

2016 EDITION

# form 20-F



**TOTAL**



UNITED STATES SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

Form 20-F

(Mark One)

- REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR 12(g) OF THE SECURITIES EXCHANGE ACT OF 1934  
OR  
 ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
**For the fiscal year ended December 31, 2016**  
OR  
 TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
For the transition period from \_\_\_\_\_ to \_\_\_\_\_  
OR  
 SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
Date of event requiring this shell company report \_\_\_\_\_

Commission file number: 1-10888

**TOTAL S.A.**

(Exact Name of Registrant as Specified in Its Charter)

**Republic of France**

(Jurisdiction of Incorporation or Organization)

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(Name, Telephone, Email and/or Facsimile Number and Address of Company Contact Person)

Securities registered or to be registered pursuant to Section 12(b) of the Act.

Title of each class	Name of each exchange on which registered
Shares American Depositary Shares	New York Stock Exchange* New York Stock Exchange

\* Not for trading, but only in connection with the registration of American Depositary Shares, pursuant to the requirements of the Securities and Exchange Commission. Securities registered or to be registered pursuant to Section 12(g) of the Act.

None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.

None

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

2,430,365,862 Shares, par value €2.50 each, as of December 31, 2016

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes  No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes  No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).\*\*

Yes  No

\*\* This requirement is not currently applicable to the registrant.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer and large accelerated filer" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP

International Financial Reporting Standards as issued by the International Accounting Standards Board

Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow. Item 17  Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

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## TABLE OF CONTENTS

	<u>Page</u>
BASIS OF PRESENTATION . . . . .	i
STATEMENTS REGARDING COMPETITIVE POSITION . . . . .	i
ADDITIONAL INFORMATION . . . . .	i
CERTAIN TERMS, ABBREVIATIONS AND CONVERSION TABLE . . . . .	i
CAUTIONARY STATEMENT CONCERNING FORWARD-LOOKING STATEMENTS . . . . .	i
<b>Item 1.</b> Identity of Directors, Senior Management and Advisers . . . . .	1
<b>Item 2.</b> Offer Statistics and Expected Timetable . . . . .	1
<b>Item 3.</b> Key Information . . . . .	1
Selected Financial Data . . . . .	1
Exchange Rate Information . . . . .	1
Risk Factors . . . . .	2
<b>Item 4.</b> Information on the Company . . . . .	2
History and Development . . . . .	2
Business Overview . . . . .	2
Other Matters . . . . .	2
<b>Item 4A.</b> Unresolved Staff Comments . . . . .	2
<b>Item 5.</b> Operating and Financial Review and Prospects . . . . .	2
<b>Item 6.</b> Directors, Senior Management and Employees . . . . .	12
Directors and Senior Management . . . . .	12
Compensation . . . . .	12
Corporate Governance . . . . .	12
Employees and Share Ownership . . . . .	12
<b>Item 7.</b> Major Shareholders and Related Party Transactions . . . . .	12
<b>Item 8.</b> Financial Information . . . . .	12
<b>Item 9.</b> The Offer and Listing . . . . .	12
<b>Item 10.</b> Additional Information . . . . .	13
<b>Item 11.</b> Quantitative and Qualitative Disclosures About Market Risk . . . . .	17
<b>Item 12.</b> Description of Securities Other than Equity Securities . . . . .	17
<b>Item 13.</b> Defaults, Dividend Arrearages and Delinquencies . . . . .	17
<b>Item 14.</b> Material Modifications to the Rights of Security Holders and Use of Proceeds . . . . .	17
<b>Item 15.</b> Controls and Procedures . . . . .	17
<b>Item 16A.</b> Audit Committee Financial Expert . . . . .	18
<b>Item 16B.</b> Code of Ethics . . . . .	18
<b>Item 16C.</b> Principal Accountant Fees and Services . . . . .	18
<b>Item 16D.</b> Exemptions from the Listing Standards for Audit Committees . . . . .	19
<b>Item 16E.</b> Purchases of Equity Securities by the Issuer and Affiliated Purchasers . . . . .	19
<b>Item 16F.</b> Change in Registrant’s Certifying Accountant . . . . .	19
<b>Item 16G.</b> Corporate Governance . . . . .	19
<b>Item 16H.</b> Mine Safety Disclosure . . . . .	21
<b>Item 17.</b> Financial Statements . . . . .	21
<b>Item 18.</b> Financial Statements . . . . .	21
<b>Item 19.</b> Exhibits . . . . .	24

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## Basis of presentation

References in this Annual Report on Form 20-F to pages and sections of the 2016 Registration Document are references only to those pages and sections of TOTAL's Registration Document for the year ended December 31, 2016 attached in Exhibit 15.1 to this Form 20-F. Other than as expressly provided herein, the 2016 Registration Document is not incorporated herein by reference.

TOTAL's Consolidated Financial Statements, which start on page 205 of the 2016 Registration Document and are incorporated herein by reference, are prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and IFRS as adopted by the European Union (EU) as of December 31, 2016.

In addition, this Annual Report on Form 20-F and the 2016 Registration Document contain certain measures that are not defined by generally accepted accounting principles (GAAP) such as IFRS. Our management uses these financial measures, along with the most directly comparable GAAP financial measures, in evaluating our operating performance. We believe that presentation of this information, along with comparable GAAP measures, is useful to investors because it allows investors to understand the primary method used by management to evaluate performance on a meaningful basis. Non-GAAP financial measures should not be considered in isolation from, or as a substitute for, financial information presented in compliance with GAAP. Non-GAAP financial measures as reported by us may not be comparable with similarly titled amounts reported by other companies.

## Statements regarding competitive position

Unless otherwise indicated, statements made in "Item 4. Information on the Company" referring to TOTAL's competitive position are based on the Company's estimates, and in some cases rely on a range of sources, including investment analysts' reports, independent market studies and TOTAL's internal assessments of market share based on publicly available information about the financial results and performance of market participants.

## Additional information

This Annual Report on Form 20-F reports information primarily regarding TOTAL's business, operations and financial information relating to the fiscal year ended December 31, 2016. For more recent updates regarding TOTAL, you may inspect any reports, statements or other information TOTAL files with the United States Securities and Exchange Commission ("SEC"). All of TOTAL's SEC filings made after December 31, 2001, are available to the public at the SEC website at <http://www.sec.gov> and from certain commercial document retrieval services. See also "Item 10. — 8. Documents on display".

No material on the TOTAL website forms any part of this Annual Report on Form 20-F. References in this document to documents on the TOTAL website are included as an aid to their location and are not incorporated by reference into this document.

## Certain terms, abbreviations and conversion table

For the meanings of certain terms used in this document, as well as certain abbreviations and a conversion table, refer to the "Glossary" starting on page 369 of the 2016 Registration Document, which is incorporated herein by reference.

## Cautionary statement concerning forward-looking statements

TOTAL has made certain forward-looking statements in this document and in the documents referred to in, or incorporated by reference into, this Annual Report. Such statements are subject to risks and uncertainties. These statements are based on the beliefs and assumptions of the management of TOTAL and on the information currently available to such management. Forward-looking statements include information concerning forecasts, projections, anticipated synergies, and other information concerning possible or assumed future results of TOTAL, and may be preceded by, followed by, or otherwise include the words "believes", "expects", "anticipates", "intends", "plans", "targets", "estimates" or similar expressions.

Forward-looking statements are not assurances of results or values. They involve risks, uncertainties and assumptions. TOTAL's future results and share value may differ materially from those expressed in these forward-looking statements. Many of the factors that will determine these results and values are beyond TOTAL's ability to control or predict. Except for its ongoing obligations to disclose material information as required by applicable securities laws, TOTAL does not have any intention or obligation to update forward-looking statements after the distribution of this document, even if new information, future events or other circumstances have made them incorrect or misleading.

Various factors, certain of which are discussed elsewhere in this document and in the documents referred to in, or incorporated by reference into, this document, could affect the future results of TOTAL and could cause actual results to differ materially from those expressed in such forward-looking statements, including:

- material adverse changes in general economic conditions or in the markets served by TOTAL, including changes in the prices of oil, natural gas, refined products, petrochemical products and other chemicals;
- changes in currency exchange rates and currency devaluations;
- the success and the economic efficiency of oil and natural gas exploration, development and production programs, including, without limitation, those that are not controlled and/or operated by TOTAL;
- uncertainties about estimates of changes in proven and potential reserves and the capabilities of production facilities;
- uncertainties about the ability to control unit costs in exploration, production, refining and marketing (including refining margins) and chemicals;
- changes in the current capital expenditure plans of TOTAL;
- the ability of TOTAL to realize anticipated cost savings, synergies and operating efficiencies;
- the financial resources of competitors;
- changes in laws and regulations, including tax and environmental laws and industrial safety regulations;
- the quality of future opportunities that may be presented to or pursued by TOTAL;
- the ability to generate cash flow or obtain financing to fund growth and the cost of such financing and liquidity conditions in the capital markets generally;
- the ability to obtain governmental or regulatory approvals;
- the ability to respond to challenges in international markets, including political or economic conditions (including national and international armed conflict) and trade and regulatory matters (including actual or proposed sanctions on companies that conduct business in certain countries);
- the ability to complete and integrate appropriate acquisitions, strategic alliances and joint ventures;
- changes in the political environment that adversely affect exploration, production licenses and contractual rights or impose minimum drilling obligations, price controls, nationalization or expropriation, and regulation of refining and marketing, chemicals and power generating activities;

- the possibility that other unpredictable events such as labor disputes or industrial accidents will adversely affect the business of TOTAL; and
- the risk that TOTAL will inadequately hedge the price of crude oil or finished products.

For additional factors, please read the information set forth under "Item 3. — 3. Risk Factors", "Item 5. Operating and Financial Review and Prospects" and "Item 11. Quantitative and Qualitative Disclosures About Market Risk".



## ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

## ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

## ITEM 3. KEY INFORMATION

### 1. Selected financial data

The following table presents selected consolidated financial data for TOTAL on the basis of IFRS as issued by the IASB and IFRS as adopted by the EU for the years ended December 31, 2016, 2015, 2014, 2013 and 2012. Effective January 1, 2014, TOTAL changed the presentation currency of the Group's Consolidated Financial Statements from the Euro to the US Dollar. Comparative 2013 and 2012 information in the table below has been restated. Following the retrospective application of the accounting interpretation IFRIC 21 effective January 1, 2014, the information for 2013 and 2012 has been restated; however, the impact on such restated results is not significant. ERNST & YOUNG Audit and KPMG Audit, a division of KPMG S.A., independent registered public accounting firms and the Company's auditors, audited the historical consolidated financial statements of TOTAL for these periods from which the financial data presented below for such periods are derived, except for the application of IFRIC 21. All such data should be read in conjunction with the Consolidated Financial Statements and the Notes thereto starting on page 205 of the 2016 Registration Document, which are incorporated herein by reference.

(M\$, except share and per share data) <sup>(a)</sup>	2016	2015	2014	2013	2012
<b>INCOME STATEMENT DATA</b>					
Revenues from sales . . . . .	127,925	143,421	212,018	227,969	234,216
Net income, Group share . . . . .	6,196	5,087	4,244	11,228	13,648
Earnings per share . . . . .	2.52	2.17	1.87	4.96	6.05
Fully diluted earnings per share . . . . .	2.51	2.16	1.86	4.94	6.02
<b>CASH FLOW STATEMENT DATA</b>					
Cash flow from operating activities . . . . .	16,521	19,946	25,608	28,513	28,858
Total expenditures . . . . .	20,530	28,033	30,509	34,431	29,475
<b>BALANCE SHEET DATA</b>					
Total assets . . . . .	230,978	224,484	229,798	239,223	225,886
Non-current financial debt . . . . .	43,067	44,464	45,481	34,574	29,392
Non-controlling interests . . . . .	2,894	2,915	3,201	3,138	1,689
Shareholders' equity — Group share . . . . .	98,680	92,494	90,330	100,241	93,969
Common shares . . . . .	7,604	7,670	7,518	7,493	7,454
<b>DIVIDENDS</b>					
Dividend per share (euros) . . . . .	€2.45 <sup>(b)</sup>	€2.44	€2.44	€2.38	€2.34
Dividend per share (dollars) . . . . .	\$2.61 <sup>(b)(c)</sup>	\$2.67	\$2.93	\$3.24	\$3.05
<b>COMMON SHARES<sup>(d)</sup></b>					
Average number outstanding of common shares €2.50 par value (shares undiluted) . . . . .	2,379,182,155	2,295,037,940	2,272,859,512	2,264,349,795	2,255,801,563
Average number outstanding of common shares €2.50 par value (shares diluted) . . . . .	2,389,713,936	2,304,435,542	2,281,004,151	2,271,543,658	2,266,635,745

<sup>(a)</sup> Following the retrospective application of the accounting interpretation IFRIC 21 effective January 1, 2014, the information for 2013 has been restated; however, the impact on such restated results is not significant.

<sup>(b)</sup> Subject to approval by the shareholders' meeting on May 26, 2017.

<sup>(c)</sup> Estimated dividend in dollars includes the first quarterly interim ADR dividend of \$0.67 paid in October 2016 and the second quarterly interim ADR dividend of \$0.65 paid in January 2017, as well as the third quarterly interim ADR dividend of \$0.64 payable in April 2017 and the proposed final interim ADR dividend of \$0.65 payable in June 2017, both converted at a rate of \$1.05/€.

<sup>(d)</sup> The number of common shares shown has been used to calculate per share amounts.

### 2. Exchange rate information

For information regarding the effects of currency fluctuations on TOTAL's results, see "Item 5. Operating and Financial Review and Prospects".

Most currency amounts in this Annual Report on Form 20-F are expressed in U.S. dollars ("dollars" or "\$") or in euros ("euros" or "€"). For the convenience of the reader, this Annual Report on Form 20-F presents certain translations into dollars of certain euro amounts (\$1.10/€ 1.00).

The following table sets out the average dollar/euro exchange rates expressed in dollars per €1.00 for the years indicated, based on an average of the daily European Central Bank ("ECB") reference exchange rate.<sup>(1)</sup> Such rates are used by TOTAL in preparation of its Consolidated Statement of Income and Consolidated Statement of Cash Flow in its Consolidated Financial Statements. No representation is made that the euro could have been converted into dollars at the rates shown or at any other rates for such periods or at such dates.

Dollar/euro exchange rates for the years provided	Average rate
2012 . . . . .	1.2848
2013 . . . . .	1.3281
2014 . . . . .	1.3285
2015 . . . . .	1.1095
2016 . . . . .	1.1069

<sup>(1)</sup> For the period 2012-2016, the averages of the ECB reference exchange rates expressed in dollars per €1.00 on the last business day of each month during the relevant year are as follows: 2012 — 1.29; 2013 — 1.33; 2014 — 1.32; 2015 — 1.10; and 2016 — 1.10.

The table below shows the high and low dollar/euro exchange rates for the four months ended December 31, 2016, and for the first months of 2017, based on the daily ECB reference exchange rates published during the relevant month expressed in dollars per €1.00.

Dollar/euro exchange rates for the periods provided	High	Low
September 2016 . . . . .	1.1296	1.1146
October 2016 . . . . .	1.1236	1.0872
November 2016 . . . . .	1.1095	1.0548
December 2016 . . . . .	1.0762	1.0364
January 2017 . . . . .	1.0755	1.0385
February 2017 . . . . .	1.0808	1.0513
March 2017 <sup>(a)</sup> . . . . .	1.0663	1.0514

<sup>(a)</sup> Through March 14, 2017.

The ECB reference exchange rate on March 14, 2017 for the dollar against the euro was \$1.0631/€ .

### 3. Risk factors

The Group and its businesses are subject to various risks relating to changing competitive, economic, political, legal, social, industry, business and financial conditions, including changes in such conditions. Point 1 (“Risk factors”) of chapter 4 of the 2016 Registration Document (starting on page 62) is incorporated herein by reference.

For additional information on these conditions, along with TOTAL’s approaches to managing certain of these risks, please refer to “Item 5. Operating and Financial Review and Prospects” and “Item 11. Quantitative and Qualitative Disclosures About Market Risk”, as well as point 4 (“Internal control and risk management procedures”) of chapter 4 of the 2016 Registration Document (starting on page 76), which is incorporated herein by reference.

## ITEM 4. INFORMATION ON THE COMPANY

The following information concerning the Group’s history and development from the 2016 Registration Document is incorporated herein by reference:

- history and development (point 1.1 of chapter 2, on page 6);
- Group organization fully effective since January 1, 2017 (point 1.3 of chapter 2, on page 7); and
- information concerning the Group’s principal capital expenditures and divestitures (point 3 of chapter 2, starting on page 42). See also “Item 5. — 2. Results 2014-2016” and “Item 5. — 3. Liquidity and capital resources”.

The following information providing an overview of the Group’s businesses and activities from the 2016 Registration Document is incorporated herein by reference:

- TOTAL’s strategy (point 1.2 of chapter 2, on page 6);
- business overview for fiscal year 2016 (point 2 of chapter 2, starting on page 8); and
- geographical breakdown of the Group’s sales, property, plants and equipment, intangible assets and capital expenditures over the past three years (Note 4 to the Consolidated Financial Statements, on page 227).

The following other matters from the 2016 Registration Document are incorporated herein by reference:

- property, plant and equipment (point 5 of chapter 2, on page 48);
- organizational structure (points 6 and 7 of chapter 2, starting on page 49);
- discussion of the Group’s investments (point 3 of chapter 2, starting on page 42);
- insurance and risk management (point 3 of chapter 4, starting on page 75);
- social, environmental and societal information (introduction and points 1.2 to 4 of chapter 7, starting on page 144);
- factors likely to have an impact in the event of a public offering (point 4.5 of chapter 8, starting on page 190); and
- information on investor relations (point 6 of chapter 8, starting on page 192).

## ITEM 4A. UNRESOLVED STAFF COMMENTS

None.

## ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

*This section is the Company’s analysis of its financial performance and of significant trends that may affect its future performance. It should be read in conjunction with the Consolidated Financial Statements and the Notes thereto in the 2016 Registration Document (starting on page 205), which are incorporated herein by reference. The Consolidated Financial Statements and the Notes thereto are prepared in accordance with IFRS as issued by the IASB and IFRS as adopted by the EU.*

*This section contains forward-looking statements that are subject to risks and uncertainties. For a list of important factors that could cause actual results to differ materially from those expressed in the forward-looking statements, see “Cautionary Statement Concerning Forward-Looking Statements” starting on page i.*

*For an overview of TOTAL’s critical accounting policies, including policies involving management’s judgment and estimates, refer to the Introduction to the Notes to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 212), which is incorporated herein by reference.*

### 1. Overview

TOTAL’s results are affected by a variety of factors, including changes in crude oil and natural gas prices as well as refining and marketing margins, which are all generally expressed in dollars, and changes in exchange rates, particularly the value of the euro compared to the dollar. Lower crude oil and natural gas prices generally have a negative effect on the income of TOTAL, since its Upstream oil and gas business is negatively impacted by the resulting decrease in revenues realized from production. Higher crude oil and natural gas prices generally have a corresponding positive effect. The effect of changes in crude oil prices on TOTAL’s Refining & Chemicals and Marketing & Services activities depends upon the speed at which the prices of refined petroleum products adjust to reflect such changes. TOTAL’s results are also significantly affected by the costs of its activities, in particular those related to exploration and production, and by the outcome of its strategic decisions with respect to cost reduction efforts. In addition, TOTAL’s results are affected by general economic and political conditions and changes in governmental laws and regulations, as well as by the impact of decisions by OPEC on production levels. For more information, see “Item 3. — 3. Risk Factors” and “Item 4. — Other Matters”.

After falling from \$100/b in 2014 to \$52/b on average in 2015, Brent prices were highly volatile in 2016, fluctuating between \$27/b and \$58/b, with an average of \$44/b for the year. In this difficult environment, the Group demonstrated its resilience by generating the highest profitability among the majors due to the strength of its integrated model and commitment of its teams to reduce the breakeven.

In this context, TOTAL's net income (Group share) in 2016 increased by 22% to \$6,196 million from \$5,087 million in 2015, mainly due to a less negative impact on net income (Group share) of special items in 2016, with the Group demonstrating its resilience despite the 19% drop in hydrocarbon prices. Adjustments to net income (Group share), which include special items and the after-tax inventory valuation effect, had a negative impact of \$2,091 million in 2016. Excluding these items, adjusted net income declined by 21% to \$8,287 million in 2016 compared to \$10,518 million in 2015, primarily due to the impact of lower Brent prices on Upstream results, partially offset by the contribution from downstream activities. For additional information, refer to "— 2. Results 2014-2016".

The Group's resilience was supported by outstanding production growth over the past two years (14.3%, including 4.5% in 2016). In the Upstream, the Group strengthened its position in the Middle East by entering the Al Shaheen field in Qatar, and in the United States with the acquisition of shale gas assets. The Group is preparing future growth with the signing of major deals in Brazil with Petrobras, in Uganda and in Iran on the giant South Pars 11 project. The Group renewed its reserves with a replacement rate of 136% at constant prices and delivered promising exploration results, with two major discoveries in the United States (North Platte) and Nigeria (Owowo).

Despite lower refining margins, the Downstream<sup>(1)</sup> once again achieved its objectives and thereby demonstrated that its results are sustainable, with operating cash flow before working capital changes at replacement cost<sup>(2)</sup> of \$7 billion and ROACE<sup>(3)</sup> above 30%, the highest among the majors. Results from the Refining & Chemicals segment were underpinned by the strong performance of its Asia and Middle East integrated platforms, while Marketing & Services results were driven by growth in retail and lubricants.

Financial discipline was successfully maintained across all business segments both for investments (\$18.3 billion including resource acquisitions) and operating costs, with savings of \$2.8 billion in 2016, exceeding the objective of \$2.4 billion. Production costs were reduced to \$5.9/boe in 2016, compared to \$9.9/boe in 2014.

The \$10 billion asset sale program is around 80% complete following the closing of the Atotech sale, and this contributed to the Group's financial strength with a net-debt-to-equity ratio at 27%, lower than it was in 2014.

In this context, the Board of Directors proposed to increase the dividend, despite the volatility of hydrocarbon prices, to €2.45/share, corresponding to a fourth quarter dividend of €0.62/share, a 1.6% increase compared to the previous three quarterly dividends. This demonstrates the Board's confidence in the strength of the Group's results and balance sheet as well as its prospects for cash flow growth.

#### – Outlook

Brent increased following the announced production cuts agreed by OPEC and non-OPEC countries, including Russia. However, inventory levels are high and prices are likely to remain volatile. In this context, the Group is continuing to cut costs with the objective of achieving \$3.5 billion of cost savings in 2017 and bringing production costs down to \$5.5/boe for the year. Investments are moving into the sustainable range needed to deliver profitable future growth and are expected to be between \$16 billion and \$17 billion in 2017 including resource acquisitions.

In the Upstream, production is set to grow by more than 4% in 2017, supporting the objective of increasing production on average by 5% per year from 2014 to 2020. As a result of this growth, the sensitivity of the portfolio to Brent increases to \$2.5 billion<sup>(4)</sup> for a \$10/b change in Brent in 2017. The Group plans to take advantage of the favorable cost environment by launching around 10 projects over the next 18 months and adding attractive resources to the portfolio.

In 2017, the Downstream is expected to continue generating stable operating cash flow before working capital changes at replacement cost of around \$7 billion thanks to its diverse portfolio of activities. Refining & Chemicals' performance has been strengthened by the restructuring and the segment will continue to benefit from the quality of its integrated platforms, notably in Antwerp, in the United States, in Asia and in the Middle East. The final investment decision to launch the Port Arthur side-cracker is expected to be made in 2017. The Marketing & Services segment is pursuing its cash generation growth strategy by leveraging its strong position in high-potential retail and lubricant markets.

In 2017, the Group expects its breakeven will continue to fall, reaching less than \$40/b pre-dividend. Cash flow from operations is expected to cover investments and the cash portion of the dividend at \$50/b. TOTAL confirms its medium-term objective to achieve a net-debt-to-equity ratio of 20%.

The Group is committed to maintaining attractive returns for its shareholders and will eliminate the discount on the scrip dividend with Brent at \$60/b.

<sup>(1)</sup> Refining & Chemicals and Marketing & Services segments, excluding New Energies.

<sup>(2)</sup> For information on the replacement cost method, refer to "— 2. Results 2014-2016 — Business segment reporting" and Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

<sup>(3)</sup> Based on adjusted net operating income and average capital employed at replacement cost.

<sup>(4)</sup> Estimated impact on cash flow from operations.

## 2. Results 2014-2016

As of and for the year ended December 31, (M\$, except per share data)	2016	2015	2014
Non-Group sales . . . . .	149,743	165,357	236,122
Adjusted net operating income from business segments <sup>(a)</sup>			
• Upstream . . . . .	3,633	4,774	10,504
• Refining & Chemicals . . . . .	4,201	4,889	2,489
• Marketing & Services . . . . .	1,586	1,699	1,254
Equity in net income (loss) of affiliates . . . . .	2,214	2,361	2,662
Fully-diluted earnings per share (\$) . . . . .	2.51	2.16	1.86
Fully-diluted weighted-average shares (millions) . . . . .	2,390	2,304	2,281
Net income (Group share) . . . . .	6,196	5,087	4,244
Gross investments <sup>(b)</sup> . . . . .	20,530	28,033	30,509
Divestments . . . . .	2,877	7,584	6,190
Net investments <sup>(c)</sup> . . . . .	17,757	20,360	24,140
Organic investments <sup>(d)</sup> . . . . .	17,484	22,976	26,430
Cash flow from operating activities . . . . .	16,521	19,946	25,608
• Includes (increase)/decrease in working capital <sup>(e)</sup> . . . . .	(1,119)	1,683	4,480

- <sup>(a)</sup> Adjusted results are defined as income using replacement cost, adjusted for special items, excluding the impact of changes for fair value. See "Business segment reporting" below for further details.
- <sup>(b)</sup> Including acquisitions and increases in non-current loans. For additional information on investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference.
- <sup>(c)</sup> "Net investments" = gross investments — divestments — repayment of non-current loans — other operations with non-controlling interests. For additional information on investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference.
- <sup>(d)</sup> "Organic investments" = net investments excluding acquisitions, asset sales and other operations with non-controlling interests. For additional information on investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference.
- <sup>(e)</sup> The change in working capital as determined using the replacement cost method was \$(467) million in 2016, \$570 million in 2015, and \$1,011 million in 2014. For information on the replacement cost method, refer to Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

### – Group results 2016 vs. 2015

After falling from \$100/b in 2014 to \$52/b on average in 2015, Brent prices were highly volatile in 2016, fluctuating between \$27/b and \$58/b, with an average of \$44/b for the year. In 2016, TOTAL's average liquids price realization<sup>(1)</sup> decreased by 15% to \$40.3/b from \$47.4/b in 2015. TOTAL's average natural gas price realization for the Group's consolidated subsidiaries decreased in 2016 by 25% to \$3.56/Mbtu from \$4.75/Mbtu in 2015. In the downstream, the Group's European refining margin indicator ("ERMI") was \$34/t in 2016, a 30% decrease compared to the high levels in 2015 (\$48.5/t), in the context of high petroleum stocks. In the fourth quarter of 2016, the ERMI was \$41.0/t. The environment for petrochemicals remained favorable.

The Euro remained stable in 2016 compared to the US Dollar, with the euro-dollar exchange rate averaging \$1.11/€ in 2016 and 2015.

In this less favorable environment, non-Group sales in 2016 were \$149,743 million, a decrease of 9% compared to \$165,357 million for 2015. The decrease in hydrocarbon prices and refining margins were partially offset by production growth and strong results for petrochemicals. Non-Group sales decreased 13% for the Upstream segment, 7% for the Refining & Chemicals segment and 11% for the Marketing & Services segment.

Net income (Group share) in 2016 increased by 22% to \$6,196 million from \$5,087 million in 2015, mainly due to a less negative impact on net income (Group share) in 2016 of special items (as further discussed below), with the Group demonstrating its resilience despite the 19% drop in hydrocarbon prices due to the strength of its integrated model and commitment of its teams to reducing the breakeven. In 2016, adjustments to net income (Group share), which included special items of \$(2,567) million and after-tax inventory valuation effect of \$479 million, had a negative impact on net income (Group share) of \$2,091 million in 2016. Special items included impairments on Gladstone LNG in Australia, Angola LNG, and Laggan-Tormore in the United Kingdom, reflecting the decrease in gas price assumptions for the coming years. For a detailed overview of adjustment items for 2016, refer to Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference. In 2015, adjustment items, which included special items of \$(4,675) million and after-tax inventory valuation effect of \$(747) million, had a negative impact on net income (Group share) of \$5,431 million. Special items included impairments on Fort Hills in Canada and Gladstone LNG in Australia as well as in Libya, an adjustment to depreciation on Usan in Nigeria following the cancellation of the sale process and the impairment of exploration projects that will not be developed. Excluding these items, adjusted net income declined by 21% to \$8,287 million in 2016 compared to \$10,518 million in 2015, primarily due to the impact of lower Brent prices on Upstream results, partially offset by the contribution from downstream activities.

Income taxes in 2016 amounted to \$970 million, a decrease of 41% compared to \$1,653 million in 2015, due to the relative weight and lower tax rates in the Upstream in a lower hydrocarbon price environment.

In 2016, the Company bought back 100,331,268 TOTAL treasury shares owned by Group affiliates under the authorization granted by the shareholders at the meeting of May 24, 2016, which were subsequently canceled by the Company's Board of Directors (for additional information, refer to point 3 ("Share buybacks") of chapter 8 of the 2016 Registration Document (starting on page 183), which is incorporated herein by reference). TOTAL bought back approximately 4.7 million of its own shares in 2015 (i.e., approximately 0.19% of the share capital as of December 31, 2015) under the authorization granted by the shareholders at the meeting of May 29, 2015. The number of fully-diluted shares at December 31, 2016, was 2,436 million compared to 2,336 million at December 31, 2015.

Fully-diluted earnings per share, based on 2,390 million weighted-average shares, was \$2.51 in 2016 compared to \$2.16 in 2015, an increase of 16%.

Asset sales were \$1,864 million in 2016, mainly comprised of the sale of a 15% interest in the Gina Krog field in Norway, the FUKA gas pipeline network in the North Sea and the retail network in Turkey. Asset sales were \$5,968 million in 2015.

Acquisitions were \$2,033 million in 2016, including \$780 million of resource acquisitions, mainly comprised of the additional 75% interest in the Barnett shale gas field in the United States, and the acquisitions of Saft, Lampiris and a retail network in the Dominican Republic. Acquisitions were \$3,441 million in 2015, including \$2,808 million of resource acquisitions.

<sup>(1)</sup> Consolidated subsidiaries, excluding fixed margins.

Cash flow from operating activities was \$16,521 million in 2016, a decrease of 17% compared to \$19,946 million in 2015, essentially due to the decrease in cash flow from operations as a result of lower hydrocarbon prices and refining margins. The change in working capital as determined in accordance with IFRS was \$(1,119) million in 2016, compared to \$1,683 million in 2015. In 2016, the change in working capital at replacement cost, which is the difference between the change in working capital of \$(1,119) million and the pre-tax inventory valuation effect of \$652 million, was \$(467) million compared to \$570 million in 2015. Operating cash flow in 2016 excluding the change in working capital at replacement cost<sup>(1)</sup> was \$16,988 million, a decrease of 12% compared to \$19,376 million in 2015.

See also “— 3. Liquidity and Capital Resources”, below.

#### – **Group results 2015 vs. 2014**

Market conditions were less favorable in 2015 compared to 2014, with the average Brent price having decreased by 47% to \$52.4/b in 2015 compared to \$99.0/b in 2014. In 2015, TOTAL's average liquids price realization decreased by 47% to \$47.4/b from \$89.4/b in 2014. TOTAL's average natural gas price realization for the Group's consolidated subsidiaries decreased in 2015 by 28% to \$4.75/Mbtu from \$6.57/Mbtu in 2014. In the downstream, the ERMI more than doubled to \$48.5/t in 2015 compared to \$18.7/t in 2014. In the fourth quarter of 2015, the ERMI was \$38.1/t. Petrochemical margins in Europe increased in 2015 due to a strong demand for polymers and the decrease in raw material costs.

The Euro depreciated in 2015 compared to the US Dollar, with the euro-dollar exchange rate averaging \$1.11/€ in 2015 compared to \$1.33/€ in 2014.

In this context, non-Group sales in 2015 were \$165,357 million, a decrease of 30% compared to \$236,122 million for 2014, due mainly to the decrease of oil and gas prices, with non-Group sales decreasing 28% for the Upstream segment, 33% for the Refining & Chemicals segment and 27% for the Marketing & Services segment.

Net income (Group share) in 2015 increased by 20% to \$5,087 million from \$4,244 million in 2014, mainly due to a less negative impact on net income (Group share) in 2015 of special items, with the strong performance of the Group's integrated model and its cost reduction program being demonstrated despite the 47% drop in the Brent price. Adjustments to net income (Group share), which included special items of \$(4,675) million and after-tax inventory valuation effect of \$(747) million, had a negative impact on net income (Group share) of \$5,431 million in 2015. Special items included impairments on Fort Hills in Canada and Gladstone LNG in Australia as well as in Libya, an adjustment to depreciation on Usan in Nigeria following the cancellation of the sale process and the impairment of exploration projects that will not be developed. In 2014, adjustment items, which included special items of \$(6,165) million and after-tax inventory valuation effect of \$(2,453) million, had a negative impact on net income (Group share) of \$8,593 million. Special items included impairments of oil sands in Canada, unconventional gas notably in the United States, refining in Europe and certain other assets in the Upstream, which was partially offset by a gain on asset sales, including for the Group's interests in Shah Deniz in Azerbaijan and GTT. Excluding these items, adjusted net income (Group share) declined by 18% to \$10,518 million in 2015 compared to \$12,837 million in 2014, primarily due to the impact of lower Brent prices on Upstream results, partially offset by a higher contribution from downstream activities.

Income taxes in 2015 amounted to \$1,653 million, a decrease of 81% compared to \$8,614 million in 2014, as a result of the decrease in taxable income and the Group's lower tax rate.

TOTAL bought back in 2015 approximately 4.7 million of its own shares (*i.e.*, approximately 0.19% of the share capital as of December 31, 2015) under the authorization granted by the shareholders at the meeting of May 29, 2015. The number of fully-diluted shares at December 31, 2015, was 2,336 million compared to 2,285 million at December 31, 2014.

Fully-diluted earnings per share, based on 2,304 million weighted-average shares, was \$2.16 in 2015 compared to \$1.86 in 2014, an increase of 16%.

Asset sales were \$5,968 million in 2015, comprised mainly of the sales of Bostik, interests in onshore blocks in Nigeria, Totalgaz, the Schwedt Refinery, the Geosel oil storage facility, coal mining assets in South Africa and partial interests in Laggan-Tormore and Fort Hills. Asset sales were \$4,650 million in 2014.

Acquisitions were \$3,441 million in 2015, including \$2,808 million of resource acquisitions, comprised mainly of the renewal of the ADCO license in the United Arab Emirates, the acquisition of a further 0.7% in the capital of Novatek in Russia bringing the Group participation to 18.9%, and the carry on the Utica gas and condensate field in the United States. Acquisitions were \$2,539 million in 2014, including \$1,765 million of resource acquisitions.

Cash flow from operating activities was \$19,946 million in 2015, a decrease of 22% compared to \$25,608 million in 2014, essentially due to the decrease in cash flow from operations in the context of a 47% lower Brent price. The change in working capital as determined in accordance with IFRS was \$1,683 million in 2015, compared to \$4,480 million in 2014. In 2015, the change in working capital at replacement cost, which is the difference between the change in working capital of \$1,683 million and the pre-tax inventory valuation effect of \$(1,113) million, was \$570 million compared to \$1,011 million in 2014. Operating cash flow in 2015 excluding the change in working capital at replacement cost was \$19,376 million, a decrease of 21% compared to \$24,597 million in 2014.

See also “— 3. Liquidity and Capital Resources”, below.

#### – **Business segment reporting**

The financial information for each business segment is reported on the same basis as that used internally by the chief operating decision-maker in assessing segment performance and the allocation of segment resources. Due to their particular nature or significance, certain transactions qualifying as “special items” are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. In certain instances, certain transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may qualify as special items although they may have occurred in prior years or are likely to recur in following years.

In accordance with IAS 2, the Group values inventories of petroleum products in its financial statements according to the First-In, First-Out (FIFO) method and other inventories using the weighted-average cost method. Under the FIFO method, the cost of inventory is based on the historic cost of acquisition or manufacture rather than the current replacement cost. In volatile energy markets, this can have a significant distorting effect on the reported income. Accordingly, the adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method in order to facilitate the comparability of the Group's results with those of its competitors and to help illustrate the operating performance of these segments excluding the impact of oil price changes on the replacement of inventories. In the replacement cost method, which approximates the Last-In, First-Out (LIFO) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differential between one

<sup>(1)</sup> Operating cash flow excluding the change in working capital at replacement cost provides information on underlying cash flow without the short-term impacts of changes in inventory and other working capital elements at replacement cost. For information on the replacement cost method, refer to “— 2. Results 2014-2016 — Business segment reporting” and Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

period and another or the average prices of the period. The inventory valuation effect is the difference between the results under the FIFO and replacement cost methods.

The effect of changes in fair value presented as an adjustment item reflects, for trading inventories and storage contracts, differences between internal measures of performance used by TOTAL's management and the accounting for these transactions under IFRS, which requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories recorded at their fair value based on forward prices. Furthermore, TOTAL, in its trading activities, enters into storage contracts, the future effects of which are recorded at fair value in the Group's internal economic performance. IFRS, by requiring accounting for storage contracts on an accrual basis, precludes recognition of this fair value effect.

The adjusted business segment results (adjusted operating income and adjusted net operating income) are defined as replacement cost results, adjusted for special items, excluding the effect of changes in fair value. For further information on the adjustments affecting operating income on a segment-by-segment basis, and for a reconciliation of segment figures to figures reported in the Company's audited consolidated financial statements, see Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

The Group measures performance at the segment level on the basis of adjusted net operating income. Net operating income comprises operating income of the relevant segment after deducting the amortization and the depreciation of intangible assets other than leasehold rights, translation adjustments and gains or losses on the sale of assets, as well as all other income and expenses related to capital employed (dividends from non-consolidated companies, income from equity affiliates and capitalized interest expenses) and after income taxes applicable to the above. The income and expenses not included in net operating income that are included in net income are interest expenses related to long-term liabilities net of interest earned on cash and cash equivalents, after applicable income taxes (net cost of net debt and non-controlling interests). Adjusted net operating income excludes the effect of the adjustments (special items and the inventory valuation effect) described above. For further discussion of the calculation of net operating income and the calculation of return on average capital employed (ROACE<sup>(1)</sup>), see Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

#### – Upstream segment

Environment — liquids and gas price realizations <sup>(a)</sup>	2016	2015	2014
Brent (\$/b)	43.7	52.4	99.0
Average liquids price (\$/b)	40.3	47.4	89.4
Average gas price (\$/Mbtu)	3.56	4.75	6.57
Average hydrocarbons price (\$/boe)	31.9	39.2	66.2

<sup>(a)</sup> Consolidated subsidiaries, excluding fixed margins.

Production	2016	2015	2014
Combined production (kboe/d)	2,452	2,347	2,146
• Liquids (kb/d)	1,271	1,237	1,034
• Gas (Mcf/d)	6,447	6,054	6,063

Results (M\$)	2016	2015	2014
Non-Group sales	14,683	16,840	23,484
Operating income <sup>(a)</sup>	(274)	(2,941)	10,494
Equity in income (loss) of affiliates and other items	1,489	2,019	4,302
Effective tax rate <sup>(b)</sup>	26.6%	45.5%	57.1%
Tax on net operating income	363	(294)	(8,799)
Net operating income <sup>(a)</sup>	1,578	(1,216)	5,997
Adjustments affecting net operating income	2,055	5,990	4,507
Adjusted net operating income <sup>(c)</sup>	3,633	4,774	10,504
Investments	16,035	24,270	26,520
Divestments	2,331	3,215	5,764
Organic investments	14,316	20,508	22,959
Cash flow from operating activities	9,675	11,182	16,666
ROACE	3%	5%	11%

<sup>(a)</sup> For the definitions of operating income and net operating income, refer to Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

<sup>(b)</sup> "Effective tax rate" = tax on adjusted net operating income / (adjusted net operating income — income from equity affiliates — dividends received from investments — impairment of goodwill + tax on adjusted net operating income).

<sup>(c)</sup> Adjusted for special items. See Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

#### 2016 vs. 2015

Market conditions were less favorable in 2016 compared to 2015. The average realized price of liquids decreased by 15% and the average realized gas prices by 25%.

For the full-year 2016, hydrocarbon production was 2,452 kboe/d, an increase of 4.5% compared to 2,347 kboe/d in 2015, due to the following:

- +6% due to new start ups and ramp ups, notably Laggan-Tormore, Surmont Phase 2, Termokarstovoye, Gladstone LNG, Moho Phase 1b, and Vega Pleyade, and Incahuasi; and
- -1.5% due to the security situation in Nigeria and Yemen, and wild fires in Canada.
- Natural field decline was offset by a positive price effect<sup>(2)</sup> and portfolio effects.

For a discussion of the Group's proved reserves, refer to point 2.1.1.2 ("Reserves") of chapter 2 of the 2016 Registration Document (starting on page 10), which is incorporated herein by reference. See also point 1 ("Oil and gas information pursuant to FASB Accounting Standards Codification 932") of chapter 11 of the 2016 Registration Document (starting on page 308), which is incorporated herein by reference, for additional information on proved reserves, including tables showing changes in proved reserves by region.

<sup>(1)</sup> "ROACE" = ratio of adjusted net operating income to average capital employed at replacement cost between the beginning and the end of the period.

<sup>(2)</sup> The "price effect" refers to the impact of changing hydrocarbon prices on entitlement volumes from production sharing and buyback contracts. For example, as the price of oil or gas increases above certain pre-determined levels, TOTAL's share of production generally decreases.

Non-Group sales for the segment in 2016 were \$14,683 million compared to \$16,840 million in 2015, a decrease of 13%.

Adjusted net operating income from the Upstream segment was \$3,633 million in 2016, a decrease of 24% compared to 2015. The increase in production combined with the decrease in operating costs as well as the lower effective tax rate partially offset the impact of lower hydrocarbon prices.

Adjusted net operating income for the Upstream segment excludes special items. The exclusion of special items had a positive impact on the segment's adjusted net operating income in 2016 of \$2,055 million, comprised mainly of impairments on Gladstone LNG in Australia, Angola LNG, and Laggan-Tormore in the United Kingdom, reflecting the decrease in gas price assumptions for the coming years (for additional information, refer to Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference). In 2015, the exclusion of special items had a positive impact on the segment's adjusted net operating income of \$5,990 million, comprised mainly of impairments on Fort Hills in Canada and Gladstone LNG in Australia as well as in Libya, an adjustment to depreciation on Usan in Nigeria following the cancellation of the sale process and the impairment of exploration projects that will not be developed.

Technical costs<sup>(1)</sup> for consolidated subsidiaries, calculated in accordance with ASC 932<sup>(2)</sup>, were reduced to \$20.4/boe in 2016 compared to \$23.0/boe in 2015. This decrease was essentially due to the reduction in operating costs from \$7.4/boe in 2015 to \$5.9/boe in 2016.

Cash flow from operating activities was \$9,675 million in 2016, a decrease of 13% compared to \$11,182 million in 2015. Operating cash flow in 2016 for the segment excluding the change in working capital at replacement cost of \$(237) million (\$3 million in 2015) was \$9,912 million, a decrease of 11% compared to \$11,179 million in 2015, essentially due to the decrease in hydrocarbon prices, partially offset by the increase in production and decrease in operating costs.

For information on the Upstream segment's capital expenditures, refer to points 2.1.1.1 ("Exploration and development") (on page 10) and 3 ("Investments") (starting on page 42) of chapter 2 of the 2016 Registration Document, which are incorporated herein by reference. See also "— 3. Liquidity and Capital Resources", below.

In this context, the segment's ROACE for the full-year 2016 was 3% compared to 5% for the full-year 2015.

### 2015 vs. 2014

Market conditions were less favorable in 2015. The average realized price of liquids fell by 47% and the average realized price of gas by 28% compared to 2014.

For the full-year 2015, hydrocarbon production was 2,347 kbode/d, an increase of 9.4% compared to 2014, due to the following:

- +6% for new project start ups and ramp ups, notably CLOV, West Franklin Phase 2, Eldfisk II and Termokarstovoye;
- +6% due to portfolio changes, mainly the extension of the ADCO concession in the United Arab Emirates, partially offset by asset sales in the North Sea, Nigeria and Azerbaijan;
- -4% due to shutdowns in Yemen and in Libya; and
- +1% due to the price effect and field performance, net of natural field decline.

For a discussion of the Group's proved reserves, refer to point 2.1.1.2 ("Reserves") of chapter 2 of the 2016 Registration Document (starting on page 10), which is incorporated herein by reference. See also point 1 ("Oil and gas information pursuant to FASB Accounting Standards Codification 932") of chapter 11 of the 2016 Registration Document (starting on page 308), which is incorporated herein by reference, for additional information on proved reserves, including tables showing changes in proved reserves by region.

Non-Group sales for the segment in 2015 were \$16,840 million compared to \$23,484 million in 2014, a decrease of 28%.

Adjusted net operating income from the Upstream segment was \$4,774 million for the full-year 2015, a decrease of 55% compared to \$10,504 million for 2014, essentially due to the lower price of hydrocarbons, partially offset by an increase in production, a decrease in operating costs, and a lower effective tax rate.

Adjusted net operating income for the Upstream segment excludes special items. The exclusion of special items had a positive impact on the segment's adjusted net operating income in 2015 of \$5,990 million, comprised mainly of impairments on Fort Hills in Canada and Gladstone LNG in Australia as well as in Libya, an adjustment to depreciation on Usan in Nigeria following the cancellation of the sale process and the impairment of exploration projects that will not be developed. In 2014, the exclusion of special items had a positive impact on the segment's adjusted net operating income of \$4,507 million, comprised mainly of the impairment of the Group's oil sands assets in Canada, its unconventional gas assets, notably in the United States, and certain other assets in the Upstream segment.

Technical costs for consolidated subsidiaries, calculated in accordance with ASC 932, were \$23.0/boe in 2015 compared to \$28.3/boe in 2014. This reduction was essentially due to the execution of the Group's program to reduce operating costs (which decreased from \$9.9/boe in 2014 to \$7.4/boe in 2015) and lower depreciation (portfolio effect).

Cash flow from operating activities was \$11,182 million in 2015, a decrease of 33% compared to \$16,666 million in 2014. Operating cash flow in 2015 for the segment excluding the change in working capital at replacement cost of \$3 million (\$2,001 million in 2014) was \$11,179 million, a decrease of 40% compared to \$18,667 million in 2014.

For information on the Upstream segment's capital expenditures, refer to points 2.1.1.1 ("Exploration and development") (on page 10) and 3 ("Investments") (starting on page 42) of chapter 2 of the 2016 Registration Document, which are incorporated herein by reference. See also "— 3. Liquidity and Capital Resources", below.

In this context, the segment's ROACE for the full-year 2015 was 5% compared to 11% for the full-year 2014.

### – Refining & Chemicals segment

Refinery throughput and utilization rates <sup>(a)</sup>	2016	2015	2014
Total refinery throughput (kb/d)	1,965	2,023	1,775
• France	669	674	639
• Rest of Europe	802	849	794
• Rest of World	494	500	342
Utilization rates <sup>(b)</sup>			
• Based on crude only	85%	86%	77%
• Based on crude and other feedstock	87%	88%	81%

<sup>(a)</sup> Includes share of TotalErg, as well as refineries in Africa and the French Antilles that are reported in the Marketing & Services segment. The condensate splitters at Port Arthur and Daesan are also included and 2015 figures have been restated accordingly.

<sup>(b)</sup> Based on distillation capacity at the beginning of the year.

<sup>(1)</sup> "Technical costs" = (Production costs + exploration expenses + depreciation, depletion and amortization and valuation allowances)/production of the year.

<sup>(2)</sup> Financial Accounting Standards Board (FASB) Accounting Standards Codification Topic 932, Extractive industries — Oil and Gas.

Results (M\$, except ERMI)	2016	2015	2014
European refining margin indicator ("ERMI") (\$/t)	34.1	48.5	18.7
Non-Group sales	65,632	70,623	106,124
Operating income <sup>(a)</sup>	5,000	4,544	(1,691)
Equity in income (loss) of affiliates and other items	833	1,780	90
Tax on net operating income	(1,245)	(1,105)	391
Net operating income <sup>(a)</sup>	4,588	5,219	(1,210)
Adjustments affecting net operating income	(387)	(330)	3,699
Adjusted net operating income <sup>(b)</sup>	4,201	4,889	2,489
• Including specialty chemicals <sup>(c)</sup>	581	496	629
Investments	1,849	1,843	2,022
Divestments	86	3,488	192
Organic investments	1,636	827	1,944
Cash flow from operating activities	4,587	6,432	6,302
ROACE	38%	41%	15%

<sup>(a)</sup> For the definitions of operating income and net operating income, refer to Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

<sup>(b)</sup> Adjusted for special items. See Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

<sup>(c)</sup> Hutchinson and Atotech. Bostik until February 2015.

#### 2016 vs. 2015

The ERMI averaged \$34/t in 2016, a decrease of 30% compared to the high level of 2015, in the context of high petroleum product stocks. In the fourth quarter of 2016, the ERMI was \$41.0/t. Refinery throughput for the full-year 2016 decreased by 3% compared to 2015, notably due to shutdowns in Europe and the United States in the second quarter and the sale of the Schwedt refinery in Germany.

Non-Group sales for the segment in 2016 were \$65,632 million compared to \$70,623 million in 2015, a decrease of 7%.

The segment's adjusted net operating income was \$4,201 million in 2016, a decrease of 14% compared to 2015, essentially due to the decrease in refining margins. Petrochemicals continued to generate good results, notably due to the strong contribution from the Group's major integrated platforms in Asia and the Middle East.

Adjusted net operating income for the Refining & Chemicals segment excludes any after-tax inventory valuation effect and special items. The exclusion of the inventory valuation effect had a negative impact on the segment's adjusted net operating income in 2016 of \$500 million compared to a positive impact of \$590 million in 2015. The exclusion of special items had a positive impact on the segment's adjusted net operating income in 2016 of \$113 million compared to a negative impact in 2015 of \$920 million, consisting essentially of gains on asset sales.

Cash flow from operating activities was \$4,587 million in 2016, a decrease of 29% compared to \$6,432 million in 2015. Operating cash flow in 2016 for the segment excluding the change in working capital at replacement cost of \$(291) million (\$647 million in 2015) was \$4,878 million, a decrease of 16% compared to \$5,785 million in 2015.

For information on the Refining & Chemicals segment's investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference. See also "— 3. Liquidity and Capital Resources", below.

In this context, the segment's ROACE for the full-year 2016 was 38% compared to 41% for the full year 2015.

#### 2015 vs. 2014

In 2015, the segment benefited from a favorable environment, notably in Europe. The ERMI averaged \$48.5/t in 2015 compared to \$18.7/t in 2014, mainly due to strong demand for gasoline. In the fourth quarter of 2015, the ERMI was \$38.1/t. Refinery throughput in 2015 increased by 14% to 2,023 kb/d compared to 1,775 kb/d in 2014. Actions to improve the availability in Europe resulted in a high utilization rate of 89%. The segment also benefited from the ramp-up of SATORP in Saudi Arabia. Petrochemical margins in Europe increased in 2015 due to strong demand for polymers and the decrease in raw material costs.

Non-Group sales for the segment in 2015 were \$70,623 million compared to \$106,124 million in 2014, a decrease of 33%.

The segment's adjusted net operating income in 2015 was \$4,889 million, twice the level of \$2,489 million in 2014, due to strong industrial performance during a period of high margins and cost reduction programs.

Adjusted net operating income for the Refining & Chemicals segment excludes any after-tax inventory valuation effect and special items. The exclusion of the inventory valuation effect had a positive impact on the segment's adjusted net operating income in 2015 of \$590 million compared to a positive impact of \$2,114 million in 2014, for both periods essentially due to a reduction of stock. The exclusion of special items had a negative impact on the segment's adjusted net operating income in 2015 of \$920 million, consisting essentially of gains on asset sales, compared to a positive impact of \$1,585 million in 2014, consisting essentially of impairments of European refining assets.

Cash flow from operating activities was \$6,432 million in 2015, an increase of 2% compared to \$6,302 million in 2014. Operating cash flow in 2015 for the segment excluding the change in working capital at replacement cost of \$647 million (\$2,274 million in 2014) was \$5,785 million, an increase of 44% compared to \$4,028 million in 2014.

For information on the Refining & Chemicals segment's investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference. See also "— 3. Liquidity and Capital Resources", below.

In this context, the segment's ROACE for the full-year 2015 was 41% compared to 15% for the full year 2014.

#### – Marketing & Services segment

Petroleum product sales (kb/d) <sup>(a)</sup>	2016	2015	2014
Total Marketing & Services sales	1,793	1,818	1,769
• Europe	1,093	1,092	1,100
• Rest of world	700	726	669

<sup>(a)</sup> Excludes trading and bulk Refining sales, which are reported under the Refining & Chemicals segment; includes share of TotalErg.



Results (M\$)	2016	2015	2014
Non-Group sales	69,421	77,887	106,509
Operating income <sup>(a)</sup>	1,461	1,758	1,158
Equity in income (loss) of affiliates and other items	84	297	(140)
Tax on net operating income	(506)	(585)	(344)
Net operating income <sup>(a)</sup>	1,039	1,470	674
Adjustments affecting net operating income	547	229	580
Adjusted net operating income <sup>(b)</sup>	1,586	1,699	1,254
• Including New Energies	26	108	10
Investments	2,506	1,841	1,818
Divestments	446	856	163
Organic investments	1,432	1,569	1,424
Cash flow from operating activities	1,623	2,323	2,721
ROACE	18%	20%	13%

<sup>(a)</sup> For the definitions of operating income and net operating income, refer to Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

<sup>(b)</sup> Adjusted for special items. See Note 3 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 215), which is incorporated herein by reference.

### 2016 vs. 2015

In 2016, refined product sales decreased slightly compared to 2015, essentially due to the sale of the retail network in Turkey. Excluding portfolio effects, retail network sales increased by around 4%. Sales of land-based lubricants also increased by around 4%.

Non-Group sales for the segment in 2016 were \$69,421 million compared to \$77,887 million in 2015, a decrease of 11%.

Adjusted net operating income in 2016 for the segment was \$1,586 million in 2016, a decrease of 7% compared to 2015. Excluding New Energies, which benefited in 2015 from the delivery of the Quinto solar farm in the United States, adjusted net operating income was stable despite asset sales (retail network in Turkey).

Adjusted net operating income for the Marketing & Services segment excludes any after-tax inventory valuation effect and special items. The exclusion of the inventory valuation effect had a positive impact on the segment's adjusted net operating income in 2016 of \$13 million compared to a positive impact of \$169 million in 2015. The exclusion of special items had a positive impact on the segment's adjusted net operating income in 2016 of \$534 million, including restructuring charges related to New Energies, compared to a positive impact of \$60 million in 2015.

Cash flow from operating activities was \$1,623 million in 2016, a decrease of 30% compared to \$2,323 million in 2015. Operating cash flow in 2016 for the segment excluding the change in working capital at replacement cost of \$(208) million (\$258 million in 2015) was \$1,831 million, a decrease of 11% compared to \$2,065 million in 2015.

For information on the Marketing & Services segment's investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference. See also "— 3. Liquidity and Capital Resources", below.

In this context, the segment's ROACE for the full-year 2016 was 18% compared to 20% for the full year 2015.

### 2015 vs. 2014

The segment's petroleum product sales were 1,818 kb/d in 2015 compared to 1,769 kb/d in 2014, an increase of 3%. In addition to strong growth in Africa, the sector benefited from its strategic repositioning in Europe and demand stimulated by lower prices.

Non-Group sales for the segment in 2015 were \$77,887 million compared to \$106,509 million in 2014, a decrease of 27%.

Adjusted net operating income in 2015 for the segment was \$1,699 million compared to \$1,254 million in 2014, an increase of 35% benefiting from an increase in sales and margins in a favorable environment, and the contribution of SunPower.

Adjusted net operating income for the Marketing & Services segment excludes any after-tax inventory valuation effect and special items. The exclusion of the inventory valuation effect had a positive impact on the segment's adjusted net operating income in 2015 of \$169 million compared to a positive impact of \$384 million in 2014. The exclusion of special items had a positive impact on the segment's adjusted net operating income in 2015 of \$60 million compared to a positive impact of \$196 million in 2014.

Cash flow from operating activities was \$2,323 million in 2015, a decrease of 15% compared to \$2,721 million in 2014. Operating cash flow in 2015 for the segment excluding the change in working capital at replacement cost of \$258 million (\$705 million in 2014) was \$2,065 million, an increase of 2% compared to \$2,016 million in 2014.

For information on the Marketing & Services segment's investments, refer to point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference. See also "— 3. Liquidity and Capital Resources", below.

In this context, the segment's ROACE for the full-year 2015 was 20% compared to 13% for the full year 2014.

## 3. Liquidity and capital resources

(M\$)	2016	2015	2014
<b>Cash flow from operating activities</b>	<b>16,521</b>	<b>19,946</b>	<b>25,608</b>
Including (increase) decrease in working capital	(1,119)	1,683	4,480
<b>Cash flow used in investing activities</b>	<b>(17,653)</b>	<b>(20,449)</b>	<b>(24,319)</b>
Total expenditures	(20,530)	(28,033)	(30,509)
Total divestments	2,877	7,584	6,190
<b>Cash flow from financing activities</b>	<b>3,532</b>	<b>1,060</b>	<b>5,909</b>
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>2,400</b>	<b>577</b>	<b>7,198</b>
Effect of exchange rates	(1,072)	(2,469)	(2,217)
Cash and cash equivalents at the beginning of the period	23,269	25,181	20,200
<b>Cash and cash equivalents at the end of the period</b>	<b>24,597</b>	<b>23,269</b>	<b>25,181</b>

TOTAL's cash requirements for working capital, capital expenditures, acquisitions and dividend payments over the past three years were financed primarily by a combination of funds generated from operations, borrowings and divestments of non-core assets. In the current environment, TOTAL expects its external debt to be principally financed from the international debt capital markets. The Group continually monitors the balance between cash flow from operating activities and net expenditures. In the Company's opinion, its working capital is sufficient for its present requirements.

#### – **Capital expenditures**

The largest part of TOTAL's capital expenditures in 2016 was made up of additions to intangible assets and property, plant and equipment (approximately 87%), with the remainder attributable to equity-method affiliates and to acquisitions of subsidiaries. In the Upstream segment, as described in more detail under point 1.6 ("Cost incurred") of chapter 11 of the 2016 Registration Document (on page 321), which is incorporated herein by reference, capital expenditures in 2016 were principally development costs (approximately 90%, mainly for construction of new production facilities), exploration expenditures (successful or unsuccessful, approximately 4%) and acquisitions of proved and unproved properties (approximately 6%). In the Refining & Chemicals segment, about 75% of capital expenditures in 2016 were related to refining and petrochemical activities (essentially 50% for existing units including maintenance and major turnarounds and 50% for new construction), the balance being related to Specialty Chemicals. In the Marketing & Services segment, capital expenditures were split between marketing/retail activities (approximately 50%) and New Energies (approximately 50%). For additional information on capital expenditures, please refer to the discussion above in "– 1. Overview" and "– 2. Results 2014-2016", above, and point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference.

#### – **Cash flow**

Cash flow from operating activities in 2016 was \$16,521 million compared to \$19,946 million in 2015 and \$25,608 million in 2014. The \$3,425 million decrease in cash flow from operating activities from 2015 to 2016 was due mainly to an increase in working capital requirements in 2016 of \$1,119 million compared to a decrease of \$1,683 million in 2015. The Group's working capital requirement was affected by the effect of changes in oil and oil product prices. As IFRS rules require TOTAL to account for inventories of petroleum products according to the FIFO method, an increase in oil and oil products in 2016 compared to a decrease in 2015 generates, all other factors remaining equal, an increase in inventories, resulting in an increase in working capital requirements. In 2016, the Group's working capital requirement increased by \$1,119 million, due to increases in inventories and receivables partially offset by an increase in payables. The Group's working capital requirement decreased by \$1,683 million in 2015 and by \$4,480 million in 2014, in both cases mainly due to reductions in inventory and receivables.

Cash flow used in investing activities in 2016 was \$17,653 million compared to \$20,449 million in 2015 and \$24,319 million in 2014. The decrease from 2015 to 2016 was mainly due to lower expenditures on the Group's portfolio of Upstream projects and lower divestments mainly in the Refining & Chemicals segment, which had a higher level of divestments in 2015 due to the sale of Bostik. The decrease from 2014 to 2015 was due to lower expenditures on the Group's portfolio of Upstream projects, as various projects approached completion, and by the divestment of Bostik in the Refining & Chemicals segment, partly offset by the extension of the ADCO concession in Abu Dhabi. Total expenditures in 2016 were \$20,530 million compared to \$28,033 million in 2015 and \$30,509 million in 2014. During 2016, 78% of the expenditures were made by the Upstream segment (as compared to 87% in 2015 and 2014), 9% by the Refining & Chemicals segment (compared to 7% in 2015 and 2014) and 13% by the Marketing & Services segment (compared to 6% in 2015 and 2014). The main source of funding for these expenditures has been cash from operating activities and issuances of non-current debt and perpetual subordinated notes. For additional information on expenditures, please refer to the discussions in "– 1. Overview" and "– 2. Results 2014-2016", above, and point 3 ("Investments") of chapter 2 of the 2016 Registration Document (starting on page 42), which is incorporated herein by reference.

Divestments, based on selling price and net of cash sold, in 2016 were \$2,877 million compared to \$7,584 million in 2015 and \$6,190 million in 2014. In 2016, the Group's principal divestments were asset sales of \$1,864 million, consisting mainly of interests in the FUKA and SIRGE gas pipelines, and the St. Fergus gas terminal in the United Kingdom. In 2015, the Group's principal divestments were asset sales of \$5,968 million, consisting mainly of sales of Bostik, interests in onshore blocks in Nigeria, Totalgaz, the Schwedt refinery, the Géosel oil storage facility, coal mining assets in South Africa, and partial interests in Laggan-Tormore and Fort Hills. In 2014, the Group's principal divestments were asset sales of \$4,650 million, consisting mainly of sales in the Upstream segment in Azerbaijan, Angola and the United States.

Cash flow raised from financing activities in 2016 was \$3,532 million compared to \$1,060 million in 2015 and \$5,909 million in 2014. The increase in cash flow from financing activities in 2016 compared to 2015 was primarily due to the variation of current financial assets and liabilities (\$1,396 million in 2016 compared to \$(5,517) million in 2015), partially offset by the decrease in variation of current borrowings \$(3,260) million in 2016 compared to \$(597) million in 2015), the lower issuance of perpetual subordinated notes in 2016 (\$4,711 million compared to \$5,616 million in 2015) and the decrease in net issuance of non-current borrowings (\$3,576 million in 2016 compared to \$4,166 million in 2015).

#### – **Indebtedness**

The Company's non-current financial debt at year-end 2016 was \$43,067 million<sup>(1)</sup> compared to \$44,464 million at year-end 2015 and \$45,481 million at year-end 2014. For further information on the Company's level of borrowing and the type of financial instruments, including maturity profile of debt and currency and interest rate structure, see Note 15 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 270), which is incorporated herein by reference. For further information on the Company's treasury policies, including the use of instruments for hedging purposes and the currencies in which cash and cash equivalents are held, see "Item 11. Quantitative and Qualitative Disclosures About Market Risk".

On February 22, 2016, Standard & Poor's downgraded TOTAL's long term credit rating from AA- to A+ with a negative outlook. The short term credit rating was also downgraded from A-1+ to A-1. On April 8, 2016, Moody's downgraded TOTAL's long term credit rating from Aa1 to Aa3 with a stable outlook.

Cash and cash equivalents at year-end 2016 were \$24,597 million compared to \$23,269 million at year-end 2015 and \$25,181 million at year-end 2014.

#### – **Shareholders' equity**

Shareholders' equity at year-end 2016 was \$101,574 million compared to \$95,409 million at year-end 2015 and \$93,531 million at year-end 2014. Changes in shareholders' equity in 2016 were primarily due to the impacts of comprehensive income, dividend payments, the issuance of perpetual subordinated notes and the issuance of common shares. Changes in shareholders' equity in 2015 were primarily due to the impacts of dividend payments, the issuance of perpetual subordinated notes and the issuance of common shares. Changes in shareholders' equity in 2014 were primarily due to the impacts of dividend payments, variations in foreign exchange and impairments (for information concerning the impairments, refer to "–2. Results 2014-2016", above).

<sup>(1)</sup> Excludes net current and non-current financial debt of \$(140) million as of December 31, 2016, \$141 million as of December 31, 2015 and \$(56) million as of December 31, 2014, related to assets classified in accordance with IFRS 5 "non-current assets held for sale and discontinued operations".

At the meeting held on December 15, 2016, and pursuant to the authorization of the Extraordinary Shareholders' Meeting of May 11, 2012, the Board of Directors of TOTAL S.A. decided to cancel 100,331,268 treasury shares (i.e., 4.13% of the share capital as of December 31, 2016) that TOTAL S.A. had bought back off-market in December 2016 from four of its 100% indirectly controlled subsidiaries. Following this transaction, Group affiliates no longer hold any treasury shares. This buyback of shares had no impact on the consolidated financial statements of TOTAL S.A. For additional information, refer to point 3 of chapter 8 ("Share buybacks") of the 2016 Registration Document (starting on page 183), which is incorporated herein by reference. In 2015, TOTAL S.A. bought back nearly 4.7 million of its own shares (i.e., 0.19% of the share capital as of December 31, 2015) under the previous authorization granted by the shareholders at the meeting of May 29, 2015. In 2014, TOTAL S.A. bought back nearly 4.4 million of its own shares (i.e., 0.18% of the share capital as of December 31, 2014) under the authorization granted by the shareholders at the meeting of May 16, 2014.

#### – Net-debt-to-equity

As of December 31, 2016, TOTAL's net-debt-to-equity ratio<sup>(1)</sup> was 27.1% compared to 28.3% and 31.3% at year-ends 2015 and 2014, respectively. The decrease from 2014 to 2015 was mostly due to the issuance of perpetual subordinated notes.

As of December 31, 2016, TOTAL S.A. had \$10,076 million of long-term confirmed lines of credit, of which \$10,076 million were unused.

## 4. Guarantees and other off-balance sheet arrangements

As of December 31, 2016, the guarantees provided by TOTAL S.A. in connection with the financing of the Ichthys LNG project amounted to \$7,800 million.

Guarantees given against borrowings also include the guarantee given in 2008 by TOTAL S.A. in connection with the financing of the Yemen LNG project for an amount of \$551 million and the guarantee given in 2016 by TOTAL S.A. in connection with the financing of the Yamal LNG project for an amount of \$3,147 million.

In 2015, TOTAL S.A. has confirmed and extended guarantees for TOTAL Refining SAUDI ARABIA SAS shareholders' advances for an amount of \$1,013 million. As of December 31, 2016, the guarantees amounted to \$1,230 million.

These guarantees and other information on the Company's commitments and contingencies are presented in Note 13 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 263), which is incorporated herein by reference.

The Group does not currently consider that these guarantees, or any other off-balance sheet arrangements of TOTAL S.A. nor any other members of the Group, have or are reasonably likely to have, currently or in the future, a material effect on the Group's financial condition, changes in financial condition, revenues or expenses, results of operation, liquidity, capital expenditures or capital resources.

## 5. Contractual obligations

Payment due by period (M\$)	Less than 1 year	1-3 years	3-5 years	More than 5 years	Total
Non-current debt obligations <sup>(a)</sup>	—	9,963	8,486	23,398	41,847
Current portion of non-current debt obligations <sup>(b)</sup>	4,614	—	—	—	4,614
Finance lease obligations <sup>(c)</sup>	8	59	44	208	319
Asset retirement obligations <sup>(d)</sup>	685	1,325	944	9,711	12,665
Operating lease obligations <sup>(c)</sup>	1,582	1,831	1,122	1,943	6,478
Purchase obligations <sup>(e)</sup>	10,898	8,731	11,839	73,740	105,208
<b>Total</b>	<b>17,787</b>	<b>21,909</b>	<b>22,435</b>	<b>109,000</b>	<b>171,131</b>

<sup>(a)</sup> Non-current debt obligations are included in the items "Non-current financial debt" and "Hedging instruments of non-current financial debt" of the Consolidated Balance Sheet (refer to point 4 of chapter 10 of the 2016 Registration Document (on page 209), which is incorporated herein by reference). The figures in this table are net of the non-current portion of issue swaps and swaps hedging bonds, and exclude non-current finance lease obligations of \$311 million and net current and non-current financial debt of \$(140) million related to assets classified in accordance with IFRS 5 "non-current assets held for sale and discontinued operations".

<sup>(b)</sup> The current portion of non-current debt is included in the items "Current borrowings", "Current financial assets" and "Other current financial liabilities" of the balance sheet. The figures in this table are net of the current portion of issue swaps and swaps hedging bonds and exclude the current portion of finance lease obligations of \$8 million.

<sup>(c)</sup> Finance lease obligations and operating lease obligations: the Group leases real estate, retail stations, ships, and other equipment through non-cancelable capital and operating leases. These amounts represent the future minimum lease payments on non-cancelable leases to which the Group is committed as of December 31, 2016, less the financial expense due on finance lease obligations for \$74 million.

<sup>(d)</sup> The discounted present value of Upstream asset retirement obligations, primarily asset removal costs at the completion date.

<sup>(e)</sup> Purchase obligations are obligations under contractual agreements to purchase goods or services, including capital projects. These obligations are enforceable and legally binding on TOTAL and specify all significant terms, including the amount and the timing of the payments. These obligations mainly include: hydrocarbon unconditional purchase contracts (except where an active, highly liquid market exists and when the hydrocarbons are expected to be re-sold shortly after purchase), reservation of transport capacities in pipelines, unconditional exploration works and development works in the Upstream segment, and contracts for downstream capital investment projects. This disclosure does not include contractual exploration obligations with host states where a monetary value is not attributed and purchases of booking capacities in pipelines where the Group has a participation superior to the capacity used.

For additional information on the Group's contractual obligations, see Note 13 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 263), which is incorporated herein by reference. The Group has other obligations in connection with pension plans which are described in Note 10 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 254), which is incorporated herein by reference. As these obligations are not contractually fixed as to timing and amount, they have not been included in this disclosure. Other non-current liabilities, detailed in Note 12 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 260), which is incorporated herein by reference, are liabilities related to risks that are probable and amounts that can be reasonably estimated. However, no contractual agreements exist related to the settlement of such liabilities, and the timing of the settlement is not known.

<sup>(1)</sup> Net-debt-to-equity ratio = net debt (i.e., the sum of current borrowings, other current financial liabilities and non-current financial debt, net of current financial assets, net financial assets and liabilities related to assets classified in accordance with IFRS 5 as non-current assets held for sale, hedging instruments on non-current financial debt and cash and cash equivalents) divided by the sum of shareholders' equity and non-controlling interests after expected dividends payable.

## 6. Research and development

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For a discussion of the Group's R&D policies and activities, refer to point 4 ("Research & Development") of chapter 2 of the 2016 Registration Document (starting on page 44), which is incorporated herein by reference.

### ITEM 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

The following information concerning directors and senior management from the 2016 Registration Document is incorporated herein by reference:

- composition of the Board of Directors and related information (introduction and point 1.1 of chapter 5, starting on page 86); and
- General Management (point 2 of chapter 5, on page 112).

The following information concerning compensation from the 2016 Registration Document is incorporated herein by reference:

- approach to overall compensation (point 1.1.3 of chapter 7, starting on page 146); and
- compensation of the administration and management bodies (points 1 to 6 of chapter 6, starting on page 116).

The following information concerning board practices and corporate governance from the 2016 Registration Document is incorporated herein by reference:

- practices of the Board of Directors (point 1.2 of chapter 5, starting on page 97); and
- statement regarding corporate governance (point 1.3 of chapter 5, on page 111).

The following information concerning employees and share ownership from the 2016 Registration Document is incorporated herein by reference:

- Group employees as of December 31, 2016 (point 1.1.1 of chapter 7, on page 145);
- employees joining and leaving TOTAL (point 1.1.2 of chapter 7, on page 146);
- shares held by the administration and management bodies (point 3 of chapter 5, starting on page 112); and
- employee shareholding (point 4.2 of chapter 8, on page 189).

### ITEM 7. MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS

The following information concerning shareholders from the 2016 Registration Document is incorporated herein by reference:

- major shareholders (point 4.1 of chapter 8, starting on page 187); and
- shareholding structure (point 4.3 of chapter 8, on page 190).

The Group's main transactions with related parties (principally all the investments carried under the equity method) and the balances receivable from and payable to them are shown in Note 8 to the Consolidated Financial Statements in the 2016 Registration Document (starting on page 239), which is incorporated herein by reference. In the ordinary course of its business, TOTAL enters into transactions with various organizations with which certain of its directors or executive officers may be associated, but no such transactions of a material or unusual nature have been entered into during the period commencing on January 1, 2014, and ending on March 15, 2017.

### ITEM 8. FINANCIAL INFORMATION

The following information from the 2016 Registration Document is incorporated herein by reference:

- Consolidated Financial Statements and Notes thereto (points 2 to 7 of chapter 10, starting on page 205);
- supplemental oil and gas information (points 1 and 2 of chapter 11, starting on page 308);
- report on payments made to governments (point 3 of chapter 11, starting on page 329);
- legal and arbitration proceedings (point 2 of chapter 4, starting on page 73); and
- dividend policy and other related information (point 2 of chapter 8, starting on page 181).

Except for certain events mentioned in "Item 5. Operating and Financial Review and Prospects" and point 2 ("Legal and arbitration proceedings") of chapter 4 (starting on page 73) and Note 17 ("Post closing events") to the Consolidated Financial Statements (on page 289) of the 2016 Registration Document, which are incorporated herein by reference, no significant changes to the Group's financial or commercial situation have occurred since the date of the Company's Consolidated Financial Statements.

Refer to "Item 18. Financial Statements" for the reports of the statutory auditors.

## ITEM 9. THE OFFER AND LISTING

### 1. Markets

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The principal trading markets for the Company's shares are the Euronext Paris exchange in France and the New York Stock Exchange ("NYSE") in the United States. The shares are also listed on Euronext Brussels and the London Stock Exchange.

### 2. Offer and listing details

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Provided below is certain information on trading on Euronext Paris and the New York Stock Exchange. For additional information on listing details and share performance, refer to point 1 ("Listing details") of chapter 8 of the 2016 Registration Document (starting on page 178), which is incorporated herein by reference.

#### – Trading on Euronext Paris

Official trading of listed securities on Euronext Paris, including the shares, is transacted through French investment service providers that are members of Euronext Paris and takes place continuously on each business day in Paris from 9:00 a.m. to 5:30 p.m. (Paris time), with a fixing of the closing price at 5:35 p.m. Euronext Paris may suspend or resume trading in a security listed on Euronext Paris if the quoted price of the security exceeds certain price limits defined by the regulations of Euronext Paris.

The markets of Euronext Paris settle and transfer ownership two trading days after a transaction (T+2). Highly liquid shares, including those of the Company, are eligible for deferred settlement (*Service de Règlement Différé* — SRD). Payment and delivery for shares under the SRD occurs on the last trading day of each month. Use of the SRD service requires payment of a commission.

In France, the shares are included in the principal index published by Euronext Paris (the "CAC 40 Index"). The CAC 40 Index is derived daily by comparing the total market capitalization of forty stocks traded on Euronext Paris to the total market capitalization of the stocks that made up the CAC 40 Index on December 31, 1987. Adjustments are made to allow for expansion of the sample due to new issues. The CAC 40 index indicates trends in the French stock market as a whole and is one of the most widely followed stock price indices in France. In the UK, the shares are listed in both the FTSE Eurotop 100 and FTSEurofirst 300 index. As a result of the creation of Euronext, the shares are included in Euronext 100, the index representing Euronext's blue chip companies based on market capitalization. The shares are also included in the Dow Jones Stoxx Europe 50 and Dow Jones Euro Stoxx 50, blue chip indices comprised of the fifty most highly capitalized and most actively traded equities throughout Europe and within the European Monetary Union, respectively. Since June 2000, the shares have been included in the Dow Jones Global Titans 50 Index which consists of fifty global companies selected based on market capitalization, book value, assets, revenue and earnings.

The table below sets forth, for the periods indicated, the reported high and low quoted prices in euros for the currently outstanding shares on Euronext Paris.

Price per share (€)	High	Low
2012	42.970	33.420
2013	45.670	35.175
2014	54.710	38.250
2015	50.300	36.920
First Quarter . . . . .	48.600	39.345
Second Quarter . . . . .	50.300	43.285
Third Quarter . . . . .	46.500	36.920
Fourth Quarter . . . . .	47.400	40.255
2016	48.885	35.210
First Quarter . . . . .	43.430	35.210
Second Quarter . . . . .	45.225	38.065
Third Quarter . . . . .	44.955	40.530
September . . . . .	44.955	40.530
Fourth Quarter . . . . .	48.885	41.825
October . . . . .	44.840	42.160
November . . . . .	45.405	41.825
December . . . . .	48.885	44.110
2017 (through February 28)	49.500	46.140
January . . . . .	49.500	46.385
February . . . . .	48.985	46.140

**– Trading on the New York Stock Exchange**

ADSS evidenced by ADRs have been listed on the NYSE since October 25, 1991. JPMORGAN CHASE BANK, N.A. serves as depository with respect to the ADSS evidenced by ADRs traded on the NYSE. One ADS corresponds to one TOTAL share. The table below sets forth, for the periods indicated, the reported high and low prices quoted in dollars for the currently outstanding ADSS evidenced by ADRs on the NYSE.

Price per ADR (\$)	High	Low
2012	57.06	41.75
2013	62.45	45.93
2014	74.220	48.433
2015	54.790	40.930
First Quarter . . . . .	55.860	46.610
Second Quarter . . . . .	54.790	48.530
Third Quarter . . . . .	50.870	40.930
Fourth Quarter . . . . .	52.340	44.190
2016	51.360	39.050
First Quarter . . . . .	48.000	39.050
Second Quarter . . . . .	51.300	43.550
Third Quarter . . . . .	50.210	45.355
September . . . . .	50.210	45.355
Fourth Quarter . . . . .	51.360	45.050
October . . . . .	49.105	47.410
November . . . . .	48.040	45.050
December . . . . .	51.360	47.380
2017 (through February 28)	52.040	49.330
January . . . . .	52.040	49.567
February . . . . .	51.980	49.330

**ITEM 10. ADDITIONAL INFORMATION**

**1. Share capital**

The information set forth in point 1 (“Share capital”) of chapter 9 (starting on page 196) and point 3 (“Share buybacks”) of chapter 8 (starting on page 183) of the 2016 Registration Document is incorporated herein by reference.

**2. Memorandum and articles of association**

The information set forth in point 2 (“Articles of incorporation and bylaws; other information”) of chapter 9 of the 2016 Registration Document (starting on page 198) is incorporated herein by reference.

**3. Material contracts**

There have been no material contracts (not entered into in the ordinary course of business) entered into by members of the Group since March 15, 2015.

**4. Exchange controls**

Under current French exchange control regulations, no limits exist on the amount of payments that TOTAL may remit to residents of the United States. Laws and regulations concerning foreign exchange controls do require, however, that an accredited intermediary must handle all payments or transfer of funds made by a French resident to a non-resident.

## 5. Taxation

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### – General

This section generally summarizes the material U.S. federal income tax and French tax consequences of owning and disposing of shares or ADSs of TOTAL to U.S. Holders that hold their shares or ADSs as capital assets for tax purposes. A U.S. Holder is a beneficial owner of shares or ADSs that is (i) a citizen or resident of the United States for U.S. federal income tax purposes, (ii) a domestic corporation or other domestic entity treated as a corporation for U.S. federal income tax purposes, (iii) an estate whose income is subject to U.S. federal income tax regardless of its source, or (iv) a trust if a U.S. court can exercise primary supervision over the trust's administration and one or more U.S. persons are authorized to control all substantial decisions of the trust.

This section does not address the Medicare tax on net investment income and does not apply to members of special classes of holders subject to special rules, including:

- dealers in securities;
- traders in securities that elect to use a mark-to-market method of accounting for their securities holdings;
- tax-exempt organizations;
- life insurance companies;
- U.S. pension funds;
- U.S. Regulated Investment Companies (RICs), Real Estate Investment Trusts (REITs), and Real Estate Mortgage Investment Conduits (REMICs);
- persons who are liable for the alternative minimum tax;
- persons that actually or constructively own 10% or more of the share capital or voting rights in TOTAL;
- persons that purchase or sell shares or ADSs as part of a wash sale for U.S. federal income tax purposes;
- persons that hold the shares or ADSs as part of a straddle or a hedging or conversion transaction; or
- persons whose functional currency is not the U.S. dollar.

If a partnership or other entity treated as a partnership for U.S. federal income tax purposes holds shares or ADSs, the tax treatment of a partner will generally depend upon the status of the partner and upon the activities of the partnership. Partners of a partnership holding these shares or ADSs should consult their tax advisors as to the tax consequences of owning or disposing of shares or ADSs, as applicable.

Under French law, specific rules apply to trusts, in particular specific tax and filing requirements as well as modifications to wealth, estate and gift taxes as they apply to trusts. Given the complex nature of these rules and the fact that their application varies depending on the status of the trust, the grantor, the beneficiary and the assets held in the trust, the following summary does not address the tax treatment of ADSs or shares held in a trust. If ADSs or shares are held in trust, the grantor, trustee and beneficiary are urged to consult their own tax advisor regarding the specific tax consequences of acquiring, owning and disposing of ADSs or shares.

In addition, the discussion below is limited to U.S. Holders that (i) are residents of the United States for purposes of the Treaty (as defined below), (ii) do not maintain a permanent establishment or fixed base in France to which the shares or ADSs are attributable and through which the respective U.S. Holders carry on, or have carried on, a business (or, if the holder is an individual, performs or has performed independent personal services), and (iii) are otherwise eligible for the benefits of the Treaty in respect of income and gain from the shares or ADSs (in particular, under the "Limitation on Benefits" provision of the Treaty). In addition, this section is based in part upon the representations of the Depository and the assumption that each obligation in the Deposit Agreement and any related agreement will be performed in accordance with its terms.

This section is based on the Internal Revenue Code of 1986, as amended ("IRC"), its legislative history, existing and proposed regulations, published rulings and court decisions, and with respect to the description of the material French tax consequences, the laws of the Republic of France and French tax regulations, all as currently in effect, as well as on the Convention Between the United States and the Republic of France for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with respect to Taxes on Income and Capital dated August 31, 1994, as amended (the "Treaty"). These laws, regulations and the Treaty are subject to change, possibly on a retroactive basis.

This discussion is intended only as a descriptive summary and does not purport to be a complete analysis or listing of all potential tax effects of the ownership or disposition of the shares and ADSs and is not intended to substitute competent professional advice. Individual situations of holders of shares and ADSs may vary from the description made below. The following summary does not address the French tax treatment applicable to dividends paid in so-called "Non Cooperative Countries and Territories" ("NCCT") within the meaning of Section 238-0 A of the French Tax Code. It does not apply to dividends paid to persons established or domiciled in such a NCCT, or paid to a bank account opened in a financial institution located in such a NCCT.

**Holders are urged to consult their own tax advisors regarding the U.S. federal, state and local, and French and other tax consequences of owning and disposing shares or ADSs of TOTAL in their respective circumstances. In particular, a holder is encouraged to confirm with its advisor whether the holder is a U.S. Holder eligible for the benefits of the Treaty.**

### – Taxation of dividends

#### French taxation

The term "dividends" used in the following discussion means dividends within the meaning of the Treaty.

Dividends paid to non-residents of France are in principle subject to a French withholding tax at a rate of 30%, regardless of whether they are paid in cash, in shares or a mix of both.

However, under the Treaty, a U.S. Holder is generally entitled to a reduced rate of French withholding tax of 15% with respect to dividends, provided that certain requirements are satisfied.

Administrative guidelines (*Bulletin Officiel des Finances Publiques*, BOI-INT-DG-20-20-20-20-20120912) (the "Administrative Guidelines") set forth the conditions under which the reduced French withholding tax at the rate of 15% may be available. The immediate application of the reduced 15% rate is available to those U.S. Holders that may benefit from the so-called "simplified procedure" (within the meaning of the Administrative Guidelines).

Under the "simplified procedure", U.S. Holders may claim the immediate application of withholding tax at the rate of 15% on the dividends to be received by them, provided that:

- (i) they furnish to the U.S. financial institution managing their securities account a certificate of residence conforming with form No. 5000-FR. The immediate application of the 15% withholding tax will be available only if the certificate of residence is sent to the U.S. financial institution managing their securities account no later than the dividend payment date. Furthermore, each financial institution managing the U.S. Holders' securities account must also send to the French paying agent the figure of the total amount of dividends to be received which are eligible to the reduced withholding tax rate before the dividend payment date; and

- (ii) the U.S. financial institution managing the U.S. Holder's securities account provides to the French paying agent a list of the eligible U.S. Holders and other pieces of information set forth in the Administrative Guidelines. Furthermore, the financial institution managing the U.S. Holders' securities account should certify that the U.S. Holder is, to the best of its knowledge, a United States resident within the meaning of the Treaty. These documents must be sent to the French paying agent within a time frame that will allow the French paying agent to file them no later than the end of the third month computed as from the end of the month of the dividend payment date.

Where the U.S. Holder's identity and tax residence are known by the French paying agent, the latter may release such U.S. Holder from furnishing to (i) the financial institution managing its securities account, or (ii) as the case may be, the U.S. Internal Revenue Service ("IRS"), the abovementioned certificate of residence, and apply the 15% withholding tax rate to dividends it pays to such U.S. Holder.

For a U.S. Holder that is not entitled to the "simplified procedure" and whose identity and tax residence are not known by the paying agent at the time of the payment, the 30% French withholding tax will be levied at the time the dividends are paid. Such U.S. Holder, however, may be entitled to a refund of the withholding tax in excess of the 15% rate under the "standard procedure", as opposed to the "simplified procedure", provided that the U.S. Holder furnishes to the French paying agent an application for refund on forms No. 5000-FR and 5001-FR (or any other relevant form to be issued by the French tax authorities) certified by the U.S. financial institution managing the U.S. Holder's securities account (or, if not, by the competent U.S. tax authorities) before December 31 of the second year following the date of payment of the withholding tax at the 30% rate to the French tax authorities, according to the requirements provided by the Administrative Guidelines.

Copies of forms No. 5000-FR and 5001-FR (or any other relevant form to be issued by the French tax authorities) as well as the form of the certificate of residence and the U.S. financial institution certification, together with instructions, are available from the IRS and the French tax authorities.

These forms, together with instructions, are to be provided by the Depository to all U.S. Holders of ADRs registered with the Depository. The Depository is to use reasonable efforts to follow the procedures established by the French tax authorities for U.S. Holders to benefit from the immediate application of the 15% French withholding tax rate or, as the case may be, to recover the excess 15% French withholding tax initially withheld and deducted in respect of dividends distributed to them by TOTAL. To effect such benefit or recovery, the Depository shall advise such U.S. Holder to return the relevant forms to it, properly completed and executed. Upon receipt of the relevant forms properly completed and executed by such U.S. Holder, the Depository shall cause them to be filed with the appropriate French tax authorities, and upon receipt of any resulting remittance, the Depository shall distribute to the U.S. Holder entitled thereto, as soon as practicable, the proceeds thereof in U.S. dollars.

The identity and address of the French paying agent are available from TOTAL.

In addition, subject to certain specific filing obligations, there is no withholding tax on dividend payments made by French companies to:

- (i) non-French collective investment funds formed under foreign law and established in a Member State of the European Union or in another State or territory, such as the United States, that has entered with France into an administrative assistance agreement for the purpose of combating fraud and tax evasion, and which fulfill the two following conditions: (a) the fund raises capital among a number of investors for the purpose of investing in accordance with a defined investment policy, in the interest of its investors, and (b) the fund has characteristics similar to those of collective investment funds organized under French law (*i.e.*, among others, open-end mutual fund (OPCVM), open-end real estate fund (OPCI) and closed-end investment companies (SICAF)); and
- (ii) companies whose effective place of management is, or which have a permanent establishment receiving the dividends, in a Member State of the European Union or in another State or territory that has entered with France into an administrative assistance agreement for the purpose of combating fraud and tax evasion, such as the United States, that are in a loss-making position and subject, at the time of the distribution, to insolvency proceedings similar to the one set out in article L.640-1 of the French Commercial Code and that meet the other conditions set out in article 119 *quinquies* of the French Tax Code as specified by the administrative guidelines n° BOI-RPPM-RCM-30-30-20-80-20160406.

Collective investment funds and companies mentioned in (ii) above are urged to consult their own tax advisors to confirm whether they are eligible to such provisions and under which conditions.

## U.S. taxation

For U.S. federal income tax purposes and subject to the passive foreign investment company rules discussed below, the gross amount of any dividend that a U.S. Holder must include in gross income equals the amount paid by TOTAL (*i.e.*, the net distribution received plus any tax withheld therefrom) to the extent of the current and accumulated earnings and profits of TOTAL (as determined for U.S. federal income tax purposes). Dividends paid to a non-corporate U.S. Holder that constitute qualified dividend income will be taxable to the holder at the preferential rates applicable to long-term capital gains provided that the shares or ADSs are held for more than sixty days during the 121-day period beginning sixty days before the ex-dividend date and the holder meets other holding period requirements. TOTAL believes that dividends paid by TOTAL with respect to its shares or ADSs will be qualified dividend income. The dividend will not be eligible for the dividends-received deduction allowed to a U.S. corporation under IRC Section 243. The dividend is taxable to the U.S. Holder when the holder, in the case of shares, or the Depository, in the case of ADSs, receives the dividend, actually or constructively. Because TOTAL does not currently maintain calculations of earnings and profits for U.S. federal income tax purposes, a U.S. Holder of shares or ADSs of TOTAL should expect to treat distributions with respect to the shares or ADSs as dividends.

The amount of any dividend distribution includible in the income of a U.S. Holder equals the U.S. dollar value of the euro payment made, determined at the spot euro/dollar exchange rate on the date the dividend distribution is includible in the U.S. Holder's income, regardless of whether the payment is in fact converted into U.S. dollars. Any gain or loss resulting from currency exchange fluctuations during the period from the date the dividend payment is includible in the U.S. Holder's income to the date the payment is converted into U.S. dollars will generally be treated as ordinary income or loss and, for foreign tax credit limitation purposes, from sources within the United States and will not be eligible for the special tax rate applicable to qualified dividend income. **The U.S. federal income tax rules governing the availability and computation of foreign tax credits are complex. U.S. Holders should consult their own tax advisors concerning the implications of these rules in light of their particular circumstances.**

Subject to certain conditions and limitations, French taxes withheld in accordance with the Treaty and paid over to the French tax authorities will generally be eligible for credit against the U.S. Holder's U.S. federal income tax liability. The limitation on foreign taxes eligible for credit is calculated separately with respect to specific classes of income. In addition, special rules apply in determining the foreign tax credit limitation with respect to dividends that are subject to the preferential tax rates. To the extent a refund of the tax withheld is available to a U.S. Holder under French law or under the Treaty, the amount of tax withheld that is refundable will not be eligible for credit against such holder's U.S. federal income tax liability.

For this purpose, dividends distributed by TOTAL will constitute "passive income", or, in the case of certain U.S. Holders, "general income", which are treated separately from one another for purposes of computing the foreign tax credit allowable to the U.S. Holder. Alternatively, a U.S. Holder may claim all foreign taxes paid as an itemized deduction in lieu of claiming a foreign tax credit.

If a U.S. Holder has the option to receive a distribution in shares (or ADSs) instead of cash, the distribution of shares (or ADSs) will be taxable as if the holder had received an amount equal to the fair market value of the distributed shares (or ADSs), and such holder's tax basis in the distributed shares (or ADSs) will be equal to such amount.

#### – **Taxation of disposition of shares**

In general, a U.S. Holder will not be subject to French tax on any capital gain from the sale or exchange of the shares or ADSs or redemption of the underlying shares that the ADSs represent unless those shares or ADSs form part of a business property of a permanent establishment or fixed base that the U.S. Holder has in France. Special rules may apply to individuals who are residents of more than one country.

A financial transaction tax applies, under certain conditions, to the acquisition of shares of publicly traded companies registered in France having a market capitalization over €1 billion on December 1<sup>st</sup> of the year preceding the acquisition. A list of the companies within the scope of the financial transaction tax for 2017 is published in the French Guidelines *Bulletin Officiel des Finances Publiques*, BOI-ANX-000467-20161220. TOTAL is included in this list. The tax also applies to the acquisition of ADRs evidencing ADSs. The financial transaction tax is due at a rate of 0.3% on the price paid to acquire the shares as from January 1, 2017. The person or entity liable for the tax is generally the provider of investment services defined in Article L. 321-1 of the French Monetary and Financial Code (*prestataire de services d'investissement*). Investment service providers providing equivalent services outside France are subject to the tax under the same terms and conditions. Taxable transactions are broadly construed but several exceptions may apply. In general, non-income taxes, such as this financial transaction tax, paid by a U.S. Holder are not eligible for a foreign tax credit for U.S. federal income tax purposes. U.S. Holders should consult their own tax advisors as to the tax consequences and creditability of such financial transaction tax.

For U.S. federal income tax purposes and subject to the passive foreign investment company rules discussed below, a U.S. Holder generally will recognize capital gain or loss upon the sale or other disposition of shares or ADSs equal to the difference between the U.S. dollar value of the amount realized on the sale or disposition and the holder's tax basis, determined in U.S. dollars, in the shares or ADSs. The gain or loss generally will be U.S. source gain or loss and will be long-term capital gain or loss if the U.S. Holder's holding period of the shares or ADSs is more than one year at the time of the disposition. Long-term capital gain of a non-corporate U.S. Holder is generally taxed at preferential rates if specified minimum holding periods are met. The deductibility of capital losses is subject to limitation.

#### – **Passive foreign investment status**

TOTAL believes that the shares or ADSs are not treated as stock of a passive foreign investment company ("PFIC") for U.S. federal income tax purposes, and TOTAL does not expect that it will be treated as a PFIC in the current or future taxable years. This conclusion is a factual determination that is made annually and thus is subject to change. If TOTAL is treated as a PFIC, gain realized on the sale or other disposition of the shares or ADSs would in general not be treated as capital gain. Instead, unless a U.S. Holder elects to be taxed annually on a mark-to-market basis with respect to the shares or ADSs, a U.S. Holder would be treated as if he or she had realized such gain and certain "excess distributions" ratably over the holding period for the shares or ADSs and would be taxed at the highest tax rate in effect for each such year to which the gain was allocated, in addition to an interest charge in respect of the tax attributable to each such year. With certain exceptions, a U.S. Holder's shares or ADSs will be treated as stock in a PFIC if TOTAL were a PFIC at any time during such holder's holding period in the shares or ADSs. Dividends paid will not be eligible for the preferential tax rates applicable to qualified dividend income if TOTAL is treated as a PFIC with respect to a U.S. Holder either in the taxable year of the distribution or the preceding taxable year, but instead will be taxable at rates applicable to ordinary income.

#### – **French estate and gift taxes**

In general, a transfer of shares or ADSs by gift or by reason of the death of a U.S. Holder that would otherwise be subject to French gift or inheritance tax, respectively, will not be subject to such French tax by reason of the Convention between the United States of America and the French Republic for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Estates, Inheritances and Gifts, dated November 24, 1978, as amended, unless the donor or the transferor is domiciled in France at the time of making the gift, or at the time of his death, or if the shares or ADSs were used in, or held for use in, the conduct of a business through a permanent establishment or a fixed base in France.

#### – **French wealth tax**

The French wealth tax does not apply to a U.S. Holder (i) that is not an individual, or (ii) in the case of individuals who are eligible for the benefits of the Treaty and who own, alone or with related persons, directly or indirectly, TOTAL shares which give right to less than 25% of TOTAL's earnings.

#### – **U.S. state and local taxes**

In addition to U.S. federal income tax, U.S. Holders of shares or ADSs may be subject to U.S. state and local taxes with respect to their shares or ADSs. U.S. Holders should consult their own tax advisors.

## **6. Dividends and paying agents**

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The information set forth in point 2.2 ("Dividend payment") of chapter 8 of the 2016 Registration Document (on page 182) is incorporated herein by reference.

## **7. Statements by experts**

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The independent third-party report of DeGolyer and MacNaughton, a petroleum engineering consulting firm with address at 5001 Spring Valley Road, Suite 800 East, Dallas, Texas 75244, is attached as Exhibit 15.3 to this Form 20-F. This report provided TOTAL estimates of proved crude oil, condensate and natural gas reserves, as of December 31, 2016, of certain properties owned by PAO NOVATEK. As evidenced by Exhibit 15.4 to this Form 20-F, DeGolyer and MacNaughton has consented to the inclusion of their report in this Form 20-F.

## **8. Documents on display**

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TOTAL files annual, periodic, and other reports and information with the Securities and Exchange Commission. You may inspect any reports, statements or other information TOTAL files with the United States Securities and Exchange Commission ("SEC") at the SEC's public reference rooms by calling the SEC for more information at 1-800-SEC-0330. All of TOTAL's SEC filings made after December 31, 2001, are available to the public at the SEC website at <http://www.sec.gov> and from certain commercial document retrieval services. You may also inspect any document the Company files with the SEC at the offices of The New York Stock Exchange, 20 Broad Street, New York, New York 10005.



## ITEM 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Please refer to Notes 15.3 (starting on page 279) and 16.2 (starting on page 288) to the Consolidated Financial Statements in the 2016 Registration Document, which are incorporated herein by reference, for a qualitative and quantitative discussion of the Group's exposure to market risks. Please also refer to Notes 15.2 (starting on page 274) and 16 (starting on page 285) to the Consolidated Financial Statements in the 2016 Registration Document, which are incorporated herein by reference, for details of the different derivatives owned by the Group in these markets.

As part of its financing and cash management activities, the Group uses derivative instruments to manage its exposure to changes in interest rates and foreign exchange rates. These instruments are mainly interest rate and currency swaps. The Group may also occasionally use futures contracts and options. These operations and their accounting treatment are detailed in Notes 15.2 (starting on page 274) and 16 (starting on page 285) to the Consolidated Financial Statements in the 2016 Registration Document, which are incorporated herein by reference.

The financial performance of TOTAL is sensitive to a number of factors; the most significant being oil and gas prices, generally expressed in dollars, and exchange rates, in particular that of the dollar versus the euro. Generally, a rise in the price of crude oil has a positive effect on earnings as a result of an increase in revenues from oil and gas production. Conversely, a decline in crude oil prices reduces revenues. The impact of changes in crude oil prices on the activities of the Refining & Chemicals and Marketing & Services segments depends upon the speed at which the prices of finished products adjust to reflect these changes. All of the Group's activities are, to various degrees, sensitive to fluctuations in the dollar/euro exchange rate.

## ITEM 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

### American Depositary Receipts fees and charges

JPMORGAN CHASE BANK, N.A., as depositary for the TOTAL S.A. ADR program, collects its fees for delivery and surrender of ADRs directly from investors depositing shares or surrendering ADRs for the purpose of withdrawal or from intermediaries acting for them. The depositary collects fees for making distributions to investors by deducting those fees from the amounts distributed or by selling a portion of distributable property to pay the fees. The depositary may generally refuse to provide fee-attracting services until its fees for those services are paid. A copy of the depositary agreement is attached as Exhibit (a) to the registration statement on Form F-6 (Reg. No. 333-199737) filed by the Company with the SEC on October 31, 2014.

Investors must pay:	For:
\$5.00 (or less) per 100 ADSs (or portion of 100 ADSs)	<ul style="list-style-type: none"><li>• Issuance of ADRs, including issuances resulting from a distribution of shares or rights or other property, stocks splits or mergers</li><li>• Cancellation of ADRs for the purpose of withdrawal, including if the deposit agreement terminates</li></ul>
A fee equivalent to the fee that would be payable if securities distributed to the investor had been shares and the shares had been deposited for issuance of ADSs	<ul style="list-style-type: none"><li>• Distribution of securities distributed to holders of deposited securities that are distributed by the depositary to ADS registered holders</li></ul>
Registration or transfer fees	<ul style="list-style-type: none"><li>• Transfer and registration of shares on the Company's share register to or from the name of the depositary or its agent when the investor deposits or withdraws shares</li></ul>
Expenses of the depositary	<ul style="list-style-type: none"><li>• Cable, telex and facsimile transmissions (when expressly provided in the deposit agreement)</li><li>• Converting foreign currency to U.S. dollars</li></ul>
Taxes and other governmental charges the depositary or the custodian have to pay on any ADS or share underlying an ADS, for example, stock transfer taxes, stamp duty or withholding taxes	<ul style="list-style-type: none"><li>• As necessary</li></ul>
Any charges incurred by the depositary or its agents for servicing the deposited securities	<ul style="list-style-type: none"><li>• As necessary</li></ul>

The depositary has agreed to provide the Company with payments concerning, among other things, expenses incurred by the Company for the establishment and maintenance of the ADR program that include, but are not limited to, exchange listing fees, annual meeting expenses, standard out-of-pocket maintenance costs for the ADRs (e.g., the expenses of postage and envelopes for mailing annual and interim financial reports, printing and distributing dividend checks, electronic filing of U.S. Federal tax information, mailing required tax forms, stationery, postage, facsimile, and telephone calls), shareholder identification, investor relations activities or programs in North America, accounting fees (such as external audit fees incurred in connection with the Sarbanes-Oxley Act, the preparation of the Company's Form 20-F and paid to the FASB and the PCAOB), legal fees and other expenses incurred in connection with the preparation of regulatory filings and other documentation related to ongoing SEC, NYSE and U.S. securities law compliance. In certain instances, the depositary has agreed to make additional payments to the Company based on certain applicable performance indicators related to the ADR facility.

During the calendar year preceding March 1, 2017, the Company received net payments of approximately \$6.6 million from the depositary.

## ITEM 13. DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

None.

## ITEM 14. MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS

None.

## ITEM 15. CONTROLS AND PROCEDURES

### 1. Disclosure controls and procedures

An evaluation was carried out under the supervision and with the participation of the Group's management, including the Chief Executive Officer and the Chief Financial Officer, of the effectiveness, as of the end of the period covered by this report, of the design and operation of

the Group's disclosure controls and procedures, which are defined as those controls and procedures designed to ensure that information required to be disclosed in reports filed under the Securities Exchange Act of 1934, as amended, is recorded, summarized and reported within specified time periods. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can provide only reasonable assurance of achieving their control objectives. Based on this evaluation, the Chief Executive Officer and the Chief Financial Officer concluded that the design and operation of these disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in the reports that the Company files under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the applicable rules and forms, and that it is accumulated and communicated to management, including the Chief Executive Officer and the Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

## 2. Management's annual report on internal control over financial reporting

The Group's management is responsible for establishing and maintaining adequate internal control over financial reporting. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements and even when determined to be effective, can only provide reasonable assurance with respect to financial statement preparation and presentation. Also, the effectiveness of an internal control system may change over time.

The Group's management, including the Chief Executive Officer and the Chief Financial Officer, conducted an evaluation of the effectiveness of internal control over financial reporting using the criteria set forth in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on the results of this evaluation, the Group's management concluded that its internal control over financial reporting was effective as of December 31, 2016.

The effectiveness of internal control over financial reporting as of December 31, 2016, was audited by ERNST & YOUNG Audit and KPMG Audit, a division of KPMG S.A., independent registered public accounting firms, as stated in their report included in Item 18 of this Annual Report.

## 3. Changes in internal control over financial reporting

There were no changes in the Group's internal control over financial reporting that occurred during the period covered by this report that have materially affected, or that were reasonably likely to materially affect, the Group's internal control over financial reporting.

## 4. Internal control and risk management procedures (Article L. 225-37 of the French Commercial Code)

For additional information, refer to point 4 ("Internal control and risk management procedures") of chapter 4 of the 2016 Registration Document (starting on page 76), which is incorporated herein by reference.

### ITEM 16A. AUDIT COMMITTEE FINANCIAL EXPERT

Ms. Marie-Christine Coisne-Roquette is the Audit Committee financial expert. She is an independent member of the Board of Directors in accordance with the NYSE listing standards applicable to TOTAL.

### ITEM 16B. CODE OF ETHICS

At its meeting on October 27, 2016, the Board of Directors adopted a revised code of ethics that applies to its Chief Executive Officer, Chief Financial Officer, Chief Accounting Officer and the financial and accounting officers for its principal activities. A copy of this code of ethics is included as an exhibit to this Annual Report.

### ITEM 16C. PRINCIPAL ACCOUNTANT FEES AND SERVICES

#### 1. Fees for accountants' services

During the fiscal years ended December 31, 2016 and 2015, fees for services provided by ERNST & YOUNG Audit and KPMG Audit were as follows:

(M\$)	ERNST & YOUNG Audit fiscal year		KPMG Audit fiscal year	
	2016	2015	2016	2015
Audit Fees . . . . .	20.2	22.0	16.5	16.0
Audit-Related Fees <sup>(a)</sup> . . . . .	5.0	1.1	4.5	4.8
Legal, Tax, Labor Law Fees <sup>(b)</sup> . . . . .	6.1	3.3	2.4	3.0
All Other Fees <sup>(c)</sup> . . . . .	0.5	0.5	0.1	0.3
<b>Total</b> . . . . .	<b>31.8</b>	<b>26.9</b>	<b>23.5</b>	<b>24.1</b>

<sup>(a)</sup> Audit-related fees are generally fees billed for services that are closely related to the performance of the audit or review of financial statements. These include due diligence services related to business combinations, attestation services not required by statute or regulation, agreed upon or expanded auditing procedures related to accounting or billing records required to respond to or comply with financial, accounting or regulatory reporting matters, consultations concerning financial accounting and reporting standards, information system reviews, internal control reviews and assistance with internal control reporting requirements.

<sup>(b)</sup> Tax fees are fees for services related to international and domestic tax compliance, including the preparation of tax returns and claims for refund, tax planning and tax advice, including assistance with tax audits and tax appeals, and tax services regarding statutory, regulatory or administrative developments and expatriate tax assistance and compliance.

<sup>(c)</sup> All other fees are principally for risk management advisory services.

#### 2. Audit Committee Pre-Approval Policy

The Audit Committee has adopted an Audit and Non-Audit Services Pre-Approval Policy that sets forth the procedures and the conditions pursuant to which services proposed to be performed by the statutory auditors may be pre-approved and that are not prohibited by regulatory or other professional requirements. This policy provides for both pre-approval of certain types of services through the use of an annual budget approved by the Audit Committee for these types of services and special pre-approval of services by the Audit Committee on a case-by-case basis. The Audit Committee reviews on an annual basis the services provided by the statutory auditors. During 2016, no audit-related fees, tax fees or other non-audit fees were approved by the Audit Committee pursuant to the de minimis exception to the pre-approval requirement provided by paragraph (c)(7)(i)(C) of Rule 2-01 of Regulation S-X.

### 3. Auditor's term of office

French law provides that the statutory and alternate auditors are appointed for renewable 6 fiscal-year terms. The terms of office of the current statutory auditors and the alternate auditors will expire at the end of the Annual Shareholders' Meeting called in 2022 to approve the financial statements for fiscal year 2021.

#### ITEM 16D. EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

None.

#### ITEM 16E. PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

Period	Total Number Of Shares (Or Units) Purchased	Average Price Paid Per Share (Or Units) (€)	Total Number Of Shares (Or Units) Purchased, As Part Of Publicly Announced Plans Or Programs <sup>(a)</sup>	Maximum Number Of Shares (Or Units) That May Yet Be Purchased Under The Plans Or Programs <sup>(b)</sup>
January 2016 . . . . .	—	—	—	131,432,881
February 2016 . . . . .	—	—	—	131,433,756
March 2016 . . . . .	—	—	—	131,436,470
April 2016 . . . . .	—	—	—	133,915,736
May 2016 . . . . .	—	—	—	133,917,941
June 2016 . . . . .	—	—	—	136,360,049
July 2016 . . . . .	—	—	—	139,415,875
August 2016 . . . . .	—	—	—	139,422,212
September 2016 . . . . .	—	—	—	139,482,313
October 2016 . . . . .	—	—	—	142,037,884
November 2016 . . . . .	—	—	—	142,059,395
December 2016 . . . . .	100,331,268 <sup>(c)</sup>	47.495 <sup>(d)</sup>	100,331,268	232,448,764
January 2017 . . . . .	—	—	—	234,779,415
February 2017 . . . . .	—	—	—	234,792,947

- <sup>(a)</sup> The Annual Shareholders' Meeting of May 24, 2016, canceled and replaced the previous resolution from the Annual Shareholders' Meeting of May 29, 2015, authorizing the Board of Directors to trade in the Company's own shares on the market for a period of eighteen months within the framework of the stock purchase program. The maximum number of shares that may be purchased by virtue of this authorization or under the previous authorization may not exceed 10% of the total number of shares constituting the share capital, this amount being periodically adjusted to take into account operations modifying the share capital after each shareholders' meeting. Under no circumstances may the total number of shares the Company holds, either directly or indirectly through its subsidiaries, exceed 10% of the share capital. This authorization will be renewed subject to the approval of the Annual Shareholders' Meeting of May 26, 2017 through the 5<sup>th</sup> resolution.
- <sup>(b)</sup> Based on 10% of the Company's share capital, and after deducting the shares held by the Company for cancellation and the shares held by the Company to cover the share purchase option plans for Company employees and restricted share grants for Company employees, as well as after deducting the shares held by the subsidiaries.
- <sup>(c)</sup> Under the authorization granted by the Annual Shareholders' Meeting of May 24, 2016, 100,331,268 TOTAL treasury shares owned by Group affiliates were bought back by TOTAL S.A. in order to be immediately canceled. For additional information, refer to point 3 ("Share buybacks") of chapter 8 of the 2016 Registration Document (starting on page 183), which is incorporated herein by reference.
- <sup>(d)</sup> Price equal to the closing price of TOTAL ordinary share on Euronext Paris on the day of the buyback, which was completed off-market on December 15, 2016, i.e. €47.495 per share.

#### ITEM 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

Not applicable.

#### ITEM 16G. CORPORATE GOVERNANCE

This section presents a summary of significant differences between French corporate governance practices and the NYSE's corporate governance standards, as required by section 303A.11 of the NYSE Listed Company Manual.

##### – Overview

The following paragraphs provide a brief, general summary of significant ways in which our corporate governance practices differ from those required by the listing standards of the New York Stock Exchange ("NYSE") for U.S. companies that have common stock listed on the NYSE. While our management believes that our corporate governance practices are similar in many respects to those of U.S. domestic NYSE listed companies and provide investors with protections that are comparable in many respects to those established by the NYSE Listed Company Manual, certain significant differences are described below.

The principal sources of corporate governance standards in France are the French Commercial Code (*Code de commerce*), the French Financial and Monetary Code (*Code monétaire et financier*) and the regulations and recommendations provided by the French Financial Markets Authority (*Autorité des marchés financiers*, AMF), as well as a number of general recommendations and guidelines on corporate governance, most notably the Corporate Governance Code of Listed Corporations (the "AFEP-MEDEF Code") published by the two main French business confederations, the *Association Française des Entreprises Privées* (AFEP) and the *Mouvement des Entreprises de France* (MEDEF), the latest version of which was published in November 2016.

The AFEP-MEDEF Code includes, among other things, recommendations relating to the role and operation of the board of directors (creation, composition and evaluation of the board of directors and the audit, compensation and nominating committees) and the independence criteria for board members. Articles L. 820-1 *et seq.* of the French Commercial Code prohibits statutory auditors from providing certain non-audit services and defines certain criteria for the independence of statutory auditors. In France, the independence of statutory auditors is also monitored by an independent body, the High Council for Statutory Auditors (*Haut Conseil du Commissariat aux Comptes*).

For an overview of certain of our corporate governance policies, see points 1.1 to 1.3 of chapter 5 of the 2016 Registration Document (starting on page 87), which are incorporated herein by reference.

## – **Composition of Board of Directors; Independence**

The NYSE listing standards provide that the board of directors of a U.S.-listed company must include a majority of independent directors and that the audit committee, the nominating/corporate governance committee and the compensation committee must be composed entirely of independent directors. A director qualifies as independent only if the board affirmatively determines that the director has no material relationship with the company, either directly or as a partner, shareholder or officer of an organization that has a relationship with the company. Furthermore, as discussed below, the listing standards require additional procedures in regards to the independence of directors who sit on the compensation committee. In addition, the listing standards enumerate a number of relationships that preclude independence.

French law does not contain any independence requirement for the members of the board of directors of a French company, except for the audit committee, as described below. The AFEP-MEDEF Code recommends, however, that (i) at least half of the members of the board of directors be independent in companies that have a dispersed ownership structure and no controlling shareholder, and (ii) at least a third of the members of the board of directors be independent in companies that have a controlling shareholder. Members of the board representing employees and employee shareholders are not taken into account in calculating these percentages. The AFEP-MEDEF Code states that a director is independent when “he or she has no relationship of any kind whatsoever with the corporation, its group or the management that may interfere with his or her freedom of judgment.” The AFEP-MEDEF Code also enumerates specific criteria for determining independence, which are on the whole consistent with the goals of the NYSE listing standards, as recently amended, although the specific tests under the two standards may vary on some points.

For an overview of the Company’s Board of Directors’ assessment of the independence of the Company’s Directors, including a description of the Board’s independence criteria, refer to point 1.1.3 of chapter 5 of the 2016 Registration Document (on page 96), which is incorporated herein by reference.

## – **Representation of women on corporate boards**

The French Commercial Code provides for legally binding quotas to balance gender representation on boards of directors of French listed companies, requiring that each gender represent at least 40% following the first ordinary shareholders’ meeting held after January 1, 2017. Members of the board representing the employees are not taken into account in calculating these percentages. Effective January 1, 2017, when the board of directors consists of a maximum of eight members, the difference between the number of directors of each gender should not be higher than two. Any appointment of a director made in violation of these rules will be declared null and void and payment of the directors’ compensation will be suspended until the board composition is compliant with the required quota (the suspension of the directors’ compensation will also be disclosed in the management report). However, if a director whose appointment is null and void takes part in decisions of the board of directors, such decisions are not declared automatically null and void by virtue thereof. As of February 8, 2017, the Company’s Board had six male and six female members. Therefore, excluding the director representing employees in accordance with French law<sup>(1)</sup>, the proportion of women on the Board was 54.5%.

## – **Board committees**

### **Overview**

The NYSE listing standards require that a U.S.-listed company have an audit committee, a nominating/corporate governance committee and a compensation committee. Each of these committees must consist solely of independent directors and must have a written charter that addresses certain matters specified in the listing standards. Furthermore, the listing standards require that, in addition to the independence criteria referenced above under “Composition of Board of Directors; Independence”, certain enumerated factors be taken into consideration when making a determination on the independence of directors on the compensation committee or when engaging advisors to the compensation committee.

With the exception of an audit committee, as described below, French law currently requires neither the establishment of board committees nor the adoption of written charters.

The AFEP-MEDEF Code recommends, however, that the board of directors sets up, in addition to the audit committee required by law, a nominations committee and a compensation committee, indicating that the nominations and compensation committees may or may not be separate. The AFEP-MEDEF Code also recommends that at least two-thirds of the audit committee members and a majority of the members of each of the compensation committee and the nominations committee be independent directors, provided that the chairman of the compensation committee should be independent, and that none of those three committees should include any executive director.

TOTAL has established an Audit Committee, a Governance and Ethics Committee, a Compensation Committee and a Strategic Committee. As of February 8, 2017, the composition of these committees was as follows:

- the Audit Committee had three members, all members of this committee have been deemed independent by the Board of Directors;
- the Governance and Ethics Committee had three members, all members of this committee have been deemed independent by the Board of Directors;
- the Compensation Committee had three members, all of whom have been deemed independent by the Board of Directors; and
- the Strategic Committee had five members. With the exception of Mr. Pouyanné, who chairs the committee and the director representing the employees (Mr. Blanc), all members of this committee have been deemed independent by the Board of Directors.

For a description of the scope of each committee’s activity and the independence assessment of each member, see points 1.2.4—1.2.7 of chapter 5 of the 2016 Registration Document (starting on page 105), which are incorporated herein by reference.

The NYSE listing standards also require that the audit, nominating/corporate governance and compensation committees of a U.S.-listed company be vested with decision-making powers on certain matters. Under French law, however, those committees are advisory in nature and have no decision-making authority. Board committees are responsible for examining matters within the scope of their charter and making recommendations thereon to the board of directors. Under French law, the board of directors has the final decision-making authority.

### **Audit committee**

The NYSE listing standards contain detailed requirements for the audit committees of U.S.-listed companies. Some, but not all, of these requirements also apply to non-U.S.-listed companies, such as TOTAL. French law and the AFEP-MEDEF Code share the NYSE listing standards’ goal of establishing a system for overseeing the company’s accounting process that is independent from management and that ensures auditor independence. As a result, they address similar topics, with some overlap.

Article L. 823-19 of the French Commercial Code requires the board of directors of companies listed in France to establish an audit committee, at least one member of which must be an independent director and must be competent in finance, accounting or statutory audit

<sup>(1)</sup> As per French law, the director representing employees shall be excluded for the computation of the gender percentage. As of February 8, 2017, the gender percentage is 54.5%, because six Board seats were held by women out of a total of eleven seats (excluding the director representing the employees of TOTAL’s Board of Directors).

procedures. The AFEP-MEDEF Code provides that at least two-thirds of the directors on the audit committee be independent and that the audit committee should not include any executive director. Under NYSE rules, in the absence of an applicable exemption, audit committees are required to satisfy the independence requirements under Rule 10A-3 of the Exchange Act. TOTAL's Audit Committee consists of three directors, all of whom meet the independence requirements under Rule 10A-3.

The duties of the Company's Audit Committee, in line with French law and the AFEP-MEDEF Code, are described in point 1.2.4 of chapter 5 of the 2016 Registration Document (starting on page 105), which is incorporated herein by reference. The Audit Committee regularly reports to the Board of Directors on the fulfillment of its tasks, the results of the financial statements certification process and the contribution of such process to guaranteeing the financial information's integrity.

One structural difference between the legal status of the audit committee of a U.S.-listed company and that of a French-listed company concerns the degree of the committee's involvement in managing the relationship between the company and the auditors. French law requires French companies that publish consolidated financial statements, such as TOTAL S.A., to have two co-auditors. While the NYSE listing standards require that the audit committee of a U.S.-listed company have direct responsibility for the appointment, compensation, retention and oversight of the work of the auditor, French law provides that the election of the co-auditors is the sole responsibility of the shareholders duly convened at a shareholders' meeting. In making their decision, the shareholders may rely on proposals submitted to them by the board of directors based on recommendations from the audit committee. The shareholders elect the auditors for an audit period of six financial years. The auditors may only be revoked by a court order and only on grounds of professional negligence or incapacity to perform their mission.

#### **– Meetings of non-management directors**

The NYSE listing standards require that the non-management directors of a U.S.-listed company meet at regularly scheduled executive sessions without management. French law does not contain such a requirement. The AFEP-MEDEF Code recommends, however, that non-executive directors meet at least once a year without executive officers.

Since December 16, 2015, the rules of procedure of the Board of Directors provide that, with the agreement of the Governance and Ethics Committee, the Lead Independent Director may hold meetings of the directors who do not hold executive or salaried positions on the Board of Directors. He or she reports to the Board of Directors on the conclusions of such meetings.

In December 2016, the Lead Independent Director held a meeting of the non-executive and non-salaried directors. She subsequently presented a summary of this meeting to the Board of Directors.

Thus, the Board of Directors' practice is in line with the recommendation made in the AFEP-MEDEF Code.

#### **– Disclosure**

The NYSE listing standards require U.S.-listed companies to adopt, and post on their websites, a set of corporate governance guidelines. The guidelines must address, among other things: director qualification standards, director responsibilities, director access to management and independent advisers, director compensation, director orientation and continuing education, management succession and an annual performance evaluation of the board. In addition, the chief executive officer of a U.S.-listed company must certify to the NYSE annually that he or she is not aware of any violations by the company of the NYSE's corporate governance listing standards.

French law requires neither the adoption of such guidelines nor the provision of such certification. The AFEP-MEDEF Code recommends, however, that the Board of Directors of a French-listed company review its operation annually and perform a formal evaluation at least once every three years, under the leadership of the appointments or nominations committee or an independent director, with help from an external consultant. TOTAL's Board of Directors' most recent formal evaluation took place in early 2016. The AFEP-MEDEF Code also recommends that shareholders be informed of these evaluations each year in the annual report. In addition, Article L. 225-37 of the French Commercial Code requires the chairman of the Board of Directors to submit an annual report to the shareholders describing the composition of the board and the balanced representation of men and women on the board, the preparation and organization of the board's work, as well as the internal control and risk management procedures implemented by the company. The AFEP-MEDEF Code also includes ethical rules concerning which directors are expected to comply.

#### **– Code of business conduct and ethics**

The NYSE listing standards require each U.S.-listed company to adopt, and post on its website, a code of business conduct and ethics for its directors, officers and employees. There were no similar requirements applicable under French law in 2016. Article 17 of Law n° 2016/1691 ("Sapin II") of December 9, 2016, requires the top management (such as the President or Chief Executive Officer) of large French companies to adopt by June 1, 2017, a code of conduct proscribing the different types of behavior being likely to characterize acts of corruption, bribery or influence peddling, which code shall be included in the rules of procedure of the company and be submitted to employee representatives. Under the SEC's rules and regulations, all companies required to submit periodic reports to the SEC, including TOTAL, must disclose in their annual reports whether they have adopted a code of ethics for their principal executive officer and senior financial officers. In addition, they must file a copy of the code with the SEC, post the text of the code on their website or undertake to provide a copy upon request to any person without charge. There is significant, though not complete, overlap between the code of ethics required by the NYSE listing standards and the code of ethics for senior financial officers required by the SEC's rules. For a description of the code of ethics adopted by TOTAL, refer to point 4 of chapter 4 of the 2016 Registration Document (starting on page 76), which is incorporated herein by reference, and "Item 16B. Code of Ethics".

### **ITEM 16H. MINE SAFETY DISCLOSURE**

Not applicable.

### **ITEM 17. FINANCIAL STATEMENTS**

Not applicable.

### **ITEM 18. FINANCIAL STATEMENTS**

The Consolidated Financial Statements and Notes thereto included in the 2016 Registration Document (starting on page 205) are incorporated herein by reference.

The reports of the statutory auditors, ERNST & YOUNG Audit and KPMG Audit, a division of KPMG S.A., are included in the following pages:

KPMG Audit, a division of KPMG S.A.  
Tour EQHO  
2 Avenue Gambetta  
CS 60055  
92066 Paris la Défense Cedex  
France

ERNST & YOUNG Audit  
1/2, place des Saisons  
92400 Courbevoie – Paris La Défense 1  
France

## TOTAL S.A.

Registered office: 2, place Jean Millier – La Défense 6 – 92400 Courbevoie – France

### REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRMS ON THE CONSOLIDATED FINANCIAL STATEMENTS

Year ended December 31, 2016

The Board of Directors and Shareholders,

We have audited the accompanying consolidated balance sheets of TOTAL S.A. and subsidiaries ("the Company") as of December 31, 2016, 2015 and 2014, and the related consolidated statements of income, comprehensive income, cash flows and changes in shareholders' equity for each of the years in the three-year period ended December 31, 2016. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2016, 2015 and 2014, and the consolidated results of its operations and its consolidated cash flows for each of the years in the three-year period ended December 31, 2016, in conformity with International Financial Reporting Standards as adopted by the European Union and in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 15, 2017 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Paris La Défense, March 15, 2017

KPMG Audit A division of KPMG S.A.		ERNST & YOUNG Audit	
/s/ MICHEL PIETTE	/s/ VALÉRIE BESSON	/s/ YVON SALAÜN	/s/ LAURENT MIANNAY
Michel Piette Partner	Valérie Besson Partner	Yvon Salaün Partner	Laurent Miannay Partner

KPMG Audit, a division of KPMG S.A.  
Tour EQHO  
2 Avenue Gambetta  
CS 60055  
92066 Paris la Défense Cedex  
France

ERNST & YOUNG Audit  
1/2, place des Saisons  
92400 Courbevoie – Paris La Défense 1  
France

## TOTAL S.A.

Registered office: 2, place Jean Millier – La Défense 6 – 92400 Courbevoie – France

### REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRMS ON THE INTERNAL CONTROL OVER FINANCIAL REPORTING

Year ended December 31, 2016

The Board of Directors and Shareholders,

We have audited TOTAL S.A. and subsidiaries' ("the Company") internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of the Company as of December 31, 2016, 2015 and 2014, and the related consolidated statements of income, comprehensive income, cash flows and changes in shareholders' equity for each of the years in the three-year period ended December 31, 2016, and our report dated March 15, 2017 expressed an unqualified opinion on those consolidated financial statements.

Paris La Défense, March 15, 2017

KPMG Audit A division of KPMG S.A.		ERNST & YOUNG Audit	
/s/ MICHEL PIETTE	/s/ VALÉRIE BESSON	/s/ YVON SALAÜN	/s/ LAURENT MIANNAY
Michel Piette Partner	Valérie Besson Partner	Yvon Salaün Partner	Laurent Miannay Partner

## ITEM 19. EXHIBITS

The following documents are filed as part of this annual report:

- 1 Bylaws (*Statuts*) of TOTAL S.A. (as amended through January 12, 2017).
- 2 The total amount of long-term debt securities authorized under any instrument does not exceed 10% of the total assets of the Company and its subsidiaries on a consolidated basis. We hereby agree to furnish to the SEC, upon its request, a copy of any instrument defining the rights of holders of long-term debt of the Company or of its subsidiaries for which consolidated or unconsolidated financial statements are required to be filed.
- 7.1 Ratio of earnings to fixed charges.
- 7.2 Computation of earnings to fixed charges.
- 8 List of Subsidiaries (see Note 18 to the Consolidated Financial Statements included in the 2016 Registration Document (starting on page 290), which is incorporated herein by reference).
- 11 Code of Ethics.
- 12.1 Certification of Chief Executive Officer.
- 12.2 Certification of Chief Financial Officer.
- 13.1 Certification of Chief Executive Officer.
- 13.2 Certification of Chief Financial Officer.
- 15.1 Excerpt of the pages and sections of the 2016 Registration Document incorporated herein by reference.
- 15.2 Consent of ERNST & YOUNG Audit and of KPMG Audit, a division of KPMG S.A.
- 15.3 Third party report of DeGolyer and MacNaughton.
- 15.4 Consent of DeGolyer and MacNaughton.

## SIGNATURE

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

TOTAL S.A.

By: /s/ PATRICK POUYANNÉ

Name: Patrick Pouyanné

Title: Chairman and Chief Executive Officer

Date: March 17, 2017



## EXHIBIT 15.1

Exhibit 15.1 contains the excerpts of TOTAL S.A.'s 2016 Registration Document that are incorporated by reference into this Annual Report on Form 20-F.<sup>(1)</sup>

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<sup>(1)</sup> *Where information has been deleted from TOTAL S.A.'s 2016 Registration Document, such deletion is indicated in this exhibit with a notation that such information has been redacted.*

# Contents

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 2. Business overview

1. History and strategy of TOTAL ..... 6
2. Business overview for fiscal year 2016 ..... 8
3. Investments ..... 42
4. Research & Development ..... 44
5. Property, plant and equipment ..... 48
6. Group organization ..... 49
7. Organization charts ..... 50

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 4. Risks and control

1. Risk Factors ..... 62
2. Legal and arbitration proceedings ..... 73
3. Insurance and risk management ..... 75
4. Internal control and risk management procedures  
(Article L. 225-37 of the French Commercial Code) . 76

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 5. Corporate governance

1. Composition and practices of the Board of Directors .. 86
2. General Management ..... 112
3. Shares held by the administration  
and management bodies ..... 112

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 6. Compensation of the administration and management bodies

1. Board members' compensation ..... 116
2. Chairman and Chief Executive Officer's  
compensation ..... 118
3. Executive officers' compensation ..... 125
4. Stock option and free share grants ..... 125
5. Summary table of compensation components  
due or granted to the Chairman and  
Chief Executive Officer for fiscal year 2016,  
as submitted to the Ordinary Shareholders'  
Meeting for vote ..... 132
6. Report on the principles and criteria  
for the determination, breakdown and allocation  
of the fixed, variable and extraordinary components  
of the total compensation (including in-kind benefits)  
attributable to the Chairman and Chief Executive  
Officer (Article L. 225-37-2 of the French  
Commercial Code) ..... 138

## 7. Social, environmental and societal information

1. Social information ..... 145
2. Safety, health and environment information ..... 151
3. Societal information ..... 161
4. Reporting scopes and method ..... 172

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 8. TOTAL and its shareholders

1. Listing details ..... 178
2. Dividend ..... 181
3. Share buybacks ..... 183
4. Shareholders ..... 187

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

6. Investor Relations ..... 192

## 9. General information

1. Share capital ..... 196
2. Articles of incorporation and bylaws;  
other information ..... 198

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 10. Consolidated Financial Statements

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

2. Consolidated statement of income ..... 207
3. Consolidated statement of comprehensive income ... 208
4. Consolidated balance sheet ..... 209
5. Consolidated statement of cash flow ..... 210
6. Consolidated statement of changes  
in shareholders' equity ..... 211
7. Notes to the Consolidated Financial Statements ... 212

## 11. Supplemental oil and gas information (unaudited)

1. Oil and gas information pursuant to FASB  
Accounting Standards Codification 932 ..... 308
2. Other information ..... 327
3. Report on the payments made to governments .. 329

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

Glossary 369

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

# Business overview

1.	History and strategy of TOTAL	6
1.1.	History and development	.6
1.2.	Strategy	.6
1.3.	Group organization	.7
2.	Business overview for fiscal year 2016	8
2.1.	Upstream segment	.8
2.2.	Refining & Chemicals segment	.30
2.3.	Marketing & Services segment	.36
3.	Investments	42
3.1.	Major investments over the 2014-2016 period	.42
3.2.	Major planned investments	.43
4.	Research & Development	44
4.1.	Upstream	.44
4.2.	Refining & Chemicals	.45
4.3.	Marketing & Services	.45
4.4.	Environment	.47
4.5.	R&D Organization	.47
5.	Property, plant and equipment	48
6.	Group organization	49
6.1.	Position of the Company within the Group	.49
6.2.	Company subsidiaries	.49
6.3.	Group interests in publicly-traded companies	.49
7.	Organization charts	50

# 1. History and strategy of TOTAL

## 1.1. History and development

---

TOTAL S.A., a French *société anonyme* (limited company) incorporated on March 28, 1924 is, together with its subsidiaries and affiliates, the world's fourth largest publicly-traded integrated oil and gas company<sup>(1)</sup>.

With operations in more than 130 countries, TOTAL is engaged in every sector of the oil and gas industry, including upstream (hydrocarbon exploration, development and production) and downstream (refining, petrochemicals, specialty chemicals, trading and shipping of crude oil and petroleum products and marketing). TOTAL is also involved in the renewable energies and power generation sectors.

TOTAL began its Upstream operations in the Middle East in 1924. Since then, the Company has grown and expanded its operations worldwide. In early 1999, the Company took over PetroFina S.A. and in early 2000 it took over Elf Aquitaine. Since the repeal in 2002 of the decree of December 13, 1993 that established a golden share of Elf Aquitaine held by the French government, there are no longer any agreements or regulatory provisions governing shareholding relationships between TOTAL and the French government. Information on TOTAL S.A.'s shareholding structure is presented in point 4.1 of chapter 8.

## 1.2. Strategy

---

TOTAL is a leading international oil and gas company and aims to be the responsible energy major by helping to supply accessible, affordable and clean energy to as many people as possible. To accomplish this goal, TOTAL leverages its integrated business model, which enables it to capture synergies between the different activities of the Group. To achieve its ambition, TOTAL relies upon its operational excellence, technological expertise and capacity to manage complex projects.

The Group's strategy is based on four main priorities:

- driving profitable, sustainable growth in Exploration & Production's hydrocarbon activities, with priority given to reducing production costs, disciplined investments and cash flow generation;
- continuing to enhance the competitiveness of major integrated refining and petrochemical platforms;
- increasing the distribution of petroleum products, particularly in high-growth regions, and offering innovative solutions and services that meet customers' evolving needs above and beyond the supply of petroleum products; and

- expanding along the full gas value chain by unlocking access to new markets, and developing profitable low-carbon businesses, in particular renewable energies.

This strategy incorporates the challenges of climate change, using as a point of reference the 2°C scenario of the International Energy Agency and its impact on energy markets. TOTAL's challenge is to increase access to affordable energy to satisfy the needs of a growing population, while providing concrete solutions to help limit the effects of climate change and supplying its clients with an energy mix featuring a progressively decreasing carbon intensity.

In addition to safety, the values of respect, responsibility and exemplary conduct underpin TOTAL's Code of Conduct and accompany priority business principles in the realms of safety/security/health/environment, integrity (preventing corruption, fraud and anti-competitive practices) and human rights. It is through strict adherence to these values and principles that TOTAL intends to build strong and sustainable growth for the Group and its stakeholders and deliver on its commitment to better energy.

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(1) Based on market capitalization (in dollars) as of December 31, 2016.

## 1.3. Group organization

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In order to implement TOTAL's strategy and in line with the "One Total" company project, a new organization, fully effective since January 1, 2017, was put in place and is structured around four business segments following the creation of the Gas, Renewables & Power (GRP) segment, alongside the existing Exploration & Production, Refining & Chemicals and Marketing & Services segments.

The GRP segment spearheads TOTAL's ambitions in low-carbon businesses by expanding in downstream gas and renewable energies as well as in energy efficiency businesses. This segment brings together the Gas and New Energies divisions (excluding biotechnologies) and a new Innovation & Energy efficiency division. Concerning bioenergies, a new Biofuels division now regroups within the Refining & Chemicals segment all these activities.

In order to improve efficiency, reduce costs and create value within the Group, the new branch Total Global Services (TGS) pools the various segments' support services (Accounting, Purchasing, Information Systems, Training, Human Resources Administration and Facilities Management). The entities making up TGS operate as

service companies for internal clients across all four business segments and the corporate Holding level.

Finally, the diverse Corporate entities were regrouped in two divisions.

The new People & Social Responsibility division consists of: the Human Resources division, including Senior Executive Management; the Health, Safety and Environment division, which combines HSE departments across the different segments to establish a strong, unified environmental and safety model; the Security division; and the new Civil Society Engagement division.

The new Strategy-Innovation division is made of: a new Strategy & Climate division, responsible notably for ensuring that TOTAL's strategy incorporates climate issues; the Public Affairs division; the Audit division; the Research & Development division (which replaces the Scientific Development Department and now coordinates all of the Group's R&D activities and notably transversal programs such as on carbon capture, use and storage of CO<sub>2</sub>); the Chief Digital Officer; and the Senior Vice President, Technology Experts.

## 2. Business overview for fiscal year 2016

### 2.1. Upstream segment

TOTAL's Upstream segment includes the activities of Exploration & Production and Gas. The Group has exploration and production activities in more than 50 countries and produces oil and gas in approximately 30 countries. The Gas division conducts downstream activities related to natural gas, Liquefied Natural Gas (LNG) and Liquefied Petroleum Gas (LPG), as well as power generation and trading.

Within the context of the One Total new organization, as of financial year 2017, Upstream activities will be reported within two segments: the Exploration & Production segment and the new Gas, Renewables & Power segment, which includes downstream gas activities (see point 1.3 of this chapter).

**2.45** Mboe/d  
hydrocarbons  
produced in 2016

**11.5** Bboe  
of proved hydrocarbon  
reserves as of  
December 31, 2016<sup>(1)</sup>

**\$15.1** billion  
of organic investments<sup>(2)</sup> and  
resource acquisitions in 2016

**15,191**  
employees present

#### Upstream segment financial data

(M\$)	2016	2015	2014
Adjusted operating income <sup>(a)</sup>	2,737	4,925	17,156
Adjusted net operating income <sup>(a)</sup>	3,633	4,774	10,504

(a) Adjusted results are defined as income using replacement cost, adjusted for special items, excluding the impact of changes for fair value.

Upstream adjusted net operating income was \$3,633 million for the full-year 2016, compared to \$4,774 million in 2015, a decrease of 24%, mainly due the impact of lower hydrocarbon prices which was partially offset by the increase in production combined with the decrease in operating costs as well as the lower effective tax rate. The effective tax rate for the Upstream was 26.6% in 2016 compared to 45.5% in 2015.

Technical costs<sup>(3)</sup> for consolidated affiliates, calculated in accordance with ASC 932<sup>(4)</sup>, were reduced to 20.4 \$/boe in 2016 compared to 23.0 \$/boe in 2015. This decrease was essentially due to the reduction in operating costs from 7.4 \$/boe in 2015 to 5.9 \$/boe in 2016.

Price realizations <sup>(a)</sup>	2016	2015	2014
Average liquids price (\$/b)	40.3	47.4	89.4
Average gas price (\$/Mbtu)	3.56	4.75	6.57

(a) Consolidated subsidiaries, excluding fixed margins.

The average liquids price decreased by 15% for the full-year 2016 compared to 2015 and the average gas price decreased by 25% in 2016 compared to 2015.

(1) Based on a Brent crude price of 42.82 \$/b (reference price in 2016), according to rules established by the Securities and Exchange Commission (refer to point 2.1.1.2).

(2) Organic investments = net investments, excluding acquisitions, divestments and other operations with non-controlling interests (refer to point 3.1 of chapter 2).

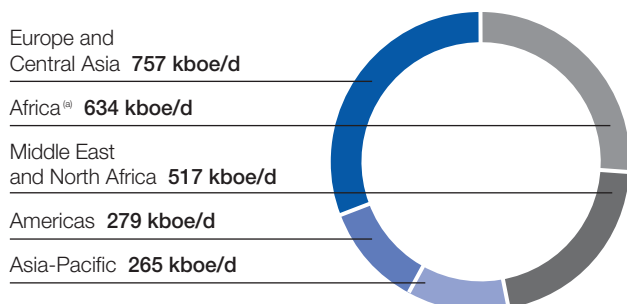
(3) (Production costs + exploration expenses + depreciation, depletion and amortization and valuation allowances)/production of the year.

(4) FASB Accounting Standards Codification 932, Extractive industries – Oil and Gas.

## Production

### Hydrocarbon production

	2016	2015	2014
Combined production (kboe/d)	2,452	2,347	2,146
Liquids (kb/d)	1,271	1,237	1,034
Gas (Mcf/d)	6,447	6,054	6,063



(a) Excluding North Africa.

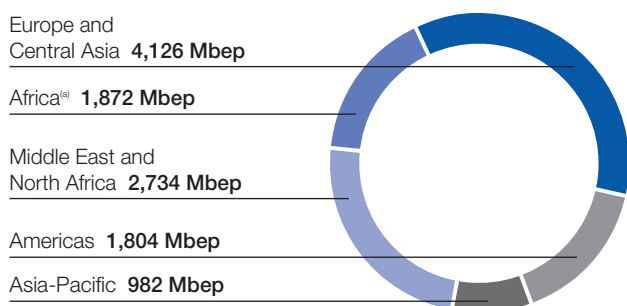
For the full-year 2016, hydrocarbon production was 2,452 kboe/d, an increase of 4.5% compared to 2015, due to the following:

- +6% due to new start ups and ramp ups, notably Laggan-Tormore, Surmont Phase 2, Termokarstovoye, Gladstone LNG, Moho Phase 1b, Vega Pleyade, and Incahuasi;
- -1.5% due to the security situation in Nigeria and Yemen, and wild fires in Canada;
- natural field decline was offset by a positive price effect and portfolio effects.

## Proved reserves

### As of December 31,

	2016	2015	2014
Hydrocarbon reserves (Mboe)	11,518	11,580	11,523
Liquides (Mb)	5,414	5,605	5,303
Gaz (Bcf)	32,984	32,206	33,590



(a) Excluding North Africa.

Proved reserves based on SEC rules (based on Brent at 42.82 \$/b) were 11,518 Mboe at December 31, 2016. The 2016 proved reserve replacement rate<sup>(1)</sup>, based on SEC rules (based on Brent at 42.82 \$/b in 2016), was 93% in 2016 and 100% over three years. At a constant price (54.17 \$/b in 2015), the proved reserve replacement rate was 136% in 2016. The difference between the proved reserves based on SEC rules and the proved reserves based on a constant price is mainly due to the debooking of proved undeveloped reserves of Canadian oil sands on the Surmont permit.

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED]

(1) Change in reserves excluding production: (revisions + discoveries, extensions + acquisitions – divestments)/production for the period.  
 [REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED]

### 2.1.1. Exploration & Production

Exploration & Production (E&P)'s mission is to discover and develop oil and gas fields in order to meet growing energy demand. Safety is a core value for that mission.

In an environment marked by the strong volatility of hydrocarbon prices, E&P's strategy is to develop an oil and gas production model that is resilient (*i.e.*, able to withstand a long period of low oil and gas prices), profitable and sustainable.

This strategy is based on three main levers:

- increase profitability: E&P strives to maximize the value of its assets through operational excellence and to ensure strict investment discipline by being selective in the sanctioning of new projects. In addition, E&P continues to restructure or sell the least performing assets in its portfolio;
- develop operational excellence: in order to ensure its resilience, E&P continues to reduce costs, improve the efficiency of its installations and start up projects on time and within budget. E&P also seeks to minimize the environmental impact of its activities; and
- renew reserves, through exploration as well as accessing already discovered resources, building on E&P's competitive advantages in terms of geographical spread and technical skills.

E&P is exiting a heavy investments phase, which peaked in 2013 and which is expected to enable production to increase 5% on average per year over the period of 2014-2020. That growth is supported, on the one hand, by the start-up of 12 major projects in 2017 and 2018 and, on the other hand, by the improvement of the facilities' operational efficiency. In 2016, 5 projects were started up, contributing to production growth of 4.5% compared to 2015.

#### 2.1.1.1. Exploration and development

TOTAL evaluates exploration opportunities based on a variety of geological, technical, political, economic (including tax and contractual terms) environmental and societal factors.

The exploration strategy deployed since 2015 aims to prioritize the most promising drill targets with a view to creating value and resources. The Group plans balanced exploration investments:

- 50% for core and emerging basins, where the presence of hydrocarbons is already proven;
- 25% for near-field exploration around producing assets; and
- 25% for high-potential frontier basins.

In 2015, a new organization for the Group's exploration activities, adapted to the new strategy, was implemented with a new senior exploration management team. The organizational changes, focused notably on strengthening regional basin mastery and technical excellence, were finalized in 2016 with the transfer of Asia-Pacific and Americas regional hubs to Singapore and Houston, respectively.

In 2016, exploration expenditure from all Exploration & Production subsidiaries was \$1.4 billion, mainly in the United States, Norway, Papua New Guinea, Brazil, Iraq, Bulgaria, Myanmar and the United Kingdom, compared to \$1.9 billion in 2015 and \$2.6 billion in 2014. The 2017 exploration budget is \$1.25 billion.

Organic investments<sup>(1)</sup> from all Exploration & Production subsidiaries were \$14.5 billion<sup>(2)</sup> in 2016, compared to \$20.5 billion in 2015 and \$23 billion in 2014, and were mainly in Angola, the Republic of the Congo, Nigeria, Norway, Canada, Australia, Kazakhstan, the United Kingdom, Russia, the United States, Abu Dhabi, Indonesia and Brazil.

#### 2.1.1.2. Reserves

The definitions used for proved, proved developed and proved undeveloped oil and gas reserves are in accordance with the United States Securities & Exchange Commission (SEC) Rule 4-10 of Regulation S-X as amended by the SEC Modernization of Oil and Gas Reporting release issued on December 31, 2008. Proved reserves are estimated using geological and engineering data to determine with reasonable certainty whether the crude oil or natural gas in known reservoirs is recoverable under existing regulatory, economic and operating conditions.

TOTAL's oil and gas reserves are consolidated annually, taking into account, among other factors, levels of production, field reassessments, additional reserves from discoveries and acquisitions, disposal of reserves and other economic factors.

Unless otherwise indicated, any reference to TOTAL's proved reserves, proved developed reserves, proved undeveloped reserves and production reflects the Group's entire share of such reserves or such production. TOTAL's worldwide proved reserves include the proved reserves of its consolidated subsidiaries as well as its proportionate share of the proved reserves of equity affiliates. The reserves estimation process involves making subjective judgments. Consequently, estimates of reserves are not exact measurements and are subject to revision under well-established control procedures.

The reserves booking process requires, among other things:

- that internal peer review of technical evaluations are carried out to ensure that the SEC definitions and guidance are followed; and
- that management makes significant funding commitments towards the development of the reserves prior to booking.

For further information concerning the reserves and their evaluation process, see points 1 and 2 of chapter 11.

#### Proved reserves for 2016, 2015 and 2014

In accordance with the amended Rule 4-10 of Regulation S-X, proved reserves at December 31 are calculated using a 12-month average price determined as the unweighted arithmetic average of the first-day-of-the-month price for each month of the relevant year unless prices are defined by contractual arrangements, excluding escalations based upon future conditions. The average reference prices for Brent crude for 2016, 2015 and 2014 were, respectively, 42.82 \$/b, 54.17 \$/b and 101.27 \$/b.

As of December 31, 2016, TOTAL's combined proved reserves of oil and gas were 11,518 Mboe (58% of which were proved developed reserves). Liquids (crude oil, condensates, natural gas liquids and bitumen) represented approximately 47% of these reserves and natural gas 53%. These reserves were located in Europe (mainly in Norway and the United Kingdom), Africa (mainly in Angola, Gabon, Nigeria and the Republic of the Congo), the Americas (mainly in Canada, Argentina, the United States and Venezuela), the Middle East (mainly in Qatar, the United Arab Emirates and Yemen), and Asia-Pacific (mainly in Australia) and in Kazakhstan and Russia.

(1) For Exploration & Production, organic investments include exploration investments, net development investments and net financial investments.

(2) Excluding the Group's Gas activities.



At a constant oil price (54.17 \$/b) the proved reserves were 11,905 Mboe. The difference between the proved reserves based on SEC rules and the proved reserves based on a constant price is mainly due to the debooking of proved undeveloped reserves of Canadian oil sands on the Surmont permit.

Discoveries of new fields and extensions of existing fields added 2,172 Mboe to the Upstream segment's proved reserves during the 3-year period ended December 31, 2016 (before deducting production and sales of reserves in place and adding any acquisitions of reserves in place during this period). The net level of reserve revisions during this 3-year period is +505 Mboe, which was mainly due to the overall positive revisions in field behaviors and to the positive impact of the decrease in hydrocarbon prices in 2015 and 2016 that led to a reserves increase on fields with production sharing or service contracts and on Canadian bitumen fields (royalty effect), which was partially offset by the reserves decrease resulting from the suspension or cancellation due to economic reasons of capital expenditures associated with, or from shorter producing life of, certain producing fields.

The 2016 proved reserve replacement rate<sup>(1)</sup>, based on SEC rules (based on Brent at 42.82 \$/b in 2016), was 93% in 2016 and 100% over three years. At a constant price (54.17 \$/b in 2015), the proved reserve replacement rate was 136% in 2016.

As of December 31, 2015, TOTAL's combined proved reserves of oil and gas were 11,580 Mboe (53% of which were proved developed reserves) compared to 11,523 Mboe (50% of which were proved developed reserves) as of December 31, 2014. Liquids (crude oil, condensates, natural gas liquids and bitumen) at year-end 2015 represented approximately 48% of these reserves and natural gas the remaining 52% and, at year-end 2014, approximately 46% of these reserves and natural gas the remaining 54%.

### Sensitivity to oil and gas prices

Changes in the price used as a reference for the proved reserves estimation result in non-proportionate inverse changes in proved reserves associated with production sharing and risked service contracts (which together represent approximately 19% of TOTAL's reserves as of December 31, 2016). Under such contracts, TOTAL is entitled to a portion of the production, the sale of which is meant to cover expenses incurred by the Group. As oil prices decrease, more barrels are necessary to cover the same amount of expenses. Moreover, the number of barrels recoverable under these contracts may vary according to criteria such as cumulative production, the rate of return on investment or the income-cumulative expenses ratio. This increase is partly offset by a reduction of the duration over which fields can be produced economically. However, the decrease in reserves due to this reduction is generally less than the increase in reserves under production sharing or risked service contracts due to such lower prices. As a result, lower prices usually lead to an increase in TOTAL's reserves. In Canada, a decrease in the reference price per barrel used as a reference for estimating proved reserves leads to a decrease in the volume of royalties and, therefore, an increase of the proved reserves, and vice versa.

Lastly, for any type of contract, a significant decrease in the reference price of petroleum products that negatively impacts projects profitability may lead to a reduction of proved reserves.

### 2.1.1.3. Production

The average daily production of liquids and natural gas was 2,452 kboe/d in 2016 compared to 2,347 kboe/d in 2015 and 2,146 kboe/d in 2014. Liquids represented approximately 52% and natural gas approximately 48% of TOTAL's overall production in 2016.

The tables on the following pages set forth TOTAL's annual and average daily production of liquids and natural gas by geographic area and for each of the last three fiscal years.

Consistent with industry practice, TOTAL often holds a percentage interest in its fields rather than a 100% interest, with the balance being held by joint venture partners (which may include other international oil companies, state-owned oil companies or government entities). The Group's entities may frequently act as operator (the party responsible for technical production) on acreage in which it holds an interest. Refer to the table "Presentation of production activities by region" on the following pages for a presentation of the Group's producing assets.

As in 2015 and 2014, substantially all of the liquids production from TOTAL's Upstream segment in 2016 was marketed by the Trading & Shipping division of TOTAL's Refining & Chemicals segment (refer to table "Trading's crude oil sales and supply and petroleum products sales" in point 2.2.2.1 of this chapter).

### 2.1.1.4. Delivery commitments

The majority of TOTAL's natural gas production is sold under long-term contracts. However, its North American production, and part of its production from the United Kingdom, the Netherlands and Norway, is sold on the spot market. The long-term contracts under which TOTAL sells its natural gas usually provide for a price related to, among other factors, average crude oil and other petroleum product prices, as well as, in some cases, a cost-of-living index. Though the price of natural gas tends to fluctuate in line with crude oil prices, a slight delay may occur before changes in crude oil prices are reflected in long-term natural gas prices.

Some of TOTAL's long-term contracts, notably in Bolivia, Indonesia, Nigeria, Norway, Thailand and Qatar, specify the delivery of quantities of natural gas that may or may not be fixed and determinable. Such delivery commitments vary substantially, both in duration and scope, from contract to contract throughout the world. For example, in some cases, contracts require delivery of natural gas on an as-needed basis, and, in other cases, contracts call for the delivery of varied amounts of natural gas over different periods of time. Nevertheless, TOTAL estimates the fixed and determinable quantity of gas to be delivered over the period 2017-2019 to be 4,734 Bcf. The Group expects to satisfy most of these obligations through the production of its proved reserves of natural gas, with, if needed, additional sourcing from spot market purchases (refer to points 1 and 2 of chapter 11).

### 2.1.1.5. Contractual framework of activities

Licenses, permits and contracts governing the Group's ownership of oil and gas interests have terms that vary from country to country and are generally granted by or entered into with a government entity or a state-owned company and are sometimes entered into with private owners. These agreements usually take the form of concessions or production sharing contracts.

(1) Change in reserves excluding production: (revisions + discoveries, extensions + acquisitions – divestments)/production for the period.

In the framework of oil concession agreements, the oil company owns the assets and the facilities and is entitled to the entire production. In exchange, the operating risks, costs and investments are the oil company's responsibility and it agrees to remit to the relevant host country, usually the owner of the subsoil resources, a production-based royalty, income tax, and possibly other taxes that may apply under local tax legislation.

The production sharing contract ("PSC") involves a more complex legal framework than the concession agreement: it defines the terms and conditions of production sharing and sets the rules governing the cooperation between the company or consortium in possession of the license and the host country, which is generally represented by a state-owned company. The latter can thus be involved in operating decisions, cost accounting and production allocation. The consortium agrees to undertake and finance all exploration, development and production activities at its own risk. In exchange, it is entitled to a portion of the production, known as "cost oil", the sale of which is intended to cover its incurred expenses (capital and operating costs). The balance of production, known as "profit oil", is then shared in varying proportions, between the company or consortium, on the one hand, and the host country or state-owned company, on the other hand.

Today, concession agreements and PSCs can coexist, sometimes in the same country or even on the same block. Even though there are other contractual models, TOTAL's license portfolio is comprised mainly of concession agreements.

On most licenses, the partners and authorities of the host country, often assisted by international accounting firms, perform joint venture and PSC cost audits and ensure the observance of contractual obligations.

In some countries, TOTAL has also signed contracts called "risked service contracts", which are similar to PSCs. However, the profit oil is replaced by a defined cash monetary remuneration, agreed by contract, which depends notably on field performance parameters such as the amount of barrels produced.

Oil and gas exploration and production activities are subject to authorization granted by public authorities (licenses), which are granted for specific and limited periods of time and include an obligation to relinquish a large portion, or the entire portion in case of failure, of the area covered by the license at the end of the exploration period.

TOTAL pays taxes on income generated from its oil and gas production and sales activities under its concessions, PSCs and risked service contracts, as provided for by local regulations. In addition, depending on the country, TOTAL's production and sales activities may be subject to a number of other taxes, fees and withholdings, including special petroleum taxes and fees. The taxes imposed on oil and gas production and sales activities are generally substantially higher than those imposed on other industrial or commercial businesses.

### 2.1.1.6. Production by region

The following table sets forth the Group's annual liquids and natural gas production by region, according to the internal business units of the Group.

	2016			2015			2014		
	Liquids Mb <sup>(a)</sup>	Natural gas Bcf <sup>(b)</sup>	Total Mboe	Liquids Mb <sup>(a)</sup>	Natural gas Bcf <sup>(b)</sup>	Total Mboe	Liquids Mb <sup>(a)</sup>	Natural gas Bcf <sup>(b)</sup>	Total Mboe
<b>Europe and Central Asia</b>	<b>91</b>	<b>1,002</b>	<b>277</b>	<b>80</b>	<b>881</b>	<b>243</b>	<b>73</b>	<b>812</b>	<b>224</b>
Azerbaijan	-	-	-	-	-	-	1	22	5
France	-	-	-	-	-	-	-	3	1
Italia	-	-	-	-	-	-	-	-	-
Kazakhstan	1	2	1	-	-	-	-	-	-
Norway	44	226	86	47	224	88	49	210	88
The Netherlands	-	52	9	-	58	10	-	62	11
United Kingdom	18	218	58	13	142	39	11	122	32
Russia	28	504	123	20	457	106	12	393	86
<b>Africa (excluding North Africa)</b>	<b>186</b>	<b>227</b>	<b>232</b>	<b>190</b>	<b>212</b>	<b>233</b>	<b>179</b>	<b>225</b>	<b>223</b>
Angola	84	25	89	86	18	90	70	20	73
Republic of the Congo	31	11	33	30	11	32	32	13	35
Gabon	20	5	21	20	5	22	20	5	21
Nigeria	51	186	89	54	178	89	57	187	94
<b>Middle East and North Africa</b>	<b>137</b>	<b>291</b>	<b>189</b>	<b>136</b>	<b>318</b>	<b>193</b>	<b>82</b>	<b>424</b>	<b>159</b>
Algeria	2	33	8	3	35	9	2	29	7
United Arab Emirates	102	25	107	100	24	105	42	22	46
Iraq	6	<1	7	7	-	7	4	-	4
Libya	5	-	5	5	-	5	10	-	10
Oman	10	23	14	8	21	12	9	22	13
Qatar	11	210	49	12	209	49	12	203	48
Yemen	-	-	-	1	29	6	3	148	31
<b>Americas</b>	<b>40</b>	<b>346</b>	<b>102</b>	<b>35</b>	<b>327</b>	<b>93</b>	<b>32</b>	<b>323</b>	<b>90</b>
Argentina	3	143	29	3	129	26	3	134	27
Bolivia	1	59	12	1	49	10	1	51	11
Canada	12	-	12	5	-	5	4	-	4
United States	11	111	31	13	112	33	10	104	28
Venezuela	12	33	17	13	37	19	14	34	19
<b>Asia-Pacific</b>	<b>11</b>	<b>494</b>	<b>97</b>	<b>12</b>	<b>471</b>	<b>94</b>	<b>11</b>	<b>429</b>	<b>87</b>
Australia	-	33	6	-	10	1	-	8	1
Brunei	1	29	7	1	23	5	1	24	5
China	-	19	4	-	22	4	-	23	4
Indonesia	7	240	51	8	247	54	7	217	47
Myanmar	-	60	8	-	56	7	-	49	6
Thailand	3	112	22	3	113	23	4	108	22
<b>Total production</b>	<b>465</b>	<b>2,360</b>	<b>897</b>	<b>453</b>	<b>2,209</b>	<b>856</b>	<b>377</b>	<b>2,213</b>	<b>783</b>
<b>Including share of equity affiliates</b>	<b>91</b>	<b>694</b>	<b>220</b>	<b>81</b>	<b>667</b>	<b>204</b>	<b>73</b>	<b>726</b>	<b>208</b>
Angola	-	7	2	-	-	-	-	4	1
United Arab Emirates	42	19	45	39	18	43	40	19	43
Oman	9	23	13	8	21	12	8	22	12
Qatar	3	139	28	3	140	28	3	139	28
Russia	25	503	120	17	456	102	9	392	83
Venezuela	12	3	12	14	3	14	14	2	14
Yemen	-	-	-	-	29	5	-	147	27

(a) Liquids consist of crude oil, bitumen, condensates and natural gas liquids (NGL). With respect to bitumen, the Group's production in Canada consists of bitumen only, and all of the Group's bitumen production is in Canada. With respect to NGL, the table above does not set forth separate figures for NGL because they represented less than 7.5% of the Group's total liquids production in each of the years 2014, 2015 and 2016.

(b) Including fuel gas (163 Bcf in 2016, 159 Bcf in 2015, 155 Bcf in 2014).

The following table sets forth the Group's average daily liquids and natural gas production by region, according to the internal business units of the Group.

	2016			2015			2014		
	Liquids kb/d <sup>(a)</sup>	Natural gas Mcf/d <sup>(b)</sup>	Total kboe/d	Liquids kb/d <sup>(a)</sup>	Natural gas Mcf/d <sup>(b)</sup>	Total kboe/d	Liquids kb/d <sup>(a)</sup>	Natural gas Mcf/d <sup>(b)</sup>	Total kboe/d
<b>Europe and Central Asia</b>	<b>249</b>	<b>2,737</b>	<b>757</b>	<b>215</b>	<b>2,413</b>	<b>664</b>	<b>201</b>	<b>2,224</b>	<b>613</b>
Azerbaijan	-	-	-	-	-	-	3	59	14
France	-	-	-	-	-	-	-	9	2
Italia	-	-	-	-	-	-	-	-	-
Kazakhstan	3	6	4	-	-	-	-	-	-
Norway	121	618	235	125	614	239	135	576	242
The Netherlands	-	141	25	1	158	28	1	171	31
United Kingdom	49	595	158	35	389	107	29	333	89
Russia	76	1,377	335	54	1,252	290	33	1,076	235
<b>Africa (excluding North Africa)</b>	<b>509</b>	<b>621</b>	<b>634</b>	<b>521</b>	<b>581</b>	<b>639</b>	<b>490</b>	<b>614</b>	<b>610</b>
Angola	230	68	243	238	49	248	191	54	200
Republic of the Congo	84	29	90	81	30	87	88	35	95
Gabon	55	15	58	55	15	59	55	14	58
Nigeria	140	509	243	147	487	245	156	511	257
<b>Middle East and North Africa</b>	<b>373</b>	<b>795</b>	<b>517</b>	<b>372</b>	<b>874</b>	<b>531</b>	<b>224</b>	<b>1,163</b>	<b>438</b>
Algeria	6	90	23	7	96	25	5	79	20
United Arab Emirates	279	67	291	274	66	287	115	61	127
Iraq	17	1	18	18	1	18	12	1	12
Libya	14	-	14	14	-	14	27	-	27
Oman	26	62	37	25	58	36	24	61	36
Qatar	31	575	134	32	573	134	32	555	132
Yemen	-	-	-	2	80	17	9	406	84
<b>Americas</b>	<b>109</b>	<b>944</b>	<b>279</b>	<b>95</b>	<b>896</b>	<b>255</b>	<b>89</b>	<b>884</b>	<b>247</b>
Argentina	8	391	78	8	354	72	9	367	75
Bolivia	4	160	34	3	133	28	4	139	30
Canada	34	-	34	14	-	14	12	-	12
United States	31	304	86	34	308	89	27	285	78
Venezuela	32	89	47	36	101	52	37	93	52
<b>Asia-Pacific</b>	<b>31</b>	<b>1,350</b>	<b>265</b>	<b>34</b>	<b>1,290</b>	<b>258</b>	<b>30</b>	<b>1,178</b>	<b>238</b>
Australia	-	91	16	-	28	4	-	23	4
Brunei	3	78	18	3	62	15	2	66	15
China	-	53	10	-	59	11	-	63	12
Indonesia	19	657	140	22	676	147	18	594	130
Myanmar	-	165	21	-	153	19	-	135	17
Thailand	9	306	60	9	312	62	10	297	60
<b>Total production</b>	<b>1,271</b>	<b>6,447</b>	<b>2,452</b>	<b>1,237</b>	<b>6,054</b>	<b>2,347</b>	<b>1,034</b>	<b>6,063</b>	<b>2,146</b>
<b>Including share of equity affiliates</b>	<b>247</b>	<b>1,894</b>	<b>600</b>	<b>219</b>	<b>1,828</b>	<b>559</b>	<b>200</b>	<b>1,988</b>	<b>571</b>
Angola	1	20	5	-	-	-	-	10	2
United Arab Emirates	114	51	123	107	50	116	109	51	118
Oman	24	62	36	24	58	34	23	61	34
Qatar	7	379	76	7	383	77	7	381	77
Russia	69	1,375	327	45	1,250	280	24	1,075	227
Venezuela	32	7	33	36	7	37	37	6	38
Yemen	-	-	-	-	80	15	-	404	75

(a) Liquids consist of crude oil, bitumen, condensates and natural gas liquids (NGL). With respect to bitumen, the Group's production in Canada consists of bitumen only, and all of the Group's bitumen production is in Canada. With respect to NGL, the table above does not set forth separate figures for NGL because they represented less than 7.5% of the Group's total liquids production in each of the years 2014, 2015 and 2016.

(b) Including fuel gas (448 Mcf/d in 2016, 435 Mcf/d in 2015, 426 Mcf/d in 2014).

### 2.1.1.7. Presentation of production activities by geographical zone

The table below sets forth, by geographical zone according to the internal business units of the Group, TOTAL's producing assets, the year in which TOTAL's activities started, the Group's interest in each asset and whether TOTAL is operator of the asset.

#### TOTAL's producing assets as of December 31, 2016<sup>(a)</sup>

##### Europe and Central Asia

<b>Kazakhstan</b> <b>1992</b>	<b>Non-operated:</b> Kashagan (16.81%)
<b>Norway</b> <b>1965</b>	<b>Operated:</b> Atla (40.00%), Skirne (40.00%) <b>Non-operated:</b> Åsgard (7.68%), Ekofisk (39.90%), Ekofisk South (39.90%), Eldfisk (39.90%), Embla (39.90%), Gimle (4.90%), Heimdal (16.76%), Islay (5.51%) <sup>(b)</sup> , Kristin (6.00%), Kvitebjørn (5.00%), Mikkel (7.65%), Oseberg (14.70%), Oseberg East (14.70%), Oseberg South (14.70%), Snøhvit (18.40%), Stjerne (14.70%), Troll I (3.69%), Troll II (3.69%), Tune (10.00%), Tyrihans (23.15%), Visund (7.70%), Visund South (7.70%), Visund North (7.70%)
<b>The Netherlands</b> <b>1964</b>	<b>Operated:</b> F6a oil (65.68%), F15a Jurassic (38.20%), F15a Triassic (32.47%), J3a (30.00%), K1a (40.10%), K3b (56.16%), K4a (50.00%), K4b/K5a (36.31%), K5b (50.00%), K6/L7 (56.16%), L1a (60.00%), L1d (60.00%), L1e (55.66%), L1f (55.66%), L4d (55.66%) <b>Non-operated:</b> E16a (16.92%), E17a/E17b (14.10%), J3b/J6 (25.00%), K9ab-A (22.46%), Q16a (6.49%)
<b>Russia</b> <b>1991</b>	<b>Non-operated:</b> Kharyaga (20.00%), Termokarstovoye (49.00%) <sup>(c)</sup> , several fields through the participation in Novatek (18.90%)
<b>United Kingdom</b> <b>1962</b>	<b>Operated:</b> Alwyn North (100.00%), Dunbar (100.00%), Ellon (100.00%), Forvie North (100.00%), Grant (100.00%), Jura (100.00%), Nuggets (100.00%), Elgin-Franklin (46.17%), West Franklin (46.17%), Glenelg (58.73%), Islay (94.49%) <sup>(b)</sup> , Laggan Tormore (60.00%) <b>Non-operated:</b> Bruce (43.25%), Markham unitized field (7.35%), Keith (25.00%)

##### Africa (excl. North Africa)

<b>Angola</b> <b>1953</b>	<b>Operated:</b> Girassol, Jasmim, Rosa, Dalia, Pazflor, CLOV (Block 17) (40.00%) <b>Non-operated:</b> Cabinda Block 0 (10.00%), Kuito, BBLT, Tombua-Landana (Block 14) (20.00%) <sup>(d)</sup> , Lianzi (Block 14K) (10.00%) <sup>(d)</sup> , Angola LNG (13.60%)
<b>Gabon</b> <b>1928</b>	<b>Operated:</b> Anguille Marine (100.00%), Anguille Nord Est (100.00%), Atora (40.00%), Avocette (57.50%), Baliste (50.00%), Barbier (100.00%), Baudroie Marine (50.00%), Baudroie Nord Marine (50.00%), Coucal (57.50%), Girelle (100.00%), Gonelle (100.00%), Grand Anguille Marine (100.00%), Grondin (100.00%), Hylia Marine (75.00%), Lopez Nord (100.00%), Mandaros (100.00%), M'Boukou (57.50%), Mérout Sardine Sud (50.00%), N'Tchengue (100.00%), Port Gentil Océan (100.00%), Torpille (100.00%), Torpille Nord Est (100.00%) <b>Non-operated:</b> Rabi Kounga (47.50%)
<b>Nigeria</b> <b>1962</b>	<b>Operated:</b> OML 58 (40.00%), OML 99 Amenam-Kpono (30.40%), OML 100 (40.00%), OML 102 (40.00%), OML 130 (24.00%) <b>Non-operated:</b> OML 102 – Ekanga (40.00%), Shell Petroleum Development Company (SPDC) (10.00%), OML 118 – Bonga (12.50%), OML 138 (20.00%)
<b>The Republic of the Congo</b> <b>1968</b>	<b>Operated:</b> Kombi-Likalala-Libondo (65.00%), Moho Bilondo (including Moho phase 1b) (53.50%), Nkossa (53.50%), Nsoko (53.50%), Sendji (55.25%), Tchendo (65.00%), Tchibeli-Litanzi-Loussima (65.00%), Tchibouela (65.00%), Yanga (55.25%) <b>Non-operated:</b> Lianzi (26.75%), Loango (42.50%), Zatchi (29.75%)

(a) The Group's interest in the local entity is approximately 100% in all cases except for Total Gabon (58.28%), Total E&P Congo (85%) and certain entities in Abu Dhabi and Oman (see notes b through k below).

(b) The field of Islay extends partially in Norway. Total E&P UK holds a 94.49% stake and Total E&P Norge 5.51%.

(c) TOTAL's interest in the joint venture ZAO Terneftegas with Novatek (51.00%).

(d) Stake in the company Angola Block 14 BV (TOTAL 50.01%).

Operated (Group share in %).  
 Non-operated (Group share in %).

**Middle East  
and North Africa**

<b>Algeria 1952</b>	<b>Non-operated:</b> Tin Fouyé Tabankort (35.00%)
<b>U.A.E. 1939</b>	<b>Operated:</b> Abu Al Bukhoosh (75.00%) <b>Non-operated:</b> ADCO (10.00%), Abu Dhabi offshore (13.33%) <sup>(e)</sup> , GASCO (15.00%), ADGAS (5.00%)
<b>Iraq 1920</b>	<b>Non-operated:</b> Halfaya (22.5%) <sup>(f)</sup>
<b>Libya 1959</b>	<b>Non-operated:</b> zones 15, 16 & 32 (75.00%) <sup>(g)</sup> , zone 129 & 130 (30.00%) <sup>(g)</sup>
<b>Oman 1937</b>	<b>Non-operated:</b> various onshore fields (Block 6) (4.00%) <sup>(h)</sup> , Mukhaizna field (Block 53) (2.00%) <sup>(i)</sup>
<b>Qatar 1936</b>	<b>Operated:</b> Al Khalij (40.00%) <b>Non-operated:</b> North Field-Block NF Dolphin (24.50%), North Field-Qatargas 1 Downstream (10.00%), North Field-Qatargas 1 Upstream (20.00%), North Field-Qatargas 2 Train 5 (16.70%)
<b>Yemen 1987</b>	<b>Non-operated:</b> Various onshore fields (Block 5) (15.00%)

**Americas**

<b>Argentina 1978</b>	<b>Operated:</b> Aguada Pichana (27.27%), Aguada San Roque (24.71%), Rincon La Ceniza (45.00%), Aries (37.50%), Cañadon Alfa Complex (37.50%), Carina (37.50%), Hidra (37.50%), Kaus (37.50%), Vega Pleyade (37.50%), La Escalonada (45.00%) <b>Non-operated:</b> Rincón de Aranda (45.00%), Sierra Chata (2.51%)
<b>Bolivia 1995</b>	<b>Operated:</b> Incahuasi (50.00%) <b>Non-operated:</b> San Alberto (15.00%), San Antonio (15.00%), Itaú (41.00%)
<b>Canada 1999</b>	<b>Non-operated:</b> Surmont (50.00%)
<b>United States 1957</b>	<b>Operated:</b> several assets in the Barnett Shale area (100.00%) <b>Non-operated:</b> several assets in the Utica Shale area (25.00%) <sup>(j)</sup> , Chinook (33.33%), Tahiti (17.00%)
<b>Venezuela 1980</b>	<b>Non-operated:</b> PetroCedeño (30.32%), Yucal Placer (69.50%)

**Asia-Pacific**

<b>Australia 2005</b>	<b>Non-operated:</b> several fields in UJV GLNG (27.50%) <sup>(k)</sup>
<b>Brunei 1986</b>	<b>Operated:</b> Maharaja Lela Jamalulalam (37.50%)
<b>China 2006</b>	<b>Non-operated:</b> South Sulige (49.00%)
<b>Indonesia 1968</b>	<b>Operated:</b> Bekapai (50.00%), Handil (50.00%), Peciko (50.00%), Sisi-Nubi (47.90%), South Mahakam (50.00%), Tambora (50.00%), Tunu (50.00%) <b>Non-operated:</b> Badak (1.05%), Nilam-gas and condensates (9.29%), Nilam-oil (10.58%), Ruby-gas and condensates (15.00%)
<b>Myanmar 1992</b>	<b>Operated:</b> Blocks M5/M6 (Yadana, Sein) (31.24%)
<b>Thailand 1990</b>	<b>Non-operated:</b> Bongkot (33.33%)

(e) Via Abu Dhabi Marine Areas Limited (equity affiliate), TOTAL holds a 13.33% stake in the Abu Dhabi Marine Areas (ADMA) concession operated by ADMA-OPCO.

(f) TOTAL's interest in the joint venture.

(g) TOTAL's stake in the foreign consortium.

(h) TOTAL's indirect interest (4.00%) in the concession, via its 10% interest in Private Oil Holdings Oman Ltd. TOTAL also has a direct interest (5.54%) in the Oman LNG facility (trains 1 and 2), and an indirect participation (2.04%) through OJNG in Qalhat LNG (train 3).

(i) TOTAL's direct interest in Block 53.

(j) TOTAL's interest in the joint venture with Chesapeake.

(k) TOTAL's interest in the unincorporated joint venture.

Operated (Group share in %).  
Non-operated (Group share in %).

### 2.1.1.8. Main activities by geographical zone

The information below describes the Group's main exploration and production activities presented by geographical zones according to the internal business units<sup>(1)</sup> of the Group, without detailing all of the assets held by TOTAL. In each area, the countries are presented in decreasing order of production. The capacities referred to herein are expressed on a 100% basis, regardless of the Group's stake in the asset.

#### Europe and Central Asia

**In 2016, TOTAL's production in the zone of Europe and Central Asia was 757 kboe/d, representing 31% of the Group's total production, compared to 664 kboe/d in 2015 and 613 kboe/d in 2014. The two main producing countries in this zone in 2016 were Russia and Norway.**

In **Russia**, where the largest percentage of TOTAL's proved reserves are located (nearly 21% as of December 31, 2016), the Group's production was 335 kboe/d in 2016, compared to 290 kboe/d in 2015 and 235 kboe/d in 2014. This production comes from the Kharyaga and Termokarstovoye fields and TOTAL's stake in PAO Novatek<sup>(2)</sup>. Since 2015, Russia has been the leading contributor to the Group's production.

In addition to the shareholding in Novatek, TOTAL currently participates in the Yamal LNG and Termokarstovoye projects with Novatek via a direct stake:

- Yamal LNG: in 2013, the company OAO Yamal LNG<sup>(3)</sup> launched this project aimed at developing the onshore field of South Tambey (gas and condensates) located on the Yamal peninsula, and at building a three-train gas liquefaction plant with total LNG capacity of 16.5 Mt/y. The Yamal LNG project's financing was finalized in 2016 in compliance with applicable regulations. At year-end 2016, 75% of the project was completed and over 96% of the LNG volumes have been sold through long-term sale agreements. Production is expected to start by year-end 2017.
- Termokarstovoye (an onshore gas and condensates field, located in the Yamalo-Nenets region): the development and production license of Termokarstovoye field is held by ZAO Terneftegas, a joint venture between Novatek (51%) and TOTAL (49%). The field came into production in 2015 (capacity of 65 kboe/d).

In August 2016, TOTAL sold a 20% interest in the Kharyaga field (thus reducing its stake to 20%) and transferred operatorship of the field to the purchaser, Zarubezhneft.

Since 2014, certain Russian persons and entities, including various entities operating in the energy sector, are subject to international economic sanctions adopted, in particular, by the United States, the European Union. TOTAL complies with sanctions applicable to its activities. For further information, refer to point 1.9 of chapter 4 (Risk factors).

In **Norway**, TOTAL has equity stakes in 93 production licenses on the Norwegian maritime continental shelf, 35 of which it operates. The Group's production in 2016 was 235 kboe/d compared to 239 kboe/d in 2015 and 242 kboe/d in 2014.

- In the Greater Ekofisk area, the Group holds a 39.9% stake in the Ekofisk and Eldfisk fields. Production at Ekofisk South started in 2013 and at Eldfisk II in 2015 (capacity of 70 kboe/d each).

- In the Sleipner area, the development of the Gina Krog field located in the north of Sleipner and approved in 2013 is underway. In December 2016, the Group sold a stake of 15% in this field, reducing its participation from 30% to 15%.
- In the Greater Hild area, the development of the Martin Linge field (51%, operator, estimated capacity 80 kboe/d) is underway.
- In the Barents Sea, the Group holds an 18.4% stake in the gas liquefaction plant of Snøhvit (capacity of 4.2 Mt/y). This plant is supplied with production from the Snøhvit and Albatross gas fields.

In the **United Kingdom**, the Group's production was 158 kboe/d in 2016 compared to 107 kboe/d in 2015 and 89 kboe/d in 2014. More than 90% of this production comes from operated fields in the three main areas described below.

- In the Alwyn/Dunbar area (100%) in the Northern North Sea, production from the Alwyn and Dunbar fields represents 25% and 18% of production, respectively, of this area. The rest of the production comes from satellites, which are:
  - 1) linked to Alwyn by subsea tieback: the Forvie gas and condensates field joined by the Jura and Islay fields and the Nuggets gas field network; and
  - 2) linked to Dunbar: the Ellon (oil and gas) and the Grant (gas and condensates) fields.
 On the Dunbar field (100%), the additional development phase (Dunbar phase IV) was stopped in 2016 for technical and economic reasons.
- In the Elgin/Franklin area in the Central Graben, TOTAL holds stakes in the Elgin-Franklin and West Franklin fields (46.17%, operator). Concerning the Elgin redevelopment project (drilling of five wells), two wells were drilled in 2016. The West Franklin Phase II project, comprising the addition of two platforms and the drilling of three wells, was completed in 2016 when the last well was drilled.
- In the West of Shetland area, the Laggan and Tormore fields (60%, operator) came into production in 2016. Production is expected to start on the Edradour and Glenlivet fields (60%, operator) in 2017 (total production capacity of 90 kboe/d). TOTAL also operates the P967 license, including the Tobermory gas discovery (30%).

Impairments on gas assets in the United Kingdom were recognized in the 2015 and 2016 Consolidated Financial Statements.

In addition, TOTAL holds five shale gas exploration and production licenses (PEDL 139 and 140, 40%; PEDL 273, 305 and 316, 50%) located in the Gainsborough Trough basin (East Midlands region).

The sale of interests held by Total E&P UK in transport pipelines (FUKA and SIRGE) and the St. Fergus terminal was finalized in March 2016.

In the **Netherlands**, the Group's production was 25 kboe/d in 2016 compared to 28 kboe/d in 2015 and 31 kboe/d in 2014. This decrease was due to natural field decline. TOTAL holds interests in 24 offshore production licenses, including 20 that it operates, and an offshore exploration license (K1c, 30%).

(1) The geographical zones are as follows: Europe and Central Asia; Africa (excluding North Africa); Middle East and North Africa; Americas; and Asia-Pacific. The information presented relating to 2015 and 2014 production has been restated accordingly.

(2) A Russian company listed on stock exchanges in the Moscow and London stock exchanges and in which the Group held an interest of 18.9% as of December 31, 2016.

(3) OAO Yamal LNG is held by PAO Novatek (50.1%), Total E&P Yamal (20%), CNODC (20%), a subsidiary of China National Petroleum Corporation, and Silk Road Fund (9.9%).

In **Kazakhstan**, TOTAL holds a stake in the North Caspian license (16.81%), which covers the Kashagan field. Production of the first phase of the Kashagan field and the associated processing plant (capacity of 370 kb/d) restarted in October 2016 after pipeline problems had taken it off stream for three years. Replacement of the pipelines by the operator was completed in the summer of 2016. The Group's production was 4 kboe/d in 2016 and is expected to gradually increase between now and the end of 2017. In July 2016, TOTAL withdrew from the Nurmunaï North and South onshore exploration licenses (51.1%, operator) located in the southwest of the country, due to negative results from the two exploration wells drilled in 2015.

In **Italy**, TOTAL holds stakes in the Tempa Rossa field (50%, operator), located on the Gorgoglione concession (Basilicate region), and three exploration licenses. The Tempa Rossa development project is underway, with production expected to start at the end of 2017.

In **Azerbaijan**, TOTAL signed an agreement in November 2016 establishing the contractual and commercial conditions for a first phase of production of the Absheron gas and condensate field located in the Caspian Sea and discovered by TOTAL in 2011 (40%, operator). The agreement enabled to define a cost-competitive development scheme by tying the field to existing infrastructure in order to deliver gas at a competitive price. The capacity production from this high pressure field is expected to be approximately 35 kboe/d. The produced gas will supply Azerbaijan's domestic market.

In **France**, the Group's production ended in 2014 with the sale of the Lacq concessions to Geopetrol. Total E&P France remains the owner of parts of the Lacq industrial site, located in the southwest of France, and is carrying out decommissioning, dismantling and site rehabilitation activities.

In **Bulgaria**, where TOTAL has been present since 2012, the Group drilled a deep offshore exploration well in 2016 on the Han Asparuh block (14,220 km<sup>2</sup>), 100 km offshore in the Black Sea, which revealed the presence of oil in this area for the first time.

In **Denmark**, TOTAL relinquished the two shale gas exploration licenses (80%, operator) it acquired in 2010, in July 2015 for the license 2/10 (Nordsjaelland) and in June 2016 for the license 1/10 (Nordjylland).

### Rest of the Europe and Central Asia area

TOTAL also holds interests in an exploration license without activity in Tajikistan.

### Africa

**In 2016, TOTAL's production in the zone of Africa (excluding North Africa) was 634 kboe/d, representing 26% of the Group's total production, compared to 639 kboe/d in 2015 and 610 kboe/d 2014. The two main producing countries in this zone in 2016 were Nigeria and Angola.**

In **Nigeria**, the Group's production, primarily offshore, was 243 kboe/d in 2016, compared to 245 kboe/d in 2015 and 257 kboe/d in 2014. This drop in production was due mainly to the sale of interests in certain licenses of the Shell Petroleum Development Company (SPDC) joint venture as well as to difficult operational security conditions in the Niger delta that had a negative impact on onshore production and, in particular, the oil export of the Forcados terminal operated by Shell.

TOTAL operates 5 of the 35 oil mining leases (OML) in which it has interests and also holds interests in 3 oil prospecting licenses (OPL).

TOTAL has offshore operations (production was 160 kboe/d in 2016) notably on the following leases:

- On OML 139 (18%), the Owowo-3 exploration well, drilled in 2016, confirmed the discovery of oil made in 2012 and should enable progress in the preparation of the development plan. The discovery is located near OML 138 (20%), where three oil discoveries were made in 2014 and 2015.
- OML 130 (24%, operator): the development of the Egina field (200 kboe/d capacity) launched in 2013 is underway, and production is expected to start in 2018. The assessment of the Preowei field is planned in 2017.
- On OML 102 (40%, operator), in 2014 TOTAL stopped routine flaring on the Ofon field (Ofon phase 2 project). The gas associated with the production of oil is now compressed and sent onshore to the Nigeria LNG plant. All activities of the Ofon 2 project were completed in 2016 and the drilling of 24 additional wells, started in 2015, continues.
- On OML 99 (40%, operator), studies are ongoing for the development of the Ikike field.
- On OML 118 (12.5%), the Bonga field contributed 19 kboe/d to the Group's production in 2016. Optimization studies of the Bonga South West Aparo project (10% unitized) are ongoing with an investment decision target in 2018.

TOTAL has onshore operations (production was 83 kboe/d in 2016), notably:

- On OML 58 (40%, operator), under its joint venture with Nigerian National Petroleum Corporation (NNPC), a gas production capacity of 550 Mcf/d was reached and delivery of gas to the Nigerian domestic market started in 2016.
- In relation to the SPDC joint venture (10%), which includes 20 oil mining leases (of which 17 are located onshore), the 2016 production was 46 kboe/d (of which 43 kboe/d was onshore). TOTAL sold its 10% interest in OML 24 (in 2014) and OMLs 18 and 29 (in 2015), operated via the SPDC joint venture. In addition, the sale process of OML 25 is underway.

TOTAL is also developing LNG activities with a 15% stake in the Nigeria LNG Ltd company, which owns a liquefaction plant with a 22 Mt/year total capacity. Assessments are ongoing for the installation of an additional capacity of approximately 8.5 Mt/year.

In **Angola**, where TOTAL is the leading oil operator in the country<sup>(1)</sup>, the Group's production was 243 kboe/d in 2016, compared to 248 kboe/d in 2015 and 200 kboe/d in 2014. This production comes from Blocks 17, 14 and 0, and Angola LNG.

- Deep offshore Block 17 (40%, operator), TOTAL's main asset in Angola, is composed of four major producing hubs: Girassol, Dalia, Pazflor and CLOV. TOTAL continued to invest in brown field projects in 2016, including in particular Dalia Phase 2A and Girassol M14, which are expected to start production in 2017. In 2015, Dalia Phase 1A went into production and the start of multiphase pumps enabled production to be increased at Girassol. The Zinia phase 2 project, a satellite development of Pazflor, is moving forward.
- On the ultra-deep offshore Block 32 (30%, operator), the Kaombo project was launched in 2014 to develop the discoveries in the southeast part of the block via two FPSOs (floating production storage and offloading facilities) with a capacity of 115 kb/d

(1) Company data.



each. The drilling campaign of 59 wells began in 2015. In June 2016, a presidential decree was published providing new tax conditions for the project. The center and north parts of the block (outside Kaombo) offer additional exploration potential and are currently being assessed.

- On Block 14 (20%)<sup>(1)</sup>, production comes from the Tombua-Landana and Kuito fields as well as the BBLT project, comprising the Benguela, Belize, Lobito and Tomboco fields.
- Block 14K (36.75%) is the offshore unitization area between Angola (Block 14) and the Republic of the Congo (Haute Mer license). The Lianzi field, which is connected to the existing BBLT platform (Block 14), started production in 2015. TOTAL's interest in the unitized zone is held 10% through Angola Block 14 BV and 26.75% through Total E&P Congo.
- On Block 0 (10%), the second phase of the Mafumeira field development project started production in March 2017.

TOTAL is also developing its LNG activities through the Angola LNG project (13.6%), which includes a gas liquefaction plant near Soyo supplied by gas associated with production from Blocks 0, 14, 15, 17 and 18. LNG production started in 2013, but various technical incidents required an extended shutdown of the plant. LNG production restarted in May 2016. Taking into account the revised gas price assumptions, an impairment on Angola LNG was recognized in the 2016 Consolidated Financial Statements.

In the Bas-Congo basin, TOTAL is also the operator of exploration Block 17/06 (30%).

In the deep offshore Kwanza basin, TOTAL is the operator of Blocks 25 (35%) and 40 (40%). The Block 39 license (7.5%) expired at the end of December 2016.

In the **Republic of the Congo**, the Group's production, through its subsidiary Total E&P Congo<sup>(2)</sup>, was 90 kboe/d in 2016, compared to 87 kboe/d in 2015 and 95 kboe/d in 2014.

- On the offshore field Moho Bilondo (53.5%, operator), the Phase 1b project (estimated capacity of 40 kboe/d) started production in 2015. The Moho Nord project (estimated capacity of 100 kboe/d) started production in March 2017.
- Block 14K (36.75%) corresponds to the offshore unitization area between the Republic of the Congo (Haute Mer license) and Angola (Block 14 located in Angola). The Lianzi field started production in 2015. TOTAL's interests in the unitization area are held 26.75% by Total E&P Congo and 10% by Angola Block 14 BV.
- Total E&P Congo is operator of Djéno (63%) the sole oil terminal in the country.
- On December 31, 2016, Total E&P Congo returned its interests in the Tchibouela, Tchendo, Tchibeli and Litanzi fields (65%) to the Republic of the Congo, as the licenses have expired.

In **Gabon**, the Group's production was 58 kboe/d in 2016 compared to 59 kboe/d in 2015 and 58 kboe/d in 2014. The Group's activities in Gabon are primarily carried out by Total Gabon<sup>(3)</sup>. TOTAL wholly owns and operates the Anguille and Torpille sector offshore fields, the Mandji Island sector onshore fields and the Cap Lopez oil terminal. TOTAL is also the operator of the Baudroie-Mérou offshore fields (50%) and the Diaba deep offshore license (42.5%), where the Diaman gas discovery was made in 2013. In February 2017, TOTAL signed an agreement for the sale of stakes and the

transfer of operatorship in various mature assets. The transaction is subject to approval by the authorities.

In **Uganda**, a growth area for the Group TOTAL has been present in the upstream since 2012, and has a 33.33% stake in the licenses EA-1, EA-1A (Lyc), EA-2 (Bulisa and Kaiso Tonya area) and EA-3 (Kingfisher) all located in the Lake Albert region. TOTAL is the operator of licenses EA-1 and EA-1A. In January 2017, TOTAL signed an agreement to acquire 21.57% of the 33.33% interest held by Tullow in the licenses EA-1, EA-1A, EA-2 and EA-3. TOTAL will take over operatorship from Tullow of license EA-2, enabling significant efficiency gains and synergies. This agreement remains subject to the approvals of the Ugandan authorities and the pre-emption rights of the partners.

In April 2016, the Government of Uganda decided to export the Lake Albert oil through a pipeline (EACOP) via Tanzania to the port of Tanga. In August 2016, the production licenses for EA-1 and EA-2 were formally granted. The partners of the Uganda Joint Venture have launched the FEED (Front End Engineering and Design) phase for the Upstream and the EACOP pipeline.

#### Rest of the zone of Africa

TOTAL also holds interests in exploration licenses in South Africa, Côte d'Ivoire, Kenya, Mauritania, Mozambique and the Democratic Republic of the Congo, and is negotiating with the authorities with a view to resuming exploration activities in the Republic of South Sudan. In July 2016, TOTAL withdrew from the Bemolanga license in Madagascar.

#### Middle East and North Africa

**In 2016, TOTAL's production in the zone of the Middle East and North Africa was 517 kboe/d, representing 21% of the Group's total production, compared to 531 kboe/d in 2015 and 438 kboe/d in 2014. The two main producing countries in this zone in 2016 were the United Arab Emirates and Qatar.**

In the **United Arab Emirates**, the Group's production was 291 kboe/d in 2016 compared to 287 kboe/d in 2015 and 127 kboe/d in 2014. The Group holds, since January 1, 2015, a 10% stake in the Abu Dhabi Company for Onshore Petroleum Operations Ltd. (ADCO) concession for a period of 40 years, which follows a previous onshore concession. This concession covers the 15 main onshore fields of Abu Dhabi and represents more than half of the Emirate's production.

TOTAL holds a 75% stake (operator) in the Abu Al Bukhoosh field and a 13.3% stake in the Abu Dhabi Marine (ADMA) concession, which operates two of the main offshore fields in Abu Dhabi (Umm Shaif and Lower Zakum). TOTAL also holds a 15% stake in Abu Dhabi Gas Industries (GASCO), which produces NGL and condensates from the associated gas produced by ADCO. In addition, TOTAL holds 5% of the Abu Dhabi Gas Liquefaction Company (ADGAS), which processes the associated gas produced by ADMA in order to produce LNG, NGL and condensates, and 5% of National Gas Shipping Company (NGSCO), which owns eight LNG tankers and exports the LNG produced by ADGAS.

TOTAL holds a 24.5% stake in Dolphin Energy Ltd. in partnership with Mubadala, a company owned by the government of Abu Dhabi, that markets to the United Arab Emirates gas coming from Qatar. In October 2016, a long-term gas sale and purchase agreement

(1) Stake held by the company Angola Block 14 BV (TOTAL 50.01%).

(2) Total E&P Congo is owned by TOTAL (85%) and Qatar Petroleum (15%).

(3) Total Gabon is a company under Gabonese law, the shares of which are listed on Euronext Paris and owned by TOTAL (58.28%), the Republic of Gabon (25%) and the public (16.72%).

was signed with Qatar Petroleum for the supply of an additional 0.3 Bcf/d of gas coming from Qatar to be sold domestically.

The Group also owns 33.33% of Ruwais Fertilizer Industries (FERTIL), which produces urea (production capacity of 2 Mt/year).

In **Qatar**, the Group's production was 134 kboe/d in 2016 and in 2015, compared to 132 kboe/d in 2014.

In June 2016, TOTAL signed an agreement granting it a 30% stake in the Al-Shaheen offshore oil field concession for a period of 25 years beginning July 14, 2017. The Al-Shaheen field has been producing since 1994 and lies offshore 80 km north of Ras Laffan. Production, which represents approximately half of Qatar's oil production<sup>(1)</sup>, is provided by 30 platforms and 300 wells. As of July 2017, the Al-Shaheen field will be operated by a new operating company, North Oil Company, held by TOTAL (30%) and Qatar Petroleum (70%).

TOTAL operates the Al Khalij field (40%, operator) and participates in the production, processing and exporting of gas from the North Field through its stakes in the Qatargas 1 and Qatargas 2 LNG plants and in Dolphin Energy:

- Qatargas 1: TOTAL holds a 20% stake in the upstream block of Qatargas 1 supplying the three LNG trains of Qatargas 1 (capacity of 10 Mt/y), in which the Group has a 10% interest.
- Qatargas 2: the Group holds a 16.7% stake in train 5, which has an LNG production capacity of 8 Mt/y. TOTAL offtakes part of the LNG produced under the 2006 contracts that provide for the purchase of 5.2 Mt/y of LNG by the Group.
- Dolphin Energy (24.5%): the contract signed in 2001 with Qatar Petroleum provides for the production and sale of gas and liquids from the Dolphin block located on the North Field. Raw gas is processed at the Dolphin plant in Ras Laffan, where the liquids are extracted. This gas is then routed to the United Arab Emirates by a 360 km gas pipeline in order to be sold (contract of 2 Bcf/d over a 25-year period).

In **Oman**, the Group's production was 37 kboe/d in 2016, compared to 36 kboe/d in 2015 and 2014. TOTAL participates in the production of oil principally in Block 6 (4%)<sup>(2)</sup>, but also in Block 53 (2%). The Group also produces LNG through its investments in the Oman LNG (5.54%/Qalhat LNG (2.04%)<sup>(3)</sup> liquefaction complex, with an overall capacity of 10.5 Mt/y.

In **Algeria**, TOTAL's production was 23 kboe/d in 2016 compared to 25 kboe/d in 2015 and 20 kboe/d in 2014. All of the Group's production in Algeria comes from the Tin Fouyé Tabankort (TFT) field (35%). In addition, the development of the Timimoun gas field (37.75%) continued in 2016 with engineering activities, activities related to the construction of the plant and drilling.

In **Iraq**, the Group's production was 18 kboe/d in 2016, stable compared to 2015, and 12 kboe/d in 2014. TOTAL holds a 22.5% stake in the development and production contract for the Halfaya field, located in Missan province. In 2016, the development of

phase 3 of the project (to increase production to 400 kb/d) was the subject of additional studies. In Iraqi Kurdistan, TOTAL relinquished four exploration blocks that expired in 2016. An impairment on the assets in Iraqi Kurdistan was recognized in the 2016 Consolidated Financial Statements.

In **Libya**, where security conditions remain unstable, the Group's production was 14 kboe/d in 2016 and in 2015, compared to 27 kboe/d in 2014. This production comes from blocks located on offshore areas 15, 16 and 32 (Al Jurf, 75%<sup>(4)</sup>), which have not been affected by security issues. Since the fourth quarter of 2014, production as well as exploration activities have been stopped on Mabruk – onshore areas 70 and 87 (75%<sup>(4)</sup>) – and on the fields of El Sharara – onshore area 130 and 131 (24%<sup>(4)</sup>). The production on the fields of El Sharara – onshore area 129 and 130 (30%<sup>(4)</sup>) – resumed at the end of December 2016. Taking into account the uncertain context in Libya, an impairment on the onshore assets was recognized in the 2015 Consolidated Financial Statements.

In **Yemen**, the Group had no production in 2016, compared to 17 kboe/d in 2015 and 84 kboe/d in 2014. Due to the security conditions in the vicinity of Balhaf, Yemen LNG, in which the Group holds a stake of 39.62%, stopped its commercial production and export of LNG in April 2015, when Yemen LNG declared *force majeure* to its various stakeholders. The plant is in a preservation mode.

TOTAL is a partner in Block 5 (Marib basin, Jannah license, 15%) and holds various stakes in four onshore exploration licenses.

In **Iran**, TOTAL signed a heads of agreement in November 2016 to develop phase 11 of the giant South Pars gas field (expected production capacity of 370 kboe/d), pursuant to which TOTAL is expected to operate South Pars 11 with a 50.1% interest alongside Petropars (19.9%), a wholly-owned subsidiary of the National Iranian Oil Company ("NIOC"), and the Chinese state-owned company CNPC (30%). The produced gas is expected to supply the Iranian domestic market. Two development phases are planned: the first for the construction of two platforms, 30 wells and two connecting lines to existing onshore treatment facilities, and the second for the installation of offshore compression facilities. This project fits with TOTAL's strategy of expanding its presence in the Middle East and growing its gas portfolio by adding a low unit cost, long plateau gas asset. For further information on the international sanctions concerning Iran, refer to point 1.9 of chapter 4 (Risk factors).

In **Syria**, TOTAL has had no production and no activity since December 2011. The Group has a 100% stake in the Deir Ez Zor license, which was operated by the joint venture company DEZPC, in which TOTAL and the state-owned company SPC each have a 50% share. Additionally, TOTAL is holder of the Tabiyeh contract which came into effect in 2009. For further information on the international sanctions concerning Syria, refer to point 1.9 of chapter 4 (Risk factors).

#### Rest of the zone of the Middle East and North Africa

TOTAL also holds interests in exploration licenses in Cyprus and Egypt.

(1) Company data.

(2) TOTAL holds an indirect 4% stake in Petroleum Development Oman LLC, operator of Block 6, via its 10% stake in Private Oil Holdings Oman Ltd.

(3) TOTAL's indirect stake via Oman LNG's stake in Qalhat LNG.

(4) TOTAL's stake in the foreign consortium.

## Americas

**In 2016, TOTAL's production in the zone of the Americas was 279 kboe/d, representing 11% of the Group's total production, compared to 255 kboe/d in 2015 and 247 kboe/d in 2014.**

**The two main producing countries in this zone in 2016 were the United States and Argentina.**

In the **United States**, the Group's production was 86 kboe/d in 2016, compared to 89 kboe/d in 2015 and 78 kboe/d in 2014.

Following the exercise of its preemption right, TOTAL acquired in November 2016 the 75% stake held by Chesapeake in the Barnett shale gas assets area located in North Texas, in which the Group had already a 25% interest since 2009. This transaction provides for the restructuring of the gas gathering and transportation contracts with respect to the acquired stake. The planned work relates to well intervention and well restarts. No wells were drilled in 2016 compared to 4 in 2015 and 40 in 2014.

TOTAL also has a 25% stake in a joint venture operated by Chesapeake in the Utica basin (on an acreage mainly located in Ohio) that produces shale gas. TOTAL was not involved in the drilling of any wells in 2016 compared to 8 in 2015 and approximately 170 in 2014.

Following successive decreases in gas prices in the United States, impairments on shale gas assets were recognized in the 2014 and 2015 Consolidated Financial Statements.

In the Gulf of Mexico, TOTAL holds interests in the deep offshore fields Tahiti (17%) and Chinook (33.33%). In Tahiti, the Tahiti Vertical Expansion (TVEX) project was launched in 2016 in order to extend the production level of the field.

The TOTAL (40%) – Cobalt (60%, operator) alliance, formed in 2009 for exploration in the Gulf of Mexico, continued its work to delineate the North Platte discovery.

In **Argentina**, TOTAL operated approximately 30%<sup>(1)</sup> of the country's gas production in 2016. The Group's production was 78 kboe/d in 2016 compared to 72 kboe/d in 2015 and 75 kboe/d in 2014.

- In Tierra del Fuego, the Group operates the Carina and Aries offshore fields (37.5%). The drilling of two additional wells off the existing platform was completed in 2015. The Vega Pleyade field (37.5%, operator), where development work was launched in 2013 (with a production capacity of 350 Mcf/d), started production in February 2016.
- In the Neuquén basin, two pilot projects were launched following positive initial results of the exploration campaign on its mining licenses in order to assess its gas and shale oil potential: the first on the Aguada Pichana Block (27.27%, operator), where production started mid-2015, and the second on the Rincón la Ceniza (45.00%, operator) and La Escalonada (45.00%, operator) Blocks, where production started in July 2016.

In **Venezuela**, the Group's production was 47 kboe/d in 2016 compared to 52 kboe/d in 2015 and 2014. TOTAL has stakes in PetroCedeño (30.32%) and Yucal Placer (69.50%) as well as the offshore exploration Block 4 of Plataforma Deltana (49%).

Development of the extra heavy oil field of PetroCedeño continues (39 production wells were drilled in 2016 compared to 47 in 2015

and 86 in 2014), as well as the debottlenecking project for the water separation and treatment facilities.

In **Bolivia**, the Group's production, mainly gas, was 34 kboe/d in 2016, compared to 28 kboe/d in 2015 and 30 kboe/d in 2014. TOTAL is active on seven licenses: three production licenses at San Alberto (15%), San Antonio (15%) and Block XX Tarija Oeste (41%); two licenses in development phase, Aquio and Ipati (50%<sup>(2)</sup>, operator); and two exploration phase licenses, Rio Hondo (50%) and Azero (50%, operator of the exploration phase).

- The Incahuasi gas field, located in the Aquio and Ipati Blocks, started production in August 2016. A second development phase, which would involve the drilling of three additional wells, is under consideration.
- TOTAL holds a 50% stake in the Azero exploration license located in the Andean foothills, which extends over an area of more than 7,800 km<sup>2</sup>. The exploration period began in 2014. A geophysical data acquisition campaign was started in the fourth quarter of 2016 and is expected to be followed by the drilling of a well in 2018.

In **Canada**, the Group's production was 34 kboe/d in 2016 compared to 14 kboe/d in 2015 and 12 kboe/d in 2014. The Group's activities were not significantly affected by the wildfires that struck Alberta in May and June 2016. The Group's production comes entirely from the Surmont (50%) project developed by SAGD<sup>(3)</sup>, the second phase of which was commissioned in 2015. Following the ramp-up of this phase in 2016 and 2017, the project is expected to produce a total of approximately 150 kb/d (75 kb/d Group share).

Construction of the Fort Hills oil sands mining project was more than 80% complete at year-end 2016, and the operator expects to start production at the end of 2017.

As a result of a full comparative analysis of its global asset portfolio in the context of lower oil prices, the Group decided in 2015 to decrease its exposure to Canadian oil sands and reduced its stake in Fort Hills from 39.2% to 29.2%. An impairment on the part of the asset sold was recognized in the 2015 Consolidated Financial Statements.

On the Joslyn (38.25%, operator) and Northern Lights (50% operator) licenses, the projects were suspended in 2014 and works have been strictly limited to legal and contractual obligations, and maintaining safety.

An impairment on the oil sands assets was recognized in the 2014 Consolidated Financial Statements.

In **Brazil**, a growth area for the Group, TOTAL acquired in 2013 a 20% stake in the Libra field, located in the Santos basin.

The Libra field is located in the ultra-deep offshore (2,000 m) approximately 170 km off the coast of Rio de Janeiro, and covers an area of 1,550 km<sup>2</sup>. In 2014, construction started on a 50 kb/d capacity FPSO for long-term production testing. At year-end 2016, in addition to the discovery well, eight wells have been drilled in the field. Development phase 1 (17 wells connected to an FPSO with a capacity of 150 kb/d) is expected to start in 2017.

In addition, the Group holds 17 exploration licenses located in the Foz do Amazonas, Barreirinhas, Ceará, Espírito Santo and Pelotas

(1) Source: Department of Federal Planning, Public Investment and Services, Energy Secretariat.

(2) In 2016, TOTAL reduced its stake in Aquio and Ipati from 60% to 50%.

(3) Steam Assisted Gravity Drainage, production by injection of recycled water vapor.

basins. An initial exploration well is expected to be drilled by year-end 2017 in the Foz do Amazonas basin.

In February 2017, TOTAL and Petrobras signed definitive contracts in relation to a package of upstream and downstream gas and electricity assets in Brazil and other international opportunities contemplated by their strategic alliance agreed in December 2016. As part of this strategic alliance, TOTAL will hold a 22.5% interest in the concession area named lara, located in Block BM-S-11, which is currently under development, as well as a 35% interest and the operatorship in the Lapa field concession area, located in Block BM-S-9. The Lapa field entered into production in December 2016. Petrobras will have the option of taking a 20% stake in the deep-water exploration Block 2 (Perdido Belt) recently obtained during the bid round in Mexico. Finally, technical cooperation between the two companies will be strongly reinforced, in particular by the joint assessment of the exploration potential of promising areas in Brazil and by the development of new technologies, in particular in deep-water. The deal is subject to regulatory approvals, the potential exercise of preemptive rights by current partners on the lara concession and other conditions precedent.

In **Mexico**, TOTAL was awarded in December 2016 exploration licenses on three blocks in offshore Mexico, following the country's first competitive deep water bid round resulting from the reform of the energy sector. Located in the Perdido basin, Block 2 (50%, operator) covers a surface area of 2,977 km<sup>2</sup> at water depths ranging from 2,300 m to 3,600 m. Block 1 (33.3%) and Block 3 (33.3%) are located in the Salina basin and cover a surface area of 2,381 km<sup>2</sup> and 3,287 km<sup>2</sup>, respectively.

### Rest of the zone of the Americas

TOTAL also owns interests in exploration licenses in Aruba, Colombia, French Guyana and Uruguay.

### Asia-Pacific

**In 2016, TOTAL's production in the zone of Asia-Pacific was 265 kboe/d, representing 11% of the Group's overall production, compared to 258 kboe/d in 2015 and 238 kboe/d in 2014.**

**The two main producing countries in this zone in 2016 were Indonesia and Thailand.**

In **Indonesia**, the Group's production was 140 kboe/d in 2016 compared to 147 kboe/d in 2015 and 130 kboe/d in 2014.

TOTAL's operations in Indonesia are primarily concentrated on the Mahakam license (50%, operator), which in particular includes the Peciko and Tunu gas fields. The Group also has a stake in the Sisi-Nubi gas field (47.9%, operator). The Mahakam license expires in December 2017. The Indonesian government has decided to allocate 100% of the participating interest to Pertamina (operator) from January 1, 2018 onwards, while giving Pertamina the possibility to farm out some interests to TOTAL and its current partner, INPEX. The Group delivers most of its natural gas production to the Bontang LNG plant. These volumes of gas represented more than 80% of the Bontang plant's supply in 2016. To this gas production was added the operated production of oil and condensates from the Handil and Bekapai fields.

– On the Mahakam license, the works aimed at maintaining production on the Tunu, Peciko, South Mahakam, Sisi-Nubi and Bekapai fields continued.

– On the Sebuku license (15%), production from the Ruby gas field is routed by pipeline for processing and separation at the Senipah terminal (operated by TOTAL).  
– TOTAL also holds stakes in two exploration blocks: Mentawai (80%, operator) and Telen (100%).

In addition, the Group holds stakes in blocks with no activity and for which a relinquishment process is underway: South Mandar (49.3%), South Sageri (100%), South West Bird's Head (90%, operator) and South East Mahakam (50%, operator).

In **Thailand**, the Group's production was 60 kboe/d in 2016 compared to 62 kboe/d in 2015 and 60 kboe/d in 2014. This production comes from the offshore gas and condensate field of Bongkot (33.33%). PTT (the Thai state-owned company) purchases all of the natural gas and condensate production. New investments are underway for maintaining the plateau and responding to gas demand.

In **Myanmar**, the Group's production was 21 kboe/d in 2016, compared to 19 kboe/d in 2015 and 17 kboe/d in 2014.

The Yadana field (31.24%, operator), located on the offshore Blocks M5 and M6, primarily produces gas for delivery to PTT for use in Thai power plants. The Yadana field also supplies the domestic market via an offshore pipeline built and operated by MOGE, a Myanmar state-owned company. The LCP-Badamyar project, which includes the installation of the Badamyar field compression and development platform connected to the Yadana facilities, was launched in 2014. Drilling at Badamyar began in November 2016.

In 2014, TOTAL was awarded the deep offshore Block YWB (100%, operator) during the offshore round launched by the local authorities. The PSC was signed in 2015.

In 2015, the Group sold its stake in the offshore Block M11 (47.06%) and entered exploration license A6 (40%) located in the deep offshore area west of Myanmar. A first well was drilled in 2015 on which a natural gas discovery has been made and which requires further evaluation work.

In 2016, TOTAL signed farm-in agreements on the deep offshore licenses MD-02 (40%), MD-04 (40%) and MD-07 (50%).

In **Brunei**, TOTAL operates the Maharaja Lela Jamalulalam offshore gas and condensate field on Block B (37.5%). The Group's production was 18 kboe/d in 2016 compared to 15 kboe/d in 2015 and 2014. The gas is delivered to the Brunei LNG liquefaction plant. Discussions are underway regarding the terms of the unitization of the northern part of the Maharaja Lela Jamalulalam field with the Malaysian part of the field.

On the Maharaja Lela South project, a first debottlenecking phase for the production processing plant was completed in 2015, increasing production capacity by 20% (from 165 Mcf/d to 200 Mcf/d). Offshore, the installation of a third platform was completed at the end of 2015 and the drilling campaign is ongoing. Three wells started production in 2016.

Studies are currently being conducted to reassess the potential of the deep offshore exploration Block CA1 (86.9%, operator), which includes the Jagus East discovery. A well was drilled in 2015, and has confirmed the connection of the Jagus East field with the Gumusut-Kakap reservoirs in Malaysia. Discussions regarding the terms of the unitization of these two reservoirs are underway. They aim to ensure unified governance of the fields while setting out the distribution of costs and production between the parties.

In **Australia**, where TOTAL has had mining rights since 2005, the Group's production was 16 kboe/d in 2016, compared to 4 kboe/d in 2015 and 2014.

- The Ichthys project (30%) involves the development of a gas and condensate field located in the Browse Basin. This development will include a floating platform designed for the production, processing and export of gas, an FPSO (with condensate processing capacity of 100 kb/d) to stabilize and export the condensate, an 889 km gas pipeline and an onshore liquefaction plant (with 8.9 Mt/y LNG and 1.6 Mt/y LPG capacities) at Darwin. The LNG has already been sold, mainly to Asian buyers, under long-term contracts. As per the information provided by the operator, production is expected to start before the end of 2017.
- Gladstone LNG (GLNG) (27.5%) is an integrated gas production, transportation and liquefaction project with a capacity of 7.8 Mt/y from the Fairview, Roma, Scotia and Arcadia fields. Train 1 of the plant started production in 2015 and train 2 in May 2016. An impairment was recognized in the 2015 and 2016 Consolidated Financial Statements.

In **China**, where TOTAL has been operating since 2006, the Group's production was 10 kboe/d in 2016 compared to 11 kboe/d in 2015 and 12 kboe/d in 2014. This production comes from the South Sulige Block (49%) in the Ordos Basin of Inner Mongolia, where the drilling of tight gas development wells is ongoing.

In **Papua New Guinea**, where TOTAL has been active since 2012, the Group owns a stake in Block PRL-15 (40.1%, operator since 2015). The State of Papua New Guinea retains the right to take a stake in the license (when the final investment decision is made) at a maximum level of 22.5%. In this case, TOTAL's stake would be reduced to 31.1%.

Block PRL-15 includes the two discoveries Elk and Antelope, growth areas for the Group. A delineation program of these discoveries is underway. The results of the first wells drilled have confirmed the level of resources in the Elk and Antelope fields. In 2015, the location of the various production sites was announced to the authorities. In 2016, work on the development studies continued and the Group carried out the environmental and societal baseline studies in the country that are necessary for the granting of authorization to start production in the fields.

In 2016, TOTAL signed an agreement to obtain a 35% stake in exploration license PPL339, located in Gulf Province.

In 2016, the authorities awarded TOTAL (100%) deep offshore exploration license PPL576 in the Coral Sea. A multi-client seismic survey was performed on the block during the fourth quarter of 2016.

#### **Rest of the zone of Asia-Pacific**

TOTAL also holds interests in exploration licenses in Malaysia and the Philippines. In Cambodia, TOTAL is working to implement an agreement entered into in 2009 with the Cambodian government for the exploration of Block 3 located in an area of the Gulf of Thailand disputed by the governments of Cambodia and Thailand. This agreement remains conditioned on the establishment by both countries of an appropriate contractual framework.

### 2.1.1.9. Oil and gas acreage

As of December 31, (in thousands of acres at year-end)		2016	
		Undeveloped acreage <sup>(a)</sup>	Developed acreage
Europe and Central Asia (excl. Russia)	Gross	18,416	719
	Net	6,989	154
Russia	Gross	3,584	503
	Net	666	93
Africa (excl. North Africa)	Gross	79,517	806
	Net	46,071	200
Middle East and North Africa	Gross	37,148	2,606
	Net	9,991	371
Americas	Gross	24,569	992
	Net	13,155	468
Asia-Pacific	Gross	44,242	738
	Net	27,373	276
<b>Total</b>	<b>Gross</b>	<b>207,476</b>	<b>6,364</b>
	<b>Net<sup>(b)</sup></b>	<b>104,245</b>	<b>1,562</b>

(a) Undeveloped acreage includes leases and concessions.

(b) Net acreage equals the sum of the Group's equity stakes in gross acreage.

### 2.1.1.10. Number of productive wells

As of December 31, (wells at year-end)		2016	
		Gross productive wells	Net productive wells <sup>(a)</sup>
Europe and Central Asia (excl. Russia)	Oil	415	106
	Gas	259	87
Russia	Oil	232	39
	Gas	489	80
Africa (excl. North Africa)	Oil	2,091	561
	Gas	96	19
Middle East and North Africa	Oil	9,385	609
	Gas	161	44
Americas	Oil	954	322
	Gas	3,585	2,230
Asia-Pacific	Oil	124	55
	Gas	2,802	976
<b>Total</b>	<b>Oil</b>	<b>13,201</b>	<b>1,692</b>
	<b>Gas</b>	<b>7,392</b>	<b>3,436</b>

(a) Net wells equal the sum of the Group's equity stakes in gross wells.

## 2.1.1.11. Number of net productive and dry wells drilled

As of December 31, (wells at year-end)	2016			2015			2014		
	Net productive wells drilled <sup>(a)(b)</sup>	Net dry wells drilled <sup>(a)(c)</sup>	Net total wells drilled <sup>(a)(c)</sup>	Net productive wells drilled <sup>(a)(b)</sup>	Net dry wells drilled <sup>(a)(c)</sup>	Net total wells drilled <sup>(a)(c)</sup>	Net productive wells drilled <sup>(a)(b)</sup>	Net dry wells drilled <sup>(a)(c)</sup>	Net total wells drilled <sup>(a)(c)</sup>
<b>Exploratory</b>									
Europe and Central Asia (excl. Russia)	1.1	1.0	2.1	1.0	4.6	5.6	1.4	0.2	1.6
Russia	-	-	-	-	-	-	-	0.3	0.3
Africa (excl. North Africa)	0.7	-	0.7	0.2	2.1	2.3	1.7	2.3	4.0
Middle East and North Africa	0.8	-	0.8	0.3	0.5	0.8	0.6	1.3	1.9
Americas	2.1	0.8	2.9	1.4	0.6	2.0	2.1	0.3	2.4
Asia-Pacific	1.6	-	1.6	2.0	0.9	2.9	1.2	1.1	2.3
<b>Total</b>	<b>6.3</b>	<b>1.8</b>	<b>8.1</b>	<b>4.9</b>	<b>8.7</b>	<b>13.6</b>	<b>7.0</b>	<b>5.5</b>	<b>12.5</b>
<b>Development</b>									
Europe and Central Asia (excl. Russia)	13.6	0.5	14.1	15.7	0.4	16.1	9.0	-	9.0
Russia	18.7	-	18.7	22.9	-	22.9	28.8	0.8	29.6
Africa (excl. North Africa)	14.6	-	14.6	21.4	-	21.4	24.1	1.0	25.1
Middle East and North Africa	49.3	1.1	50.4	36.6	0.6	37.2	36.6	0.2	36.8
Americas	35.4	-	35.4	60.6	0.1	60.7	128.1	0.2	128.3
Asia-Pacific	151.0	-	151.0	86.9	-	86.9	106.0	0.5	106.5
<b>Total</b>	<b>282.6</b>	<b>1.6</b>	<b>284.2</b>	<b>244.1</b>	<b>1.1</b>	<b>245.2</b>	<b>332.6</b>	<b>2.7</b>	<b>335.3</b>
<b>Total</b>	<b>288.9</b>	<b>3.4</b>	<b>292.3</b>	<b>249.0</b>	<b>9.8</b>	<b>258.8</b>	<b>339.6</b>	<b>8.2</b>	<b>347.8</b>

(a) Net wells equal the sum of the Company's fractional interests in gross wells.

(b) Includes certain exploratory wells that were abandoned, but which would have been capable of producing oil in sufficient quantities to justify completion.

(c) For information: service wells and stratigraphic wells are not reported in this table.

## 2.1.1.12. Wells in the process of being drilled (including wells temporarily suspended)

As of December 31, (wells at year-end)	2016	
	Gross	Net <sup>(a)</sup>
<b>Exploratory</b>		
Europe and Central Asia (excl. Russia)	4	0.9
Russia	-	-
Africa (excl. North Africa)	18	4.6
Middle East and North Africa	2	0.8
Americas	10	3.5
Asia-Pacific	5	1.3
<b>Total</b>	<b>39</b>	<b>11.1</b>
<b>Other wells<sup>(b)</sup></b>		
Europe and Central Asia (excl. Russia)	45	11.8
Russia	111	27.9
Africa (excl. North Africa)	72	21.3
Middle East and North Africa	174	25.2
Americas	46	28.0
Asia-Pacific	421	116.7
<b>Total</b>	<b>869</b>	<b>230.9</b>
<b>Total</b>	<b>908</b>	<b>242.0</b>

(a) Net wells equal the sum of the Group's equity stakes in gross wells. Includes wells for which surface facilities permitting production have not yet been constructed. Such wells are also reported in the table "Number of net productive and dry wells drilled", above, for the year in which they were drilled.

(b) Other wells are developments wells, service wells, stratigraphic wells and extension wells.

### 2.1.1.13. Interests in pipelines

The table below sets forth interests of the Group's entities<sup>(1)</sup> in the main oil and gas pipelines as of December 31, 2016.

Pipeline(s)	Origin	Destination	(%) interest	Operator	Liquids	Gas
<b>Europe and Central Asia</b>						
<b>Azerbaijan</b>						
BTC	Baku (Azerbaijan)	Ceyhan (Turkey, Mediterranean)	5.00		X	
<b>Norway</b>						
Frostpipe (inhibited)	Lille-Frigg, Froy	Oseberg	36.25		X	
Heimdal to Brae Condensate Line	Heimdal	Brae	16.76		X	
Kvitebjorn Pipeline	Kvitebjorn	Mongstad	5.00		X	
Norpipe Oil	Ekofisk Treatment center	Teeside (UK)	34.93		X	
Oseberg Transport System	Oseberg, Brage and Veslefrikk	Sture	12.98		X	
Sleipner East Condensate Pipe	Sleipner East	Karsto	10.00		X	
Troll Oil Pipeline I et II	Troll B et C	Vestprosess (Mongstad refinery)	3.71		X	
Vestprosess	Kollsnes (Area E)	Vestprosess (Mongstad refinery)	5.00		X	
Polarled	Asta Hansteen/Linnorm	Nyhamna	5.11			X
<b>The Netherlands</b>						
Nogat Pipeline	F3-FB	Den Helder	5.00			X
WGT K13-Den Helder	K13A	Den Helder	4.66			X
WGT K13-Extension	Markham	K13 (via K4/K5)	23.00			X
<b>United Kingdom</b>						
Alwyn Liquid Export Line	Alwyn North	Cormorant	100.00	X	X	
Bruce Liquid Export Line	Bruce	Forties (Unity)	43.25		X	
Central Graben Liquid Export Line (LEP)	Elgin-Franklin	ETAP	15.89		X	
Frigg System: UK Line	Alwyn North, Bruce and others	St. Fergus (Scotland)	100.00	X		X
Ninian Pipeline System	Ninian	Sullom Voe	16.00		X	
Shearwater Elgin Area Line (SEAL)	Elgin-Franklin, Shearwater	Bacton	25.73			X
SEAL to Interconnector Link (SILK)	Bacton	Interconnector	54.66	X		X
<b>Africa (excl. North Africa)</b>						
<b>Gabon</b>						
Mandji Pipes	Mandji fields	Cap Lopez Terminal	100.00 <sup>(a)</sup>	X	X	
Rabi Pipes	Rabi fields	Cap Lopez Terminal	100.00 <sup>(a)</sup>	X	X	
<b>Nigeria</b>						
O.U.R	Obite	Rumuji	40.00	X		X
NOPL	Rumuji	Owaza	40.00	X		X
<b>Middle East and North Africa</b>						
<b>Qatar</b>						
Dolphin	North Field (Qatar)	Taweelah-Fujairah-Al Ain (United Arab Emirates)	24.50			X
<b>Americas</b>						
<b>Argentina</b>						
TGN	Network (Northern Argentina)		15.38			X
TGM	TGN	Uruguayana (Brazil)	32.68			X
<b>Brazil</b>						
TBG	Bolivia-Brazil border	Porto Alegre via São Paulo	9.67			X
TSB	Argentina-Brazil border (TGM) Porto Alegre	Uruguayana (Brazil) Canoas	25.00			X
<b>Asia-Pacific</b>						
<b>Australia</b>						
GLNG	Fairview, Roma, Scotia, Arcadia	GLNG (Curtis Island)	27.50			X
<b>Myanmar</b>						
Yadana	Champ de Yadana field	Ban-I Tong (Thai border)	31.24	X		X

(a) Interest of Total Gabon. The Group has a financial interest of 58.28% in Total Gabon.

(1) Excluding equity affiliates, except for the Yadana and Dolphin pipelines.



## 2.1.2. Gas

The activities of TOTAL in the gas business have a primary objective to contribute to the growth of the Group by ensuring market outlets for its current and future natural gas production.

Beyond the production and liquefaction of natural gas (refer to point 2.1.1 of this chapter), TOTAL actively markets natural gas, which is sold either by pipeline or in the form of Liquefied Natural Gas (LNG) and develops a downstream portfolio for its trading and shipping activities, as well as regasification terminals.

In order to enhance the value of the Group's gas resources, the activities of Gas also include the trading and marketing of natural gas, LNG, Liquefied Petroleum Gas (LPG) and electricity as well as shipping of LNG and LPG. The Group also has stakes in infrastructure companies (including regasification terminals, natural gas transportation and storage, and power plants) necessary to implement its strategy.

### 2.1.2.1. Purchases, sales and shipping of LNG

A pioneer in the LNG industry, TOTAL is today one of the world's leading players<sup>(1)</sup> in the sector and has sound and diversified positions both in the upstream and downstream portions of the LNG chain. LNG development is a key element of the Group's strategy, strengthening its positions in most major production zones and markets.

Through its stakes in liquefaction plants located in Qatar, the United Arab Emirates, Oman, Nigeria, Norway, Yemen, Angola and Australia and its gas supply agreement with the Bontang plant in Indonesia, the Group markets LNG in all global markets. In 2016, the share of LNG production sold by TOTAL was 11 Mt, compared to 10.2 Mt in 2015 and 12.2 Mt in 2014. The reduction between 2014 and 2015 was due to *force majeure* being declared in 2015 for the Yemen LNG<sup>(2)</sup> joint venture due to the deterioration of security conditions. The growth of LNG production sold by TOTAL over the coming years is expected to be ensured by the Group's liquefaction projects under construction in Australia and Russia and by projects currently under consideration, including a new project in Papua New Guinea and the expansion of the Nigeria LNG plant.

In January 2017, TOTAL finalized the acquisition of approximately 23% of Tellurian Investments Inc. ("Tellurian"), announced in December 2016, in order to develop an integrated gas project, from the acquisition of gas produced at a competitive cost in the United States to the delivery of LNG to international markets from the Driftwood LNG terminal. Driftwood LNG is in the engineering design and pre-filing phase.

### Long-term Group LNG purchases and sales

TOTAL acquires long-term LNG volumes mainly from liquefaction projects in which the Group holds an interest, including Qatargas 2 (Qatar), Yemen LNG (Yemen), Nigeria LNG (Nigeria) and Snøhvit (Norway). These volumes support the expansion of the Group's worldwide LNG portfolio.

Since 2009, a growing portion of the long-term volume purchased by the Group that was initially intended for delivery to North American and European markets has been diverted to more buoyant Asian markets.

New LNG sources are expected to support the growth of the Group's LNG portfolio, including Ichthys LNG (Australia), Yamal LNG<sup>(3)</sup> (Russia), trains 3 and 5 of Sabine Pass LNG (United States) and Cameron LNG (United States).

TOTAL has entered into several significant long-term agreements throughout the world for the sale of LNG from the Group's global LNG portfolio, notably in China, Indonesia, Japan, South Korea and Spain.

### LNG shipping

As part of its LNG transport activities, TOTAL uses two long-term chartered LNG tankers: since 2006, the *Arctic Lady*, with a capacity of 145,000 m<sup>3</sup>, and since 2011, the *Meridian Spirit*, with a capacity of 165,000 m<sup>3</sup>, primarily for the transport of volumes from Snøhvit in Norway.

TOTAL continues to develop its fleet. The Group also signed a long-term charter agreement in 2013 with SK Shipping and Marubeni for two 180,000 m<sup>3</sup> LNG tankers. The vessels will serve to fulfill the purchase obligations of Total Gas & Power Limited, including commitments relating to the Ichthys and Sabine Pass projects. They will be among the largest LNG tankers to navigate the Panama Canal and are expected to be delivered in 2017 and 2018 respectively.

### 2.1.2.2. Trading

In 2016, TOTAL continued its strategy downstream from natural gas and LNG production by developing its trading, marketing and logistics activities. The aim of this strategy is to optimize access for the Group's current and future production to markets supplied based on long-term contracts and to markets open to international competition (with short-term contracts and spot sales). Furthermore, the Group is developing new LNG markets by promoting LNG import infrastructure projects such as described in point 2.1.2.4, below. The Group also has operations in electricity trading and the marketing of LPG and petcoke. Since 2016, TOTAL has also been active in the marketing of sulfur. In 2016, the Group stopped its coal trading activities.

The trading teams are located in London, Houston, Geneva and Singapore.

### Gas and electricity

TOTAL is pursuing gas and electricity trading operations in Europe and North America in order to sell the Group's production, to supply its marketing subsidiaries and to support other entities of the Group.

In **Europe**, TOTAL traded 887 Bcf (25.1 Bcm) of natural gas in 2016, compared to 849 Bcf (24 Bcm) in 2015 and 911 Bcf (25.8 Bcm) in 2014. The Group also traded 49.1 TWh of electricity in 2016, compared to 41.1 TWh in 2015 and 44.8 TWh in 2014, mainly from external sources.

In **North America**, TOTAL traded 356 Bcf (10.1 Bcm) of natural gas in 2016 from its own production or from external resources compared to 441 Bcf (12.5 Bcm) in 2015 and 593 Bcf (16.8 Bcm) in 2014.

(1) Company data, based on upstream and downstream LNG portfolios in 2016.

(2) The Yemen LNG plant has been shut down since April 2015. For more information, refer to point 2.1.1.8 of this chapter.

(3) OAO Yamal LNG, which is developing the Yamal LNG project, is held by PAO Novatek (50.1%), Total E&P Yamal (20%), CNODC (20%), a subsidiary of China National Petroleum Corporation, and Silk Road Fund (9.9%). For information on international economic sanctions concerning Russia, refer to point 1.9 of chapter 4.

### LNG

TOTAL operates LNG trading activities through both spot sales and long-term contracts such as those described in point 2.1.2.1 above. Significant sales and purchase agreements (SPAs) have permitted appreciable development of the Group's activities in LNG trading, especially in the Asian markets (China, South Korea, India and Japan). The spot and fixed-term LNG portfolio allows TOTAL to supply gas to its main customers worldwide, while retaining a sufficient degree of flexibility to react to market opportunities.

In 2016, TOTAL purchased 51 contractual cargoes under long term contracts (from Qatar, Nigeria and Norway) and 19 spot or medium term cargoes, compared to, respectively, 64 and 20 in 2015 and 88 and 7 in 2014. Deliveries from Yemen LNG have been interrupted since April 2015.

### LPG

In 2016, TOTAL traded nearly 5.3 Mt of LPG (propane and butane) worldwide, compared to 5.8 Mt in 2015 and 5.5 Mt in 2014. Nearly 28% of these quantities come from fields or refineries operated by the Group. This trading activity was conducted by means of 9 time-chartered vessels. In 2016, 323 voyages were necessary for transporting the negotiated quantities, including 217 journeys carried out by TOTAL's time-chartered vessels and 106 journeys by spot-chartered vessels.

### Petcoke and sulfur

TOTAL has been trading petcoke produced since 2011 by the Port Arthur refinery in the **United States**. 1.1 Mt of petcoke were sold on the international market in 2016, compared to 1.1 Mt in 2015 and 1.3 Mt in 2014.

In 2014, TOTAL began trading petcoke from the Jubail refinery in **Saudi Arabia**. In 2016, 890 kt were sold, compared to 720 kt in 2015 and 100 kt in 2014.

Petcoke is sold to cement producers and electricity producers mainly in India, as well as in Mexico, Brazil and other Latin American countries and in Turkey.

In 2016, TOTAL sold 0.7 Mt of sulfur, mainly from its refineries' production.

### 2.1.2.3. Marketing

To optimize its position throughout the value chain and to leverage the synergies from the Group's other activities, TOTAL has been developing the business of marketing natural gas and electricity to end users.

In the **United Kingdom**, TOTAL markets gas and electricity to the industrial and commercial segments through its subsidiary Total Gas & Power Ltd. In 2016, the volumes of gas sold were 143 Bcf (4.0 Bcm), compared to 140 Bcf (4.0 Bcm) in 2015 and 135 Bcf (3.8 Bcm) in 2014. Electricity sales were 7.4 TWh in 2016, compared to 6.0 TWh in 2015 and 5.3 TWh in 2014.

In **France**, TOTAL operates in the natural gas market through its marketing subsidiary Total Énergie Gaz, the sales of which were 77 Bcf (2.2 Bcm) in 2016, compared to 84 Bcf (2.4 Bcm) in 2015 and 95 Bcf (2.7 Bcm) in 2014.

In **Germany**, Total Energie Gas GmbH, a marketing subsidiary of TOTAL, marketed 29 Bcf (0.9 Bcm) of gas in 2016 to industrial and commercial customers, compared to 31 Bcf (0.9 Bcm) in 2015 and 24 Bcf (0.7 Bcm) in 2014.

In 2016, the volumes of gas delivered to the industrial and commercial segments were 4 Bcf (0.1 Bcm) in **Belgium** (Total Gas & Power Belgium) and 9 Bcf (0.3 Bcm) in the **Netherlands** (Total Gas & Power Nederland B.V.), an increase with respect to previous years, these two subsidiaries having started marketing gas in 2013.

In 2015, the natural gas marketing subsidiaries in France, Germany, Belgium and the Netherlands extended their activities to the marketing of electricity to industrial and commercial consumers. The volumes sold in 2016 are still modest.

As part of its development strategy for its gas and electricity marketing activities, TOTAL finalized in September 2016 the acquisition of Lampiris, the third-largest gas and electricity supplier in Belgium with more than 750,000 metering points. Lampiris is also active in France, where it markets gas and electricity to the residential and commercial segments.

In **Spain**, TOTAL markets natural gas to the industrial and commercial segments through Cepsa Gas Comercializadora, in which it holds a 35% stake. In 2016, the volumes of gas sold reached 100 Bcf (2.8 Bcm), compared to 105 Bcf (3.0 Bcm) in 2015 and 94 Bcf (2.7 Bcm) in 2014.

In **Argentina**, the subsidiary Total Gas Marketing Cono Sur oversees the marketing of gas on behalf of Total Austral, the Group's production subsidiary in Argentina. In 2016, the volumes of gas sold reached 142 Bcf (4.0 Bcm), compared to 128 Bcf (3.6 Bcm) in 2015 and 131 Bcf (3.7 Bcm) in 2014.

The Group also holds stakes in the marketing companies that are associated with the LNG regasification terminals located at Altamira in **Mexico** and Hazira in **India**.

### 2.1.2.4. Gas facilities

Downstream from its natural gas and LNG production activities, TOTAL holds stakes in natural gas transport networks and LNG regasification terminals.

### Transportation and storage of natural gas

The Group holds stakes in several natural gas transportation companies located in **Brazil** and **Argentina**. These companies are facing a difficult operational and financial environment in Argentina.

In **France**, TOTAL sold in February 2016 its stake in Géosud, which held an interest in Géométhane, a company that owns and operates several natural gas storage caverns in Manosque.

### LNG regasification

TOTAL has entered into agreements to obtain long-term access to LNG regasification capacity worldwide: in the Americas (United States, Mexico and Brazil), Europe (France and the United Kingdom), Asia (India) and Africa (Côte d'Ivoire). This diversified market presence allows the Group to access new liquefaction projects by becoming a long-term buyer of a portion of the LNG produced, thereby strengthening TOTAL's LNG supply portfolio.

In **France**, TOTAL holds a 27.5% stake in the company Fosmax and has access to a regasification capacity of 78 Bcf/y (2.25 Bcm/y). The terminal received 54 vessels in 2016, compared to 46 in 2015 and 2014.

TOTAL holds a 9.99% stake in Dunkerque LNG, which operates an LNG receiving terminal with a capacity of 459 Bcf/y (13 Bcm/y). Trade agreements have also been signed that allow TOTAL to reserve up to 2 Bcm/y of regasification capacity over a 20-year term. Commercial operations started on January 1, 2017.

In the **United Kingdom**, through its equity interest in the Qatargas 2 project, TOTAL holds an 8.35% stake in the South Hook LNG receiving terminal with a total capacity of 742 Bcf/y (21 Bcm/y) and an equivalent access right to the regasification capacity. The terminal received 67 cargoes in 2016, compared to 84 in 2015 and 67 in 2014.

In **Mexico**, TOTAL has reserved 25% of the regasification capacity of the Altamira receiving terminal, *i.e.*, 59 Bcf/y (1.7 Bcm/y), through its 25% stake in Gas del Litoral.

In the **United States**, TOTAL has reserved a regasification capacity of approximately 353 Bcf/y (10 Bcm/y) in the Sabine Pass terminal (Louisiana) for a 20-year period until 2029. In 2012, TOTAL and Sabine Pass Liquefaction (SPL) signed agreements allowing SPL to gradually obtain access to TOTAL's reserved capacity. Access to 38 Bcf/y commenced in 2012, growing to 195 Bcf/y from the start-up of train 3 scheduled in 2017 and plateauing at substantially all of TOTAL's capacity from the start-up of train 5 scheduled in 2019. In return, SPL will pay TOTAL a fee linked to the capacity assigned.

In **India**, TOTAL holds a 26% stake in the Hazira receiving terminal, with a regasification capacity of 244 Bcf/y (6.9 Bcm/y). Located in the Gujarat state, this merchant terminal with operations that cover both LNG regasification and gas marketing, received 60 vessels (equivalent) in 2016, compared to 57 in 2015 and 45 in 2014.

In **Côte d'Ivoire**, a consortium led by TOTAL (34%, operator) has been assigned responsibility for developing and operating an LNG regasification terminal in Abidjan with a capacity of 3 Mt/y and a start-up scheduled in 2018.

In **Brazil**, as part of its strategic alliance with Petrobras, the definitive contracts of which were signed in February 2017, TOTAL expects to proceed with the acquisition from Petrobras of regasification capacity in the Bahia LNG terminal.

#### 2.1.2.5. Electricity generation

In a context of increasing global demand for electricity, TOTAL has developed expertise in the power generation sector, especially through cogeneration and combined-cycle power plant projects.

In **Abu Dhabi**, the Taweelah A1 gas-fired power plant, which is owned by Gulf Total Tractebel Power Company (TOTAL, 20%), combines electricity generation and water desalination. The plant, in operation since 2003, currently has a net power generation capacity of 1,600 MW and a water desalination capacity of 385,000 m<sup>3</sup> per day. The plant's production is sold to Abu Dhabi Water and Electricity Company (ADWEC) as part of a long-term agreement.

In **Thailand**, in September 2016 TOTAL sold the 28% stake it held in Eastern Power and Electric Company Ltd which operates the Bang Bo gas-fired combined cycle power plant with a capacity of 350 MW.

In **Brazil**, as part of its strategic alliance with Petrobras, TOTAL expects to proceed with the acquisition from Petrobras of a 50% interest in two co-generation plants located in the Bahia area.

#### 2.1.2.6. End of coal production and trading

Following completion of the sale in 2015 of its subsidiary Total Coal South Africa, the Group ceased its coal production activities. In addition, in 2016 the Group ended its coal trading activities.

## 2.2. Refining & Chemicals segment

Refining & Chemicals is a large industrial segment that encompasses refining, petrochemicals and specialty chemicals operations. It also includes the activities of Trading & Shipping.

As part of the One Total new organization, Group biomass activities will be reported within the Refining & Chemicals segment as of financial year 2017 (refer to point 1.3 of this chapter). They were previously part of New Energies within the Marketing & Services segment.

Among the world's 10 largest integrated producers<sup>(1)</sup>

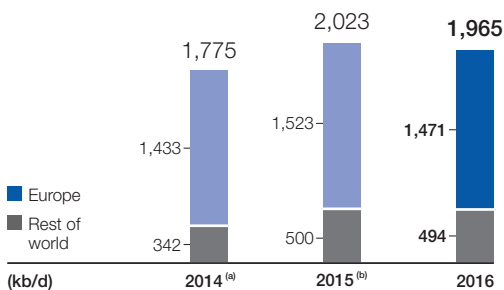
Refining capacity of **2.0** Mb/d at year-end 2016

One of the leading traders of oil and refined products worldwide

**\$ 1.6** billion of organic investments<sup>(2)</sup> in 2016

**50,433** employees present

### Refinery throughput<sup>(3)</sup>



- (a) Excluding the condensate splitters of Port Arthur and Daesan.  
(b) Since 2015, Port-Arthur and Daesan condensate splitters are integrated in the Group's refining capacity and the 2015 data have been restated.

Refinery throughput decreased by 3% for the full-year 2016 compared to 2015, notably due to shutdowns in Europe and the US in the second quarter and the sale of the Schwedt refinery in Germany in the fourth quarter 2015.

### Refining & Chemicals segment financial data

(M\$)	2016	2015	2014
Non-Group sales	65,632	70,623	106,124
Adjusted operating income <sup>(a)</sup>	4,373	5,649	2,739
Adjusted net operating income <sup>(a)</sup>	4,201	4,889	2,489
<i>of which specialty chemicals</i>	581	496	629

(a) Adjusted results are defined as income at replacement cost, excluding non-recurring items, and excluding the impact of fair value changes.

The ERMI average was 34 \$/t for the full-year 2016, a decrease of 30% compared to the high level of 2015, in the context of high inventories of refined products. Petrochemicals continued to benefit from a favorable environment in 2016.

Adjusted net operating income from the Refining & Chemicals segment was \$4,201 million for the full-year 2016, a decrease of 14% compared to 2015 essentially due to the decrease in refining margins. Petrochemicals continued to generate good results, notably due to the strong contribution from the Group's major integrated platforms in Asia and the Middle East.

(1) Based on publicly available information, production capacities at year-end 2015.

(2) Organic investments = net investments, excluding acquisitions, divestments and other operations with non-controlling interests (refer to point 3.1 of this chapter).

(3) Includes share of TotalErg, as well as refineries in Africa and the French Antilles that are reported in the Marketing & Services segment.

## 2.2.1. Refining & Chemicals

Refining & Chemicals includes the Group's refining, petrochemicals and specialty chemicals businesses:

- the petrochemicals business includes base petrochemicals (olefins and aromatics) and polymer derivatives (polyethylene, polypropylene, polystyrene and hydrocarbon resins); and
- the specialty chemicals business covers elastomer processing. The sales of electroplating chemistry (Atotech) and adhesives (Bostik) activities were completed in early 2017 and in 2015, respectively.

The volume of its Refining & Chemicals activities places TOTAL among the top ten integrated chemical producers in the world<sup>(1)</sup>.

The strategy of Refining & Chemicals integrates a constant requirement of safety, a core value of the Group, and priority given to respect of the environment. In a context of rising worldwide demand for oil and petrochemicals driven by non-OECD countries and the entry of new capacities into the market, the strategy involves:

- improving competitiveness of refining and petrochemicals activities by making optimal use of industrial means of production, concentrating investments on large integrated platforms and adapting production capacity to changes in demand in Europe;
- developing petrochemicals in the United States and the Middle East by exploiting the proximity of advantaged oil and gas resources in order to supply growth markets, in particular Asia; and
- innovating in low-carbon solutions/products by developing biofuels and biopolymers as well as materials and solutions contributing to the energy efficiency of the Group's customers, in particular in the automotive market.

### 2.2.1.1. Refining and petrochemicals

TOTAL's refining capacity was 2,011 kb/d as of December 31, 2016, compared to 2,247 kb/d at year-end 2015 and 2,187 kb/d at year-end 2014. TOTAL has equity stakes in 19 refineries (including nine operated by companies of the Group), located in Europe, the United States, Africa, the Middle East and Asia.

The Refining & Chemicals segment manages refining operations located in Europe (excluding TotalErg in Italy), the United States, the Middle East, Asia and Africa<sup>(2)</sup> with a capacity of 1,962 kb/d at year-end 2016, *i.e.*, 98% of the Group's total capacity.

The petrochemicals businesses are located mainly in Europe, the United States, Qatar, South Korea and Saudi Arabia. Most of these sites are either adjacent to or connected by pipelines to Group refineries. As a result, TOTAL's petrochemical operations are integrated within its refining operations, thereby maximizing synergies.

Between 2011 and 2016, the Group reduced its production capacities in Europe by 20%, thereby fully meeting the target it had set itself for 2017. The year 2016 saw the continuation of plans to adapt the Lindsey refinery in the United Kingdom with closure at the end of September of one of the two atmospheric distillation towers, and the La Mède refinery in France with stoppage in December of the crude oil treatment prior to the transformation of the site into a

bio-refinery scheduled for 2018. TOTAL also continued to develop its major investment project launched in 2013 on the integrated Antwerp platform in Belgium, which is intended to improve the site's conversion rate.

### Activities by geographical area

#### Europe

TOTAL is the largest refiner in Western Europe<sup>(3)</sup>.

**Western Europe** accounts for 72% of the Group's refining capacity, *i.e.*, 1,454 kb/d at year-end 2016, compared to 1,699 kb/d at year-end 2015 and 1,736 kb/d at year-end 2014, in line with the Group's target of reducing capacity in Europe.

The Group operates eight refineries in Western Europe (one in Antwerp, Belgium, five in France in Donges, Feyzin, Gonfreville, Grandpuits and La Mède, one in Immingham in the United Kingdom and one in Leuna, Germany) and owns stakes in the Vlissingen refinery (Zeeland) in the Netherlands and the Trecate refinery in Italy through its interest in TotalErg.

The Group's main petrochemical sites in Europe are located in Belgium, in Antwerp (steam crackers, aromatics, polyethylene) and Feluy (polyolefins, polystyrene), and in France, in Carling (polyethylene, polystyrene), Feyzin (steam cracker, aromatics), Gonfreville (steam crackers, aromatics, styrene, polyolefins, polystyrene) and Lavéra (steam cracker, aromatics, polypropylene). Europe accounts for 49% of the Group's petrochemicals capacity, *i.e.*, 10,383 kt at year-end 2016, compared to 10,394 kt at year-end 2015 and 10,909 kt at year-end 2014.

- In **France**, the Group continues to adapt its refining capacity and to improve its operational efficiency against the backdrop of structural decline in the demand for petroleum products in Europe.

In 2016, TOTAL continued the significant modernization plan announced in April 2015 for its refining facilities in France, in particular at La Mède, with an investment decision made in 2015 for over €200 million to transform the site and in particular create the first bio-refinery in France. The first step relating to this investment took place at the end of 2016 when the treatment of crude oil was ended. The industrial transformation of La Mède will allow TOTAL to respond to the growing demand for biofuel in Europe. Other activities, such as a logistics and storage platform, a solar energy farm, a training center and an AdBlue production plant<sup>(4)</sup>, will also be developed on the site.

In Donges, the €400 million investment project for the construction of intermediate feedstock desulfurization units and hydrogen production units is being considered. This program requires the re-routing of the railroad track that currently crosses the refinery. A three-party memorandum of intent to fund this re-routing work between the state, local authorities and TOTAL was signed at the end of 2015.

In 2014, the Group completed its industrial plan, launched in 2009, to reconfigure the Gonfreville refinery in Normandy by commissioning a new diesel desulfurization unit. In addition, the Group modernized production of specialty products on the site and decreased the base oil production capacity.

(1) Based on publicly available information, refining and petrochemicals production capacities at year-end 2015.

(2) Earnings related to certain refining assets in Africa and to the TotalErg joint venture are reported in the results of the Marketing & Services segment.

(3) Based on publicly available information, 2015 refining capacities.

(4) Fuel additive intended for road transport and designed to lower nitrogen oxide (NOx) compound emissions.

In petrochemicals, the Group reconfigured the Carling platform in Lorraine. Steam cracking ended in October 2015. New hydrocarbon resin and compound polypropylene production units were commissioned in 2016.

- In **Germany**, TOTAL operates the Leuna refinery (100%). In 2015, the Group completed the sale of its stake in the Schwedt refinery (16.7%) and acquired a majority stake in Polyblend, a manufacturer of polyolefin compounds that are mainly used in the automotive industry.
- In **Belgium**, the Group launched a major project in 2013 to modernize its Antwerp platform which is expected to be commissioned in 2017:
  - new conversion units in response to the shift in demand towards lighter petroleum products with a very low sulfur content,
  - a new unit to convert part of the combustible gases recovered from the refining process into raw materials for the petrochemical units.In addition, the Group is developing a project to enable greater flexibility on one of the steam-cracking units in order to process European ethane as from 2017.
- In the **United Kingdom**, TOTAL decreased the capacity of the Lindsey refinery by half in 2016, reducing it to 5.5 Mt/y. The investment plan also focused on improving the conversion ratio, adapting logistics and simplifying the refinery's organization, thereby lowering the site's break-even point.

### North America

The Group's main sites in North America are located in Texas, at Port Arthur (refinery, steam cracker), Bayport (polyethylene) and La Porte (polypropylene), and in Louisiana, at Carville (styrene, polystyrene).

At Port Arthur, TOTAL holds at the same site a 100% interest in a 178 kb/d capacity refinery and a 40% stake in BASF Total Petrochemicals (BTP), which has a condensate splitter and a steam cracker. The Group continues to work on strengthening the synergies between these two plants.

A pipeline connecting the Port Arthur refinery to the Sun terminal in Nederland was commissioned in 2014 to facilitate access to all domestic crudes, which are priced advantageously compared to the international market. Following investments to adapt its furnaces and the construction of a tenth ethane furnace, which was commissioned in 2014, BTP's cracker can produce more than 1 Mt/year of ethylene, including more than 85% from advantaged feedstock (ethane, propane, butane). BTP thus benefits from favorable market conditions in the United States. In addition, in mid-2016, TOTAL completed detailed studies (FEED) for the construction of a new ethane steam cracker with an ethylene production capacity of 1 Mt/y on the Port Arthur site, in synergy with the refinery and BTP steam cracker.

### Asia, the Middle East and Africa

TOTAL is continuing to expand in growth areas and is developing sites in countries with favorable access to raw materials. The Group

has high-level platforms in these markets which are ideally positioned for growth.

In **Saudi Arabia**, TOTAL has a 37.5% stake in the company SATORP (Saudi Aramco Total Refining and Petrochemical Company), which operates the Jubail refinery. It has been fully operational since mid-2014 and technical and financial completions were reached in June 2016. This refinery has an initial capacity of 400 kb/d and is situated close to Saudi Arabia's heavy crude oil fields. The refinery's configuration enables it to process these heavy crudes and sell fuels and other light products that meet strict specifications and are mainly intended for export. The refinery is also integrated with petrochemical units: a 700 kt/y paraxylene unit, a 200 kt/y propylene unit, and a 140 kt/y benzene unit.

In **China**, TOTAL holds a 22.4% stake in WEPEC, a company that operates a refinery located in Dalian. Discussions are underway to sell this stake to the Chinese partners of the joint venture.

The Group is also active through its polystyrene plant in Foshan in the Guangzhou region and its polystyrene plant in Ningbo in the Shanghai region, each with a capacity of 200 kt/y.

In **South Korea**, TOTAL has a 50% stake in Hanwha Total Petrochemicals Co., Ltd. ("HTC"), which operates a petrochemical complex in Daesan (condensate splitter, steam cracker, styrene, paraxylene, polyolefins). Following the launch in 2014 of new aromatics (paraxylene and benzene) and polymer units (EVA2), HTC continued to expand its activities in 2015 with debottlenecking of the steam cracker and a styrene unit thereby raising its ethylene production capacity to 1.09 Mt/y and styrene production capacity to 1.04 Mt/y. At the end of 2016, the EVA2 unit was debottlenecked. In 2016, the Group benefited from these investments in a favorable economic environment.

In **Qatar**, the Group holds interests<sup>(1)</sup> in two ethane-based steam crackers (Qapco, Ras Laffan Olefin Cracker – RLOC) and four polyethylene lines (Qapco, Qatofin), including the Qatofin linear low-density polyethylene plant in Messaied with a capacity of 550 kt/y and a 300 kt/y low-density polyethylene line operated by Qapco, which started up in 2012. The Group is considering the debottlenecking of these sites to optimize benefits from the available ethane in the region.

TOTAL holds a 10% stake in the Ras Laffan condensate refinery, the capacity of which increased to 300 kb/d following completion of the project to double the refinery's capacity; the new facilities were commissioned in late 2016.

In Africa, the Group holds interests in four refineries (Cameroon, Côte d'Ivoire, Senegal, South Africa) after the sale of its interest in the refinery in Gabon in 2016. Refining & Chemicals provides technical assistance for two of these refineries: the Natref refinery with a capacity of 109 kb/d in **South Africa** and the SIR refinery with a capacity of 80 kb/d in **Côte d'Ivoire**.

(1) TOTAL shareholdings: Qapco (20%); Qatofin (49%); RLOC (22.5%).

## Crude oil refining capacity

The table below sets forth TOTAL's crude oil refining capacity<sup>(a)</sup>:

### As of December 31

(kb/d)	2016	2015	2014
Nine refineries operated by Group companies			
Normandy-Gonfreville (100%)	253	247	247
Provence-La Mède (100%)	- <sup>(b)</sup>	153	153
Donges (100%)	219	219	219
Feyzin (100%)	109	109	109
Grandpuits (100%)	101	101	101
Antwerp (100%)	338	338	338
Leuna (100%)	227	227	227
Lindsey-Immingham (100%)	109	207	207
Port-Arthur (100%) and BTP (40%) <sup>(c)</sup>	202	198	169
<b>Subtotal</b>	<b>1,558</b>	<b>1,799</b>	<b>1,770</b>
Other refineries in which the Group has equity stakes <sup>(d)</sup>	453	448	417
<b>Total</b>	<b>2,011</b>	<b>2,247</b>	<b>2,187</b>

(a) Capacity data based on refinery process unit stream-day capacities under normal operating conditions, less the impact of shutdown for regular repair and maintenance activities averaged over an extended period of time.

(b) Crude oil processing stopped indefinitely at the end of 2016.

(c) The condensate splitter held by the joint venture between TOTAL 40% and BASF 60% located in Port-Arthur refinery has been taken into account since end 2015.

(d) TOTAL's share in the 10 refineries in which it has equity stakes as of December 31, 2016 ranging from 10% to 55% (one each in the Netherlands, China, Korea, Qatar, Saudi Arabia, Italy and four in Africa). In addition to the sale of its participation in the Schwedt refinery in November 2015 and to the sale of its 50% stake in Société Anonyme de la Raffinerie des Antilles (SARA) in Martinique in May 2015, TOTAL completed in December 2016 the sale of its stake in the SOGARA refinery in Gabon. In addition, the condensate splitter of Daesan in Korea has been taken into account since end 2015, for a capacity of 79 kb/d (in TOTAL share of 50%).

## Refined products

The table below sets forth by product category TOTAL's net share<sup>(a)</sup> of refined quantities produced at the Group's refineries:

(kb/d)	2016	2015 <sup>(c)</sup>	2014 <sup>(d)</sup>
Gasoline	324	346	344
Aviation fuel <sup>(b)</sup>	182	190	148
Diesel and heating oils	795	825	787
Heavy fuels	140	131	134
Other products	430	439	329
<b>Total</b>	<b>1,871</b>	<b>1,931</b>	<b>1,742</b>

(a) For refineries not 100% owned by TOTAL, the production shown is TOTAL's equity share in the site's overall production.

(b) Avgas, jet fuel and kerosene.

(c) Since 2015, the condensate splitters of Port Arthur and Daesan are integrated in the refining capacities and 2015 data have been restated.

(d) Excluding the condensate splitters of Port Arthur and Daesan.

## Utilization rate

The tables below set forth the utilization rate of the Group's refineries:

On crude and other feedstock <sup>(a) (b)</sup>	2016	2015 <sup>(c)</sup>	2014 <sup>(d)</sup>
France	81%	81%	77%
Rest of Europe	92%	94%	88%
Americas	97%	111%	106%
Asia and the Middle East	86%	80%	50%
Africa	85%	84%	77%
<b>Average</b>	<b>87%</b>	<b>88%</b>	<b>81%</b>

(a) Including equity share of refineries in which the Group has a stake.

(b) Crude + crackers' feedstock/distillation capacity at the beginning of the year.

(c) Since 2015, the condensate splitters of Port Arthur and Daesan are integrated in the refining capacities and 2015 data have been restated.

(d) Excluding the condensate splitters of Port Arthur and Daesan.

On crude <sup>(a) (b)</sup>	2016	2015	2014
Average	85%	86%	77%

(a) Including equity share of refineries in which the Group has a stake.

(b) Crude/distillation capacity at the beginning of the year.

## Petrochemicals: breakdown of TOTAL's main production capacities

As of December 31

(in thousands of tons)

		2016			2015		2014	
	Europe	North America	Asia and Middle East <sup>(a)</sup>	Worldwide	Worldwide	Worldwide	Worldwide	
Olefins <sup>(b)</sup>	4,373	1,525	1,571	7,468	7,433	7,791	7,791	
Aromatics <sup>(c)</sup>	2,903	1,512	2,429	6,844	6,783	6,773	6,773	
Polyethylene	1,120	445	773	2,338	2,338	2,338	2,338	
Polypropylene	1,350	1,200	400	2,950	2,950	2,950	2,950	
Polystyrene	637	700	408	1,745	1,745	1,805	1,805	
Other <sup>(d)</sup>			63	63	63	63	63	
<b>Total</b>	<b>10,383</b>	<b>5,382</b>	<b>5,643</b>	<b>21,407</b>	<b>21,312</b>	<b>21,720</b>	<b>21,720</b>	

(a) Including interests in Qatar, 50% of Hanwha Total Petrochemicals Co. Ltd. and 37.5% of SATORP in Saudi Arabia.

(b) Ethylene + propylene + butadiene.

(c) Including monomer styrene.

(d) Mainly monoethylene glycol (MEG) and cyclohexane.

### Development of new avenues for the production of fuels and polymers

TOTAL is exploring new ways to monetize carbon resources, conventional or otherwise (natural gas, biomass, waste). These projects are part of the Group's commitment to building a diversified energy mix generating lower CO<sub>2</sub> emissions.

As regards biomass development, TOTAL is pursuing several industrial and exploratory projects. The scope of these developments is broad since they entail defining access to the resource (nature, sustainability, location, supply method, transport), the nature of the molecules and target markets (fuels, petrochemicals, specialty chemicals) and the most appropriate, efficient and environmentally friendly conversion processes.

#### Biomass to fuels

In Europe, TOTAL produces biofuel, notably hydrotreated vegetable oils (HVO) for incorporation into diesel, and ether produced from ethanol and isobutene (ETBE) for incorporation into gasoline.

In 2016, the Group blended, at its European refineries and several depots <sup>(1)</sup>, 424 kt of ethanol <sup>(2)</sup> in gasoline, and 1,872 kt of fatty-acid-methyl-ester (FAME) or HVO <sup>(2)</sup> in diesel.

In addition, as part of the La Mède refinery transformation program announced in 2015, the Group will construct the first bio-refinery in France. Work is expected to begin in 2017 with a view to reaching a production capacity of almost 500 kt/y of biofuel, mainly high-quality biodiesel (HVO), but also biojet and petrochemical bio-feedstocks. This will therefore allow the La Mède plant to meet the growing biofuel market. Furthermore, the Group entered into a partnership in 2016 with Suez to increase the supply and the recycling of used oil, which could then be processed at La Mède.

In 2016, TOTAL engaged in extensive research activity targeting the emergence of new biofuel solutions. Construction now underway as part of the BioTFuel consortium of a pilot demonstration unit on the Dunkirk site is expected to lead to commencement in 2017 of a gasification test program for conversion of biomass into fungible, sulfur-free fuels.

#### Biomass to polymers

TOTAL is actively involved in developing activities associated with the conversion of biomass to polymers. The main area of focus is developing drop-in solutions for direct substitutions, by incorporating biomass into the Group's existing units, for example HVO or other hydrotreated vegetable oil co-products in a naphtha cracker, and developing the production of new molecules such as polylactic acid polymer (PLA). Thus, in November 2016, the Group signed a cooperation agreement with Corbion to create a joint venture for construction of a PLA production site in Thailand.

#### 2.2.1.2. Specialty chemicals

As part of active management of its business portfolio, TOTAL completed in early 2017 the sale of its subsidiary Atotech, specialized in electroplating technologies. In 2016, Atotech had almost 4,000 employees with 18 production sites in the world and its sales were €1 billion (\$1.1 billion). In 2015, TOTAL also completed the sale of its subsidiary Bostik, specialized in adhesive chemicals.

Hutchinson actively contributes to the mobility of the future by addressing its customers' needs (automotive, aerospace and major industries – defense, rail, energy) in order to offer a greater level of safety, comfort and energy performance, as well as more responsible solutions.

The company draws on wide-ranging expertise and deploys its know-how from the custom design of materials to the integration of connected solutions: structural sealing solutions, precision sealing, management of fluids, materials and structures, anti-vibration systems and transmission systems.

To serve its customers, Hutchinson had 89 production sites across the world (of which 56 are located in Europe and 18 in North America) and 34,200 employees at December 31, 2016.

Hutchinson's sales were €4.0 billion (\$4.5 billion) in 2016, up 5.4% compared to 2015 and 16.7% compared to 2014. This growth was due to outperformance on the world's automotive markets, especially among German and Asian manufacturers. In 2016, Hutchinson also performed well on its other markets, particularly commercial aircrafts.

(1) Excluding the Group's participation in TotalErg.

(2) Including ethanol from ETBE (ethyl-tertio-butyl-ether) expressed in ethanol equivalent and HVO expressed in FAME equivalent. These equivalents are defined according to the EU Renewable Energy Directive.



## 2.2.2. Trading & Shipping

Trading & Shipping focuses on serving the Group's needs by:

- selling and marketing the Group's crude oil production;
- providing a supply of crude oil for the Group's refineries;
- importing and exporting the appropriate petroleum products for the Group's refineries to be able to adjust their production to the needs of local markets;
- chartering appropriate ships for these activities; and
- undertaking trading on various derivatives markets.

In addition, with its acquired expertise, Trading & Shipping is able to extend its scope beyond the aforementioned activities.

Trading & Shipping conducts its activities worldwide through various wholly-owned subsidiaries established on strategically important oil markets in Europe, Asia and North America.

### 2.2.2.1. Trading

In 2016, crude oil prices reached their lowest point in January and then strengthened progressively, while remaining low, with high volatility and a reduction in the contango<sup>(1)</sup> structure of certain oil indexes compared with 2015. Significant storage capacities in different parts of the world, made available through leases, contributed to the strong performance of Trading's activities. The Group's offices in Houston and Singapore also contributed to the growth of results by expanding their respective activities.

TOTAL is one of the world's largest traders of crude oil and petroleum products on the basis of volumes traded. The table below presents Trading's worldwide crude oil sales and supply sources and petroleum products sales for each of the past three years. Trading of physical volumes of crude oil and petroleum products amounted to 5.6 Mb/d in 2016, compared to 5.2 Mb/d in 2015 and to 4.9 Mb/d in 2014.

### Trading's crude oil sales and supply and petroleum products sales<sup>(a)</sup>

(kb/d)	2016	2015	2014
<b>Group's worldwide liquids production</b>	<b>1,271</b>	<b>1,237</b>	<b>1,034</b>
Purchased from Exploration & Production	1,078	935	791
Purchased from external suppliers	2,444	2,336	2,227
<b>Total of Trading's crude supply</b>	<b>3,522</b>	<b>3,271</b>	<b>3,018</b>
Sales to Refining & Chemicals and Marketing & Services segments	1,590	1,668	1,520
Sales to external customers	1,932	1,603	1,498
<b>Total of Trading's crude sales</b>	<b>3,522</b>	<b>3,271</b>	<b>3,018</b>
<b>Petroleum products sales by Trading</b>	<b>2,105</b>	<b>1,961</b>	<b>1,854</b>

(a) Including condensates.

Trading operates extensively on physical and derivatives markets, both organized and over the counter. In connection with its Trading activities, TOTAL, like most other oil companies, uses derivative energy instruments (futures, forwards, swaps and options) with the aim of adjusting its exposure to fluctuations in the price of crude oil and petroleum products. These transactions are entered into with a wide variety of counterparties.

For additional information concerning derivatives transactions by Trading & Shipping, see Note 16 (Financial instruments related to commodity contracts) to the Consolidated Financial Statements (refer to point 7 of chapter 10).

All of TOTAL's Trading activities are subject to strict internal controls and trading limits.

### 2.2.2.2. Shipping

The transportation of crude oil and petroleum products necessary for the activities of the Group is coordinated by Shipping. These requirements are fulfilled through balanced use of the spot and time-charter markets. The additional transport capacity can also be used to transport third-party cargo. Shipping maintains a rigorous safety policy, mainly through a strict selection of chartered vessels.

In 2016, Shipping chartered approximately 2,900 voyages (relatively stable compared to 2015 and 2014) to transport 131 Mt of crude oil and petroleum products, compared to 126 Mt in 2015 and 122 Mt in 2014. On December 31, 2016, the mid- and long-term chartered fleet amounted to 59 vessels (including 8 LPG vessels), compared to 55 in 2015 and 48 in 2014. None of these vessels is single-hulled and the average age of the fleet is approximately six years.

Like a certain number of other oil companies and ship owners, the Group uses freight rate derivative contracts to adjust Shipping's exposure to freight rate fluctuations.

(1) Contango is the price structure where the prompt price of an index is lower than the future price.

## 2.3. Marketing & Services segment

The Marketing & Services segment includes worldwide supply and marketing activities in the oil products and services field as well as the activity of New Energies.

As part of the One Total new organization, New Energies has been reorganized. As from financial year 2017, solar activities will be reported within the new Gas, Renewables & Power segment, while biomass activities will be reported within the Refining & Chemicals segment (refer to point 1.3 of this chapter).

Historically among the largest marketers in Western Europe<sup>(1)</sup>

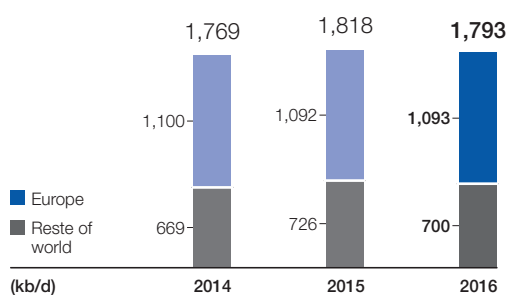
Leading marketer in Africa<sup>(2)</sup>

**16,461**  
branded service stations<sup>(3)</sup>  
at year-end 2016

**\$ 1.4 billion**  
of organic investments<sup>(4)</sup>  
in 2016

**32,036**  
employees present

### 2016 petroleum products sales<sup>(a)</sup>



(a) Excludes trading and refining bulk sales, including share of TotalErg.

In 2016, refined product sales decreased slightly compared to 2015, essentially due to the sale of the retail network in Turkey. Excluding portfolio effects, retail network sales increased by nearly 4%. Sales of land-based lubricants also increased by nearly 4%.

### Marketing & Services segment financial data

(M\$)	2016	2015	2014
Non-Group sales	69,421	77,887	106,509
Adjusted operating income <sup>(a)</sup>	1,818	2,098	1,709
Adjusted net operating income <sup>(a)</sup>	1,586	1,699	1,254
<i>including New Energies</i>	26	108	10

(a) Adjusted results are defined as income using replacement cost, adjusted for special items, excluding the impact of changes for fair value.

Adjusted net operating income from the Marketing & Services segment was \$1,586 million for the full-year 2016, a 7% decrease compared to 2015. Excluding New Energies, which was particularly high in 2015 due to the delivery of the Quinto solar farm in the United States, net operating income was stable despite asset sales.

(1) Data published by the companies based on quantities sold.

(2) PFC Energy and Company data 2015.

(3) Total, Total Access, Elf, Elan and AS24, including service stations owned by third parties.

(4) Organic investments = net investments, excluding acquisitions, divestments and other operations with non-controlling interests (refer to point 3.1 of this chapter).

### 2.3.1. Marketing & Services

The Marketing & Services (M&S) business segment is dedicated to the development of TOTAL's petroleum products distribution activities and related services throughout the world. Present in more than 150 countries<sup>(1)</sup>, M&S conveys TOTAL's brand image to its customers, both individual and professional. TOTAL's brand renown, underpinned by advertising campaigns, substantial investment in R&D and a digital transformation plan, all contribute to building M&S's highly visible, innovative and assertive lineup of commercial solutions for its customers. Close proximity to its customers is a core tenet of M&S's strategy and the Group aims to promote this proximity in all of its business segments. Finally, M&S is committed to supplying environmentally responsible solutions.

M&S pursues a proactive, primarily organic, development strategy. M&S is consolidating its market share in its key western European markets<sup>(2)</sup>, where it has reached critical mass and is one of the main distributors of petroleum products<sup>(3)</sup>. M&S continues to develop its activities in high-growth areas, particularly in Africa where it is the market leader<sup>(4)</sup>, and in Asia. In 2016, organic investments were approximately \$1 billion, stable compared to 2015, and focused mainly on network development.

M&S is implementing an active portfolio management strategy. In 2016, it completed the sale of its network of service stations in Turkey and, with its partner Erg, started the process of selling the joint venture TotalErg in Italy. In 2014 and 2015, M&S disposed of several assets to optimize its position in Europe (sales of the Liquefied Petroleum Gas (LPG) marketing subsidiaries in France and Hungary and the LPG/commercial sales activity in Switzerland). M&S also disposed of low-growth mature assets (stakes in the Société Anonyme de la Raffinerie des Antilles and the Société Réunionnaise de Produits Pétroliers). In parallel, M&S made targeted acquisitions. In 2016, M&S announced the acquisition of assets in East Africa (Kenya, Uganda and Tanzania), and in 2014 and 2015, it completed acquisitions in Pakistan, Vietnam and the Dominican Republic.

M&S's three main business areas are:

- **Retail**, with a network of more than 16,000 service stations. The Group is focusing on its key markets in Western Europe and continues to develop in Africa, where it is already present in more than 40 countries. In addition to the sale of high-performance fuels and petroleum products, M&S captures new customers and builds customer loyalty by diversifying its offer in its stores and service stations (e.g., car wash, catering, car servicing) through partnerships with other leading brands. The aim of these additional offerings is to support customers in their mobility by providing them with all of the products and services they need at "one stop shop" service stations. In 2016, excluding the portfolio effect, retail saw a 4% growth in sales compared to 2015.
- The production and sales of **lubricants**, a highly profitable sector that accounts for more than one third of M&S's results<sup>(5)</sup>, and in which TOTAL intends to pursue growth. M&S has entered into commercial and technological partnerships with European and Asian car manufacturers. With its 41 blending plants, including the plant in Singapore commissioned in 2015, and its R&D

investments, M&S is able to supply high-quality lubricants to its customers worldwide. In 2016, inland<sup>(6)</sup> lubricants sales increased by nearly 4% compared to 2015.

- The distribution of products and services for **professional markets**. TOTAL is a partner of choice and a local supplier of products (mainly bulk fuels, aviation fuel, special fluids, LPG, bitumens, heavy fuels and marine bunkers) and a solution provider that helps its customers to manage all their energy needs with services such as the maintenance of on-site facilities and the optimization of consumption.

As part of its activities, M&S holds interests in four refineries in Africa, following the sale in 2016 of its minority interest in a refinery in Gabon, and one in Europe through its 49% stake in TotalErg in Italy.

To meet its customers' current and future needs, M&S has strengthened its efforts in R&D, which increased by 19% between 2014 and 2016, in order to design and develop new product ranges, in particular for the engine technologies of the future.

#### 2.3.1.1. Sales of petroleum products

The following table presents M&S petroleum products sales<sup>(7)</sup> by geographical area:

(kb/d)	2016	2015	2014
Europe	1,093	1,092	1,100
France	541	541	547
Europe, excluding France	552	551	553
Africa (excl. North Africa)	419	423	380
Middle East	55	85	77
Asia-Pacific <sup>(a)</sup>	150	148	134
Americas	76	70	78

(a) Including Indian Ocean islands.

For data on biofuels, refer to point 2.2.1.1 of this chapter.

#### 2.3.1.2. Service stations

The table below presents the geographical distribution of the Group's branded<sup>(a)</sup> service stations:

As of December 31	2016	2015	2014
Europe <sup>(b)</sup>	8,309	8,391	8,557
of which France	3,593	3,667	3,727
of which TotalErg	2,585	2,608	2,749
Africa (excl. North Africa)	4,167	4,058	3,991
Middle East	809	816	796
Asia-Pacific <sup>(c)</sup>	1,790	1,531	1,033
Americas	585	464	452
AS24 network (dedicated to heavy-duty vehicles)	801	763	740
<b>Total</b>	<b>16,461</b>	<b>16,023</b>	<b>15,569</b>

(a) TOTAL, Total Access, Elf, Elan and AS24. Including service stations not owned by TOTAL.

(b) Excluding AS24 network.

(c) Including Indian Ocean islands.

(1) Including via national distributors.

(2) France, Germany, Belgium, Luxembourg and the Netherlands.

(3) Publicly available information, based on quantities sold in 2015.

(4) PFC Energy and Company data 2015.

(5) Adjusted net operating income of M&S, excluding New Energies.

(6) For non-maritime transportation and industrial applications.

(7) In addition to M&S's petroleum product sales, the Group's sales also include international Trading (1,690 kb/d in 2016, 1,538 kb/d in 2015 and 1,385 kb/d in 2014) and bulk refining sales (700 kb/d in 2016, 649 kb/d in 2015 and 615 kb/d in 2014).

### 2.3.1.3. Main activities by geographical area

#### Europe

##### Retail

In Western Europe, the Group aims to optimize its activities in the countries where it has a large market share, enabling a high level of profitability. It has a retail network of more than 8,300 service stations<sup>(1)</sup> mainly spread throughout France, Belgium, the Netherlands, Luxembourg, Germany and Italy. TOTAL is regaining market shares in Western Europe by developing an innovative and diversified line of products and services.

- In **France**, the Group's dense retail network includes over 1,500 TOTAL-branded service stations, nearly 700 Total Access stations (service station concept combining low prices and premium TOTAL-branded fuels and services) and almost 1,300 Elan service stations, which are mainly located in rural areas. Since its launch in 2011, Total Access has led to the Group regaining nearly 3%<sup>(2)</sup> market share.
- In **Germany**, where TOTAL is the country's fourth-largest operator<sup>(3)</sup> with nearly 1,200 service stations at the end of 2016, and in **Belgium**, where TOTAL is the country's biggest operator<sup>(3)</sup> with more than 530 service stations, the Group's market share has increased by almost 1% in three years.
- In **Italy**, TOTAL and its partner Erg have started the process of selling the joint venture TotalErg, in which the Group has a 49% stake. TotalErg's network includes nearly 2,600 service stations. TOTAL will continue to have a presence in the country through its marketing of lubricants and jet fuel.
- In the overall perimeter and bolstered by a network of more than 800 branded service stations, AS24 targets the heavy-duty vehicles segment in 28 countries and seeks continued growth primarily through expansion in the Mediterranean basin and Eastern Europe and through its toll payment card service, which covers nearly 20 countries.

TOTAL is also a major player in the European market for fuel payment cards with nearly 3.3 million cards issued, enabling companies of all sizes to improve fuel cost management and access an ever-increasing number of services.

##### Lubricants

TOTAL is pursuing its development in high-growth segments throughout Europe. It relies mainly on its lubricant production sites in Rouen (France) and Ertvelde (Belgium). In 2016, TOTAL launched the construction of a lubricant production site in Russia.

##### Professional markets and other specialties

TOTAL produces and markets specialty products in Europe, and relies on its industrial facilities to produce special fluids (Oudalle in France) and bitumen (Brunsbüttel in Germany).

In France, TOTAL promotes a large fuel and service offering to 120,000 vehicle fleet managers. As for fuel sales (heavy fuels, domestic fuels, etc.), they reach nearly one million customers.

#### Africa & the Middle East

##### Retail

TOTAL is the leading marketer of petroleum products in Africa. The Group achieved an average market share of nearly 18%<sup>(4)</sup> in retail in 2016, an increase of 1% compared to 2014. It is pursuing a strategy of profitable growth and increased market share in Africa.

In the zone Africa & the Middle East, the retail network has made of approximately 5,000 service-stations in 2016, spread across more than 40 countries. The Group operates major networks in South Africa, Nigeria, Egypt and Morocco.

As part of its dynamic asset management policy, TOTAL finalized in 2016 the disposal of its network of 450 service stations in Turkey, while retaining its brand and lubricants business in the country.

In order to achieve its goal of gaining market share in all of the countries where it operates in Africa & the Middle East, and in addition to its organic growth strategy, M&S acquires independent petroleum networks in certain countries. The acquisition underway of assets in Kenya, Uganda and Tanzania will strengthen the supply and logistics system in the region and speed up the growth of the service station network, particularly in Tanzania.

M&S is diversifying its offering at service stations and is deploying a range of innovative products and services through partnerships in catering and stores, as well as in digital solutions.

##### Lubricants

TOTAL continues to pursue a growth strategy in lubricants in Africa & the Middle East. M&S relies in particular on its lubricant production plants in Dubai, Egypt and Saudi Arabia. In Africa, TOTAL is the leading distributor of lubricants with 16.5%<sup>(5)</sup> market share.

##### Professional markets and other specialties

TOTAL acts as a leading partner, notably for mining customers in Africa by delivering complete supply chain and management solutions for fuels and lubricants.

M&S also offers a diverse range of products and services aimed at professionals in Africa. Among the different products, the bitumen offering meets the requirements of the public works sector in Africa with a variety of packaging options, and special fluids form an integral part of development projects in the petroleum, mining and agricultural sectors. Industrial customers also receive support from TOTAL for the maintenance of on-site facilities through lubricants in service analysis, among others.

#### Asia-Pacific

At year-end 2016, TOTAL was present in 20 countries in the Asia-Pacific zone and continued to strengthen its position in the distribution of fuels and specialty products.

##### Retail

TOTAL operates service station networks in China, Pakistan, the Philippines, Cambodia and Indonesia, and is a significant player in the Pacific islands. The Group network continued to expand, and reached nearly 1,630 service stations at year-end 2016, an increase of nearly 800 compared to 2014.

(1) Excluding AS24 network.

(2) Company data between 2011 and 2016.

(3) Source: IHS 2015.

(4) Retail market share in Africa in the countries where the Group operates, based on 2015 publicly available information on quantities sold.

(5) Company data.

- In **Pakistan**, TOTAL's acquisition in 2015, with its local partner PARCO, of Chevron's distribution network, has increased the TOTAL network by 500 service stations and strengthened the Group's distribution and logistics capacities in Pakistan.
- In the **Philippines**, TOTAL doubled its market share (from 3% to 6%<sup>(1)</sup>) in retail through the creation of a joint venture with its local operator FilOil in 2016. TOTAL has thus increased its retail network by 200 service stations.
- In **China**, TOTAL was operating more than 230 services stations at year-end 2016 through a wholly-owned subsidiary and two joint ventures with Sinochem, one of which obtained a commercial wholesales license in 2016 that will enable it to expand its activities.

#### Lubricants

TOTAL's share of the inland lubricant market reached 3.6% in 2016 in this region. One of the Group's largest lubricant production plants started up in mid-2015 in **Singapore** in order to support M&S's ambitions for growth in the region. It has a production capacity of 310 kt/year.

TOTAL lubricant sales in **China** increased in 2016. To support its ambitions for growth in China and in the region, TOTAL opened a grease production site in Tianjin (China) in 2016.

#### Professional markets and other specialties

TOTAL continues to strengthen its presence in the specialties markets in the region, in particular in **Vietnam**, where the Group confirmed its position as the number two player<sup>(1)</sup> in the LPG market, and in **India**.

#### Americas

In **retail**, the Group operates in several **Caribbean islands** with nearly 600 service stations at year-end 2016. In January 2016, TOTAL strengthened its position with the acquisition of a majority stake of 70% in the fuel marketing leader in the Dominican Republic, which operates a network of 130 service stations, commercial sales and lubricants activities.

In **lubricants and other specialty products**, TOTAL is pursuing in the overall region its strategy of growth, mainly in lubricants, aviation fuel and special fluids. To strengthen its special fluids business, the Group has built a special fluids production plant in Bayport, Texas, which has been operational since early 2016.

#### 2.3.1.4. Products and services developments

The Group develops technologically advanced products, some of which are formulated for use in motor sports before being generally released on the market. In 2016, TOTAL continued its technical partnerships, in particular with Renault Sport Racing, the PSA group (WRC, WTCC and Rallycross) and Aston Martin Racing. These partnerships demonstrate TOTAL's technical excellence in the formulation of fuels and lubricants under extreme conditions and subject to requirements to reduce fuel consumption. At the end of 2016, TOTAL and PSA (Peugeot, Citroën and DS) renewed their partnership for five years in the areas of R&D, business relations with the three PSA brands and motor sports.

In order to respond to developments in world markets and prepare for tomorrow's growth opportunities, TOTAL develops products and services in collaboration with its customers that optimize their energy bills, such as the products under the Total Ecosolutions label, which include Excellium fuels and Fuel Economy lubricants (refer to point 2.3.4 of chapter 7). These solutions include a diversified range of energy supplies (fuels, gas, solar and wood pellets) as well as consumption auditing, monitoring and management services.

Looking beyond energy services, TOTAL also relies on digital innovations to develop new offers for its customers. This is how TOTAL enables money transfers and payment by smartphone in Africa, or online domestic heating oil orders in France. The Total Services mobile application has been deployed in 43 countries, and the customer relationship program uses a central tool to send personalized offers to over one million customers in 10 countries. For its professional customers, M&S has launched Bitume Online in France, a platform that offers bitumens at fixed rates, and a portal for lubricant distributors deployed in some 20 countries (including in the United Arab Emirates), among others.

For the longer term, TOTAL also supports the development of alternatives to traditional fuels, and M&S intends to expand in these segments:

- **Electro-mobility**: in 2016, TOTAL's European subsidiaries continued the developments and demonstrations of the distribution of electricity intended for electric vehicles. TOTAL will have in 2017 approximately 100 service stations equipped with higher power charging points in Belgium, the Netherlands, Luxembourg, France and Germany. Service stations on major routes in Europe are due to be fitted with super-fast charging stations over the coming years. In the short term, a new offering will be added to Total cards to give professional customers access to the largest public charging networks in Europe.
- **Gas for transport**: TOTAL has approximately 450 stations that deliver natural gas vehicles (NGV) in Asia, Africa and Europe, and intends to develop several hundred additional stations, mainly in Europe, over the coming years.
- **Hydrogen**: with its partners Air Liquide, Daimler, Linde, OMV and Shell, TOTAL created in 2015 the H2 Mobility Germany joint venture, which aims to deploy some 400 hydrogen stations in Germany, with a forecast of more than 250,000 fuel cell vehicles being in circulation by 2025. The majority of the hydrogen stations also developed through the Clean Energy Partnership in Germany (target of 50 stations in 2017, 13 of which are in the TOTAL network) will be incorporated into the H2 Mobility Germany joint venture.

#### 2.3.2. New Energies

As part of its ambition to become the responsible energy major, the Group is developing its activities in low-carbon and renewable energies businesses. Facing the challenge of climate change, TOTAL positions itself on an energy mix, with decreasing carbon intensity that takes into account the 2°C scenario of the IEA.

(1) Company data.

The Group is active along the entire solar photovoltaic value chain, with SunPower and Total Solar, from the production of photovoltaic cells to the development of solar farms or installation of solar facilities in private households.

Over the longer term, it pursues a second axe of development with the transformation of biomass through biotechnology, which aims to develop new biosourced product solutions for transportation and chemicals.

TOTAL actively follows developments in other renewable energies. In this context, the Group owns a farm of four wind turbines (10 MW near Dunkirk, France) and a stake in marine energy (9.99% in the company Scotrenewables Tidal Power, Scotland).

The acquisition of Saft Groupe S.A. in 2016 is consistent with this ambition. The Group plans to pursue its investments in low-carbon businesses.

### 2.3.2.1. Solar energy

TOTAL acquired a majority share in SunPower in 2011. In addition, the Group develops and holds interests via Total Solar in solar farms and is pursuing R&D investments in the photovoltaic field through several industrial and academic partnerships.

The steady reduction in photovoltaic electricity costs opens an ever-growing number of markets. However, in some areas, achievement of the full potential of this technology requires the support of public programs.

#### SunPower

TOTAL holds 56.73% of SunPower as of December 31, 2016, an American company listed on NASDAQ and based in California. As an integrated player, SunPower operates over the entire solar power value chain. Upstream, it designs, manufactures and supplies cells as well as the highest-efficiency solar panels on the market. Downstream, SunPower is active in the design and construction of large turnkey power plants and in the marketing of integrated solar solutions for decentralized electricity generation.

Upstream, SunPower manufactures all its cells in Asia (Philippines, Malaysia) and has a nominal production capacity of approximately 1,050 MW/y at year-end 2016. Through its significant R&D program, the company is constantly optimizing its production process to reduce costs while maintaining its technological leadership. The cells are assembled into modules, or solar panels, in plants located mainly in Mexico and Europe.

To extend its commercial offering, from 2016 SunPower has marketed a new lower-priced modules range to target the most competitive market sectors while continuing to hold a technical edge over its competitors.

Downstream, SunPower markets its panels worldwide for applications ranging from residential and commercial roof tiles to large solar power plants. SunPower installed more than 1.3 GW in 2016 compared to 1.2 GW in 2015. As of December 31, 2016, SunPower holds a 36.53% stake in the company 8point3 Energy Partners, initially set up with First Solar. 8point3 Energy Partners, the purpose of which is to acquire and operate solar projects, was listed on NASDAQ in 2015. Additionally, in 2016 SunPower completed the construction in the United States of the solar farm Boulder Solar 1 (125 MWc) and the Henrietta farm (128 MWc). SunPower also completed construction of the Prieska farm (86 MWc) in South Africa.

SunPower is pursuing its development in residential and commercial markets, in particular in the United States, by increasing its service offerings for solar power production, management and financing. SunPower is also developing its Smart Energy activity to permit its residential and commercial customers to optimize their power consumption. Thus in 2016, SunPower launched a pilot project in New York State involving electricity production and consumption management with a storage offer in association with the local electricity provider.

The second half of 2016 was marked by a sharp deterioration of the global market, in a context of strong overcapacity of photovoltaic cells production. SunPower announced an adjustment plan to cope with this market deterioration. This plan is essentially based on a reduction of the company's operational costs and on the closure of a cells manufacturing unit in the Philippines.

In this context, TOTAL and SunPower decided to deepen their cooperation through several strategic initiatives. In particular, in November 2016, TOTAL concluded an agreement with SunPower to supply the panels required for retrofitting over the next five years 5,000 service stations and approximately 100 other sites across the world for an installed capacity of 200 MW. In addition, TOTAL undertook via Total Solar the acquisition of projects developed by SunPower in Japan, South-Africa and France.

#### Other solar assets

The Group holds a 20% stake in the solar power plant Shams 1, commissioned in 2013 in Abu Dhabi. With 109 MW of parabolic concentrated solar power, Shams 1 is the largest thermal parabolic concentrated solar power plant in the Middle East<sup>(1)</sup>. In addition, Total Solar co-developed and holds interests in the solar farms built by SunPower: Salvador in Chile and Prieska in South-Africa, as well as Nanao in Japan, which is under construction.

In line with its CSR approach, the Group continues to install solar solutions through its decentralized rural electrification projects in several countries, especially in South Africa via KES (Kwazulu Energy Services Company), in which TOTAL holds a 35% stake.

#### New solar technologies

In order to strengthen its technological leadership in the crystalline silicon value chain, and in addition to its cooperation with SunPower in the R&D field, New Energies partners with leading laboratories and international research institutes. This work consists of developing and optimizing the photovoltaic solar power chain (from silicon through to power systems and including wafers, cells and modules), reducing production costs and increasing the efficiency and reliability of components. The Group is also strengthening its expertise in solar resource evaluation and prediction.

Additionally, downstream, TOTAL is continuing its research efforts on new generations of energy management and control systems for residential and commercial applications in order to differentiate the Group entities' offer on the electric market and to lower the cost of energy consumed for customers.

(1) Company data.

### 2.3.2.2. Energy storage

Energy storage is one of the solutions that can offset the intermittent nature of renewable energies, thereby increasing their profitability and facilitating their development. The Group has invested in this area since 2009 via collaborative R&D programs with academic partners and minority stakes in start-ups, through among others Total Energy Ventures, a venture capital company (refer to point 2.3.5 of chapter 7).

The acquisition of 100% of the shares of Saft Groupe S.A. ("Saft"), completed in August 2016 following a successful voluntary takeover bid, is fully in line with TOTAL's goal to develop in the renewable energies and electricity businesses.

Saft is a French company founded in 1918 specializing in the design, manufacture and marketing of high technology batteries for industry. In 2016, Saft achieved sales of €738 million, including 75% on markets where it is the leader<sup>(1)</sup>, such as nickel and primary lithium batteries for industrial infrastructure, transport and civil and military electronics applications. It also develops batteries for space and defense using its lithium-ion technologies, which are also deployed in the domains of energy storage, transport and telecommunications networks. Building on its technological expertise, the company is well positioned to benefit from growth in renewable energies beyond its current activities.

As of year-end 2016, Saft is present in 19 countries in the world (historically Europe and the United States) and has over 4,000 employees. It is achieving steady growth in emerging countries, in particular in Asia, South America and Russia, and has 14 production sites and approximately 30 sales offices.

### 2.3.2.3. Biotechnologies and the conversion of biomass

TOTAL has launched numerous collaborative R&D projects for the development of bio-sourced molecules with various academic partners (the Joint BioEnergy Institute in the United States, the University of Wageningen in the Netherlands) and industrial partners in Europe (the Toulouse White Biotechnology consortium) and in the United States (Amyris Inc., Novogy). Amyris Inc. is an American company listed on NASDAQ, in which TOTAL holds an interest of 23.51% as of December 31, 2016. It produces biojet fuel from farnesane, which has been used successfully in demonstration flights, notably with Air France, KLM and Cathay Pacific.

TOTAL is exploring a number of opportunities for developing biomass. In particular, TOTAL has invested in the start-up Renmatix, which is developing an innovative technology involving the deconstruction of lignocellulose into fermentable sugars. This is in addition to the action already initiated by the Group within the French consortium Futurol for the conversion of lignocellulose into ethanol.

In 2015 and 2016, TOTAL also acquired two new R&D platforms: one at Emeryville in California (United States) dedicated to the development of processes for fermenting and separating molecules from biotechnologies, and the other at Solaize (France) with the goal of developing new biocomponents by implementing predictive retrosynthesis methodologies.

In the longer term, the Group is also studying the potential for developing a cost-effective phototrophic process for producing biomolecules through microalgae bioengineering.

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(1) Largest market share. Company data.

## 3. Investments

### 3.1. Major investments over the 2014-2016 period

Gross investments <sup>(a)</sup> (M\$)	2016	2015	2014
Upstream	16,035	24,270	26,520
Refining & Chemicals	1,849	1,843	2,022
Marketing & Services	2,506	1,841	1,818
Corporate	140	79	149
<b>Total</b>	<b>20,530</b>	<b>28,033</b>	<b>30,509</b>
Net investments <sup>(b)</sup> (M\$)	2016	2015	2014
Upstream	13,701	21,055	20,756
Refining & Chemicals	1,763	(1,645)	1,830
Marketing & Services	2,167	896	1,476
Corporate	126	54	78
<b>Total</b>	<b>17,757</b>	<b>20,360</b>	<b>24,140</b>
(M\$)	2016	2015	2014
Acquisitions	2,033	3,441	2,539
including resource acquisitions	780	2,808	1,765
Divestments	1,864	5,968	4,650
Other operations with non-controlling interests	(104)	89	179
Organic investments <sup>(c)</sup> (M\$)	2016	2015	2014
Upstream	14,316	20,508	22,959
Refining & Chemicals	1,636	827	1,944
Marketing & Services	1,432	1,569	1,424
Corporate	100	72	104
<b>Total</b>	<b>17,484</b>	<b>22,976</b>	<b>26,430</b>

(a) Including acquisitions and increases in non-current loans. The main acquisitions for the 2014-2016 period are detailed in Note 3 to the Consolidated Financial Statements (point 7 of chapter 10).

(b) Net investments = gross investments – divestments – repayment of non-current loans – other operations with non-controlling interests. The main divestments for the 2014-2016 period are detailed in Note 7 to the Consolidated Financial Statements (point 7 of chapter 10).

(c) Organic investments = net investments, excluding acquisitions, divestments and other operations with non-controlling interests.

In 2016, the Group's organic investments and resource acquisitions were \$18.3 billion. The decrease in investments compared to 2015 follows the completion and start-up of nine major production growth projects in 2015 and five in 2016. The reduction also resulted from a successful capital efficiency program implemented in response to the fall in Brent prices.

In the Upstream segment, most of the investments were geared toward the development of new hydrocarbon production facilities, the maintenance of existing facilities and exploration activities. Development expenditures were mainly related to the five projects that started up in 2016 (Laggan-Tormore, Vega Pleyade, Incahuasi, Angola LNG and Kashagan) and to other major projects under construction and expected to start up in 2017 and 2018, including Moho North in the Republic of the Congo, Yamal LNG in Russia, Ichthys LNG in Australia, Kaombo in Angola and Egina in Nigeria.

In the Refining & Chemicals segment, investments were made in facilities maintenance and safety, as well as in projects aimed at improving the plants' competitiveness. In 2016, the Group progressed with the transformation of the La Mède refinery in

France into a bio-refinery and the modernization of the Antwerp refinery in Belgium with the addition of a new heavy fuel oil conversion unit and another petrochemical unit, and reduced by 50% the capacity of the Lindsey oil refinery in the United Kingdom.

In the Marketing & Services segment, investments in 2016 mainly concerned retail networks in growth regions, logistics and specialty products production and storage facilities.

Acquisitions in 2016 totaled \$2.0 billion, including \$780 million of resource acquisitions, a 41% decrease compared to \$3.4 billion in 2015.

The Group took advantage of favorable market conditions to expand its Upstream portfolio. The Group strengthened its position in the Middle East by entering the Al Shaheen field in Qatar, and in the US with the acquisition of shale gas assets. Resources acquisitions were \$780 million in 2016, comprised mainly of the additional 75% interest in the Barnett shale gas field in the United States. The Group is preparing future growth with the signing of major deals in Brazil with Petrobras, in Uganda and in Iran on the giant South Pars 11 project.



As part of the development of profitable low-carbon businesses, the Group acquired Saft Groupe, a leader in energy storage solutions. In line with the strategy to expand its gas and power distribution activities, the Group also acquired Lampiris, a supplier of natural gas and energy services in Belgium and France. Finally, in the Marketing & Services segment, the Group announced the planned acquisition of a retail and supply terminal network in Kenya, Uganda and Tanzania to strengthen its marketing and supply activities in the region.

The Group also continued its divestment program of mature and non-core assets for a total of \$1.9 billion in 2016, including the sale

of a 15% stake in the Gina Krog field in Norway and a 20% stake in the Kharyaga field in Russia, as well as the sale of the FUKA pipeline system in the North Sea and a retail network in Turkey. The Group also finalized in January 2017 the sale of Atotech, a plating chemistry company, for \$3.2 billion, which was announced in 2016.

The \$10 billion asset sale program for 2015-2017 was around 80% complete following the closing of the Atotech sale in 2017.

Net investments were \$17.8 billion in 2016, compared to \$20.4 billion in 2015, a decrease of 13% essentially related to the decrease in organic investments.

## 3.2. Major planned investments

Investments are moving into the sustainable range needed to deliver profitable future growth and are expected to be between \$16 and \$17 billion in 2017 including resource acquisitions.

Investments in the Exploration & Production segment will be largely allocated to major development projects under construction, including Moho North in the Republic of the Congo, Yamal LNG in Russia, Ichthys LNG in Australia, Kaombo in Angola and Egina in Nigeria as well to a number of new projects expected to be launched this year. A portion of the funds will also be allocated to assets already in production, in particular for maintenance capital expenditures and in-fill wells.

In the Refining & Chemicals segment, the modernization of the Antwerp integrated platform and the transformation of the La Mède refinery to a bio-refinery will be among the major investments in 2017. The Group is also progressing plans for the construction of a side cracker at the Port Arthur refinery complex in the United States. A significant portion of the segment's budget will also be allocated to required maintenance and safety investments.

The Marketing & Services segment's investment budget will, in particular, finance the service station network, logistics, specialty products production and storage facilities, particularly lubricants.

Most of the Marketing & Services budget will be allocated to growth regions, notably Africa, the Middle East and Asia.

The Group will also continue investing to grow its Downstream gas and renewables businesses through the newly established Gas, Renewables and Power segment, as well as in R&D.

TOTAL self-finances most of its investments with cash flow from operating activities and occasionally accesses the bond market when financial market conditions are favorable. Investments for joint ventures between TOTAL and external partners are generally funded through specific project financing.

As part of certain project financing arrangements, TOTAL S.A. has provided guarantees. These guarantees ("Guarantees given on borrowings") as well as other information on the Group's off-balance sheet commitments and contractual obligations appear in Note 13 to the Consolidated Financial Statements (point 7 of chapter 10). The Group currently believes that neither these guarantees nor the other off-balance sheet commitments of TOTAL S.A. or of any other Group company have, or could reasonably have in the future, a material effect on the Group's financial position, income and expenses, liquidity, investments or financial resources.

## 4. Research & Development

The Group's overall R&D investments were \$1,050 million in 2016, compared to \$980 million in 2015 and \$1,245 million in 2014. There were 4,939 people dedicated to R&D activities in 2016 compared to 4,248 in 2015 and 4,596 in 2014<sup>(1)</sup>.

TOTAL invested \$689 million in 2016 in innovation and R&D for its oil and gas activities<sup>(2)</sup>. The expenses dedicated to these activities are expected to increase by 5% on average between 2015 and 2017.

R&D at TOTAL focuses on six major axes:

- developing knowledge, tools and technological expertise to discover and profitably produce complex oil and gas resources at a reduced cost to help meet the global demand for energy;
- developing, industrializing and improving competitive processes for the conversion of oil, gas and biomass resources to adapt to changes in resources and markets, improve reliability and safety, achieve better energy efficiency, reduce the environmental footprint and maintain profitability in the long term;
- developing and industrializing solar, biomass and carbon capture and storage technologies to help prepare for future energy needs in an economically competitive manner;
- developing practical, innovative and competitive materials and products that meet customers' specific needs, contribute to the emergence of new features and systems, enable current materials to be replaced by materials delivering higher performance to users, and address the challenges of improved energy efficiency, lower environmental impact and toxicity, better management of their life cycle and waste recovery;
- understanding and measuring the impacts of the Group's operations and products on ecosystems (water, soil, air, biodiversity) and recovering waste to improve environmental safety, as part of the regulation in place, and reduce their environmental footprint to endeavor to achieve sustainability in the Group's operations; and

- mastering and using innovative technologies such as biotechnologies, materials sciences, nanotechnologies, high-performance computing, information and communication technologies or new analytical techniques.

These issues are incorporated into the project portfolio to develop synergies. Different aspects may be looked at independently by different business segments, with high levels of interaction between R&D, technology and business unit teams.

Since 2009, Total Energy Ventures, which is in charge of developing small and medium-sized enterprises (SMEs) specialized in innovative energy technologies and clean technologies for the Group, manages a portfolio that has grown regularly. In addition, a loan facility was introduced for innovative SMEs that develop technologies of interest for the Group.

In 2016, a Group R&D Division was set up as part of the Group's new organization, "One Total" (refer to point 1.3 of this chapter). This new division is in charge of:

- constructing a consolidated view of all of the Group's R&D activities and putting in place an R&D roadmap taking into account the 2°C scenario of the IAE;
- launching and monitoring transversal studies on key subjects for the Group, such as CO<sub>2</sub> capture, use and storage, health, safety and the environment (HSE) and energy efficiency;
- increasing synergies between R&D teams by facilitating the sharing of tools, expertise and, when needed, resources, selecting and respecting good practices, and capitalizing on scientific expertise; and
- ensuring the transfer of technologies towards the Group's industrial and commercial activities.

### 4.1. Upstream

In Exploration & Production, the R&D project portfolio was reviewed in 2016 according to the impacts on reducing costs and the environmental footprint, and on improving safety and production. More than half of the R&D budget is focused on improving exploration (geological structures, seismic acquisition and imaging technologies), characterization of hydrocarbon reservoirs and simulation of field evolution during production. Enhancing oil recovery from mature reservoirs remains an active area of research, particularly in the Group's partnerships in the Middle East.

R&D activities in deep offshore aiming at greater distances for multiphase production transport have been increased further, which is fully in line with the goals of Exploration & Production and supports major technology-intensive assets such as Libra in Brazil.

Operations on wells, from drilling to closure, account for a significant share of Upstream costs; new R&D projects are under way to reduce these and further increase operational safety.

The monitoring phase of the oxy-combustion CO<sub>2</sub> capture and storage project in the depleted Rouse reservoir in Lacq (France) came to an

end in 2016. The Group now has a strong command of the methods used to characterize reservoirs and their mechanical properties for this type of injection. New R&D projects are being identified in order to develop carbon capture, use and storage (CCUS) in the coming years.

A sustained effort to adapt mature technologies in order to reduce their costs has been implemented. In particular, new technologies addressing the management of water associated with hydrocarbon production are now available for new developments. This subject is part of a larger program dedicated to Sustainable Development. The increased use of digital technology also forms part of this cost-reduction program.

Finally, R&D programs prepare for the medium and long terms, whether for researching new exploration concepts, non-conventional resources or developing technologies, such as robotics, nanotechnologies or high-performance computing (notably, the Pangea supercomputer, a decision-support tool for exploration and field management).

Concerning the activities of Gas, the program to develop new technological acid gas treatment and LNG solutions is continuing.

(1) Figures for 2014 and 2015 concerning the Group's R&D investments and employees were restated to reflect the accounting reporting scope.  
(2) Excluding R&D budgets of Atotech, Hutchinson, SunPower and Saft Groupe.

## 4.2. Refining & Chemicals

### 4.2.1. Refining & Chemicals (excluding specialty chemicals)

The aim of R&D is to support the medium and long-term development of Refining & Chemicals. In doing so, it contributes to the technological differentiation of this business through the development, implementation and promotion of effective R&D programs that pave the way for the industrialization of knowledge, processes and technologies.

In line with Refining & Chemicals' strategy, R&D places special emphasis on the following four major challenges: taking advantage of different types of feedstock; maximizing asset value; continuing to develop innovative products; and developing biosourced products. The medium-term strategy of the project portfolio and its deployment plan will facilitate Refining & Chemicals' technological differentiation.

To take advantage of different types of feedstock, R&D activities related to the processing of more diversified crudes have increased significantly through a clearer insight into the effect that feedstocks have on equipment and processes at the molecular level. R&D is launching ambitious new programs to develop various technologies for producing liquid fuels, monomers and intermediates from gas.

R&D is developing expertise and technologies with a view to maximizing asset value. Its efforts mainly involve programs focusing on the flexibility and availability of facilities. Advanced modeling of feedstocks and processes helps the units overcome processing-related constraints and operate while taking these constraints into account in real time. Research conducted on catalysts is helping to increase their resistance, improve catalytic stability and extend the cycle time at a lower cost. Programs are being set up to maximize the value of heavy residues. The new opportunities presented by digital technology are being examined to pave the way for the "plant of the future", which will provide an even safer working environment and increased productivity, while consuming less energy and producing less waste.

In line with the Group's low-carbon strategy, R&D is pioneering solutions to reduce greenhouse gas emissions through carbon capture and recovery by conversion. In addition, out of concern for the environmental footprint of Refining & Chemicals' activities, R&D is developing new technologies to improve the energy efficiency of facilities and reduce the impact of the activities on water, air, soil, etc.

The offer of innovative products is a key aspect of research on polymers. R&D draws on its knowledge of metallocenes and

bimodality to develop different types of mass consumption polymers that have exceptional properties allowing them to replace heavier materials and compete with technical polymers. Value-added niche polymers are also being developed, whether in the form of blends or composites. Efforts to diversify into biosourced products are focused mainly on products endorsed by the market: biomonomers, biointermediates, and biopolymers. R&D is thus focusing on polylactic acid due to the new applications that can be envisaged as a result of its specific properties. For plastics recycling, R&D is designing technologies that will make it possible to recycle polymers under acceptable conditions in terms of end product quality, cost and environmental impact.

With regard to biofuels, R&D has directed its efforts towards gasification and coprocessing to produce liquid fuels from biomass. R&D is also particularly mindful of issues related to blends and product quality raised by the use of biomolecules.

The efficient use of resources is a major challenge for Sustainable Development. As a result, R&D is pioneering technologies enabling more efficient use of biosourced molecules to produce higher added-value chemical compounds, whether through biotechnologies or thermochemical processes.

### 4.2.2. Specialty chemicals

R&D is strategically important for specialty chemical products. It is closely linked to the needs of the subsidiaries and industrial customers.

For Hutchinson, R&D is an important factor in innovation and differentiation. The company is present along the entire value chain, from designing custom materials (e.g., rubber, thermoplastics, composites) to incorporating connected solutions (e.g., complex solutions, mechatronics, connected objects).

With a corporate research and innovation center, more than 25 technical centers and a number of university partnerships worldwide, Hutchinson is equipped to rise to the challenge of contributing to the safer, more comfortable, and more responsible mobility of the future.

Weight reduction, increased energy efficiency and improved diagnostic and control functionality are common preoccupations across all of Hutchinson's markets (e.g., automotive, aerospace, defense, railways). Hutchinson designs innovative solutions to put its customers ahead of the game, and transposes those solutions between markets, adopting a cross-fertilization approach.

## 4.3. Marketing & Services

### 4.3.1. Marketing & Services

In 2016, the R&D activities of Marketing & Services continued to roll out its new roadmap in line with its ambitions.

The roadmap features two focal points: reducing the environmental footprint of products, particularly CO<sub>2</sub> emissions, and increasing energy efficiency by improving the durability of end users' equipment. These are broken down into a number of areas: energy savings for customers; competitive advantage and new solutions; anticipation of changes in legislation; and incorporation of biosourced molecules.

A new "Chemicals and biocomponent processes" department shared by the Marketing & Services and Refining & Chemicals segments opened in April 2016 on the Solaize site, with the aim of using a predictive approach to design components derived from renewable sources. This approach uses cheminformatics and digital tools to simulate, model and predict how the components will perform, in order to help chemists and formulators better identify ideal chemical structures.

The "Fuel Economy" range of lubricants continues to expand with many new products designed to comply with the specifications of

manufacturers targeted by the Total Lubricants business line in all fields of application (automotive, marine and manufacturing). The key work is focused on the design and incorporation of breakthrough components in formulations. At the same time, more fundamental work has been started to anticipate the issues that manufacturers will face as a result of changes in engine technology and legislation. New contracts have been won with strategic manufacturers. In addition, the new marine lubricant for two-stroke engines that run on fuels with sulfur contents of 0 to 3.5% has been introduced onto the market. The International Maritime Organization's recent decision to limit the sulfur content of fuels to 0.5% by 2020 has led to the redefinition of marine lubricant development programs.

Launched in 2015, the project to synthesize new molecules for future generations of the "Total Excellium" fuel range is based on the areas of chemicals, methods & measurements and benchmarking. Alongside this, work to develop new products tailored to specific local requirements has been finalized, mainly for the African market.

In the field of refinery additives, research continued into understanding and developing new additives to improve the performance of distillates in cold temperatures.

With respect to bitumen, in order to meet the challenges of competitiveness, sustainable logistics, Sustainable Development and geographic expansion in the bitumen sector, researchers mainly concentrated on the prospect of transporting bitumen in solid form, establishing a program to reduce binder aging and developing Styrelf formulas for the international market.

The new "Bio Life" range of special fluids derived from renewable sources was put on the market. It is protected by several patent applications covering the production methods and applications of the fluids.

In Formula 1 racing, important work on understanding combustion and lubrication phenomena, in conjunction with closer technical ties with manufacturers, once again brought very significant improvements in engine performance in 2016. As a result of this collaboration, new skills have been acquired in-house that can be used in other areas (e.g., production vehicles, electric engines).

The Asia-Pacific Technical Center based in Mumbai, India, increased its activities and skills, mainly in lubricants (particularly for textiles and two-wheeled vehicles), special fluids (including drilling fluids) and fuel additives.

The enlisting of French and international skills has increased in recent years, with a growing number of ties to academia, researchers seconded to universities in France, Italy, Switzerland and the United States, and international researchers recruited. R&D has also increased its activities relating to evaluating and selecting external technologies and partners with shared interests (SMEs, start-ups). These different approaches enhance the work necessary for the guided design and development of breakthrough products included in Marketing & Services' objectives.

### 4.3.2. New Energies

New Energies' R&D efforts are focused, on the one hand, on the solar value chain from silicon to photovoltaic electricity management systems, and, on the other hand, on the development of biotechnological methods of converting biomass into products of interest to the Group's markets.

In the field of solar energy, R&D is striving to improve SunPower's<sup>(1)</sup> methods of producing cells and modules in order to drive down costs while enhancing efficiency and reliability, with the aim of maintaining the company's global technological leadership and tailoring its offering to the different application markets, from solar farms to the residential sector. It is also preparing future generation photovoltaic cells within the framework of several strategic partnerships between TOTAL and renowned academic research institutes. In particular, TOTAL is the founding partner of the Ile-de-France Photovoltaic Institute, a research institute on the Paris-Saclay campus that has reached critical mass and offers a very high-quality technical platform and scientific support structure with the ambitious aim of identifying breakthrough technologies to produce highly efficient, low-cost panels.

Downstream in the solar value chain, R&D is monitoring the development of low-cost stationary storage technologies. At the same time, Saft Groupe's R&D teams are focusing on improving lithium-ion technologies, reducing costs and environmental impact, and developing management systems. This last activity provides a link to the R&D activities of New Energies, which is preparing solutions for supplying solar power and associated services to residential markets by developing software tools and algorithms for the intelligent management of domestic electricity production and consumption, and also by integrating and testing systems combining photovoltaics, storage, control of demand as well as pilots for assessing and improving systems and algorithms in contact with customers.

With regard to biotechnologies, the Group is developing methods for converting sugars into biofuels and molecules of interest for chemicals, as well as processes for the deconstruction of lignocellulose into sugars. To support its ambitions, the Group has set up laboratories, including one research center specializing in fermentation and another specializing in predictive approaches, a cutting-edge technology for anticipating the properties of components and providing a better response to future needs, with unprecedented performance levels. To this end, TOTAL's biotech research team heads up a network of partners including academic laboratories and start-ups in the United States and Europe. The Group mainly works with Amyris<sup>(2)</sup>, a company specializing in biotechnologies.

(1) American company listed on NASDAQ in which the Group holds a 56.73% interest as of December 31, 2016.

(2) American company listed on NASDAQ in which the Group holds a 23.51% interest as of December 31, 2016.

## 4.4. Environment

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Environmental issues are important throughout the Group and are taken into account in all R&D projects. R&D's effort is to manage environmental risks more effectively, particularly with regard to:

- water management, especially by reducing the use of water from natural environments and lowering emissions in compliance with local, national and international regulations;
- reduction of greenhouse gas emissions by improving energy efficiency and monitoring carbon capture, use and storage of CO<sub>2</sub> and the potential effects of CO<sub>2</sub> on the natural environment;

- detection and reduction of discharges into the air and simulation of their dispersal;
- prevention of soil contamination and regulatory compliance with regard to historical aspects and the remediation of sites; and
- changes in the Group's different products and management of their life cycle, in particular in compliance with the Registration, Evaluation, Authorisation and Restriction of Chemicals regulation (REACH).

## 4.5. R&D Organization

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The Group intends to increase R&D in all of its segments through cross-functional themes and technologies. Constant attention is paid to R&D synergies between business segments.

The Group has 18 R&D sites worldwide and has entered into approximately 1,000 partner agreements with other industrial groups and academic or highly specialized research institutes. TOTAL also has a permanently renewed network of scientific advisors worldwide that monitor and consult on matters of interest

to the Group's R&D activities. Long-term partnerships with universities and academic laboratories considered to be of strategic importance in Europe, the United States, Japan and China, as well as innovative small businesses, are part of the Group's approach.

Each business segment is developing an active intellectual property activity aimed at protecting its innovations, allowing its activity to develop and promoting its technological assets among its partners. In 2016, more than 200 patent applications were filed by the Group.

## 5. Property, plant and equipment

The companies of the Group have freehold and leasehold interests in over 130 countries throughout the world. Operations in properties, oil and gas fields or any other industrial, commercial or administrative facility, as well as the production capacities and utilization rates of these facilities, are described in this chapter for each business segment (Upstream, Refining & Chemicals and Marketing & Services).

A summary of the Group's property, plant and equipment and their main related expenses (depreciation and impairment) is included in Note 7 to the Consolidated Financial Statements (point 7 of chapter 10).

Minimum royalties from finance lease agreements regarding properties, service stations, vessels and other equipment are presented in Note 13 to the Consolidated Financial Statements (point 7 of chapter 10).

Information about the objectives of the Company's environmental policy, in particular those related to the Group's industrial sites or facilities, is presented in chapter 7.

## 6. Group organization

### 6.1. Position of the Company within the Group

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TOTAL S.A. is the Group's parent company.

The Group's businesses are organized in business segments, which receive assistance from the corporate functional divisions.

### 6.2. Company subsidiaries

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A list of the major subsidiaries directly or indirectly held by the Company included in TOTAL S.A.'s scope of consolidation is presented in Note 18 to the Consolidated Financial Statements (refer to point 7 of chapter 10).

As of December 31, 2016, there were 934 consolidated companies, of which 839 were fully consolidated and 95 were accounted for under the equity method. The principles of consolidation are described in Note 1.1 to the Consolidated Financial Statements.

In addition, the table of subsidiaries and affiliates in point 5.1 of chapter 12 presents the Company's direct subsidiaries and shareholdings, and in particular those with a gross value exceeding 1% of the Company's share capital.

The decision of TOTAL S.A.'s subsidiaries to declare dividends is made by their relevant Shareholders' Meetings and is subject to the provisions of applicable local laws and regulations. As of December 31, 2016, there is no restriction under such provisions that would materially restrict the distribution to TOTAL S.A. of the dividends declared by those subsidiaries.

During the fiscal year 2016, TOTAL S.A. acquired 100% of the shares of Saft Group S.A. in August 2016 following a successful voluntary takeover bid. TOTAL S.A. did not acquire any other stakes in companies with registered offices in France representing more than one twentieth, one tenth, one fifth, one third or one half of the capital of these companies, nor took control of any such companies.

### 6.3. Group interests in publicly-traded companies

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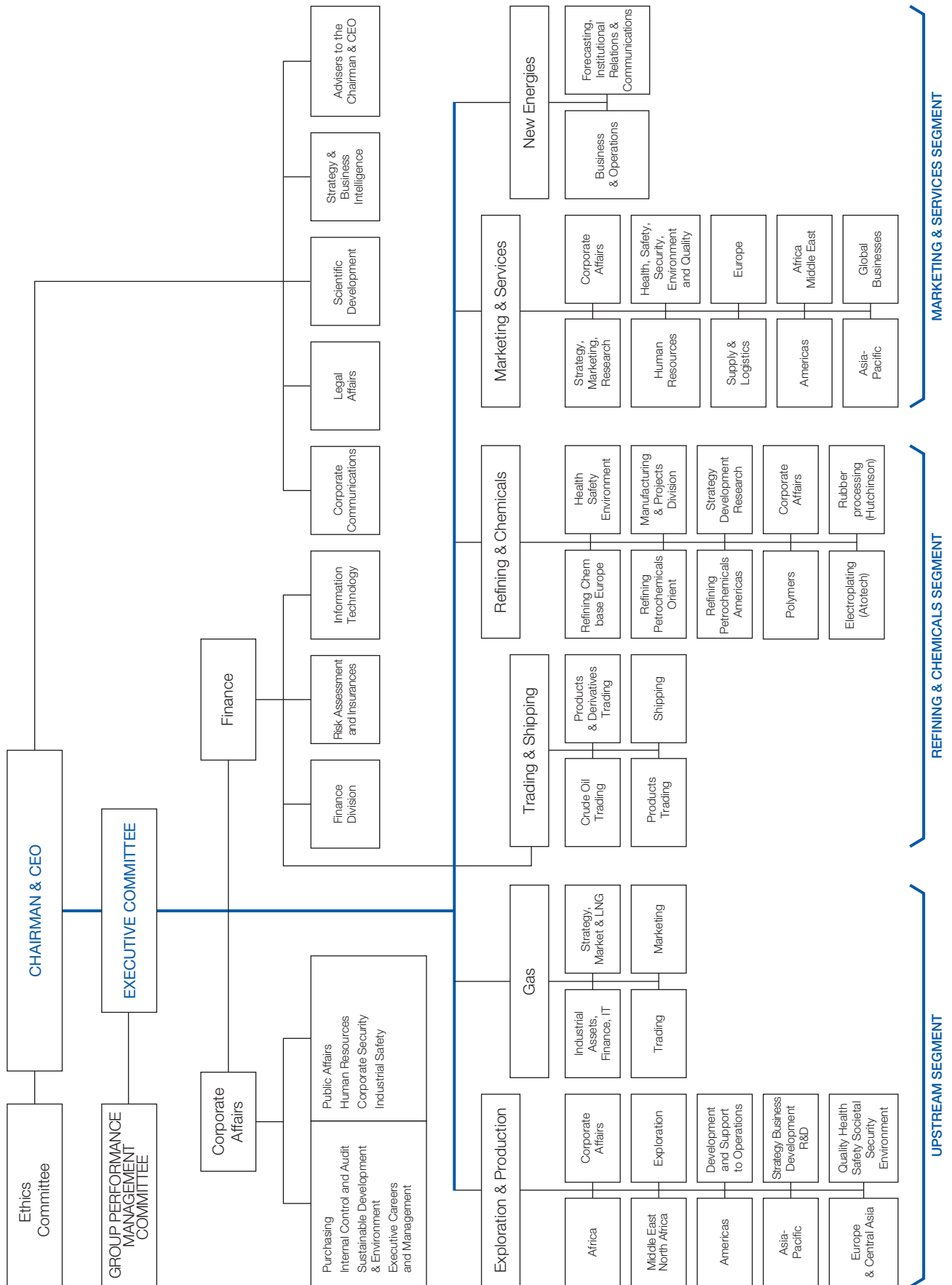
TOTAL holds stakes in a limited number of companies that issue publicly-traded financial instruments in France or abroad. These companies are mainly the Group's financing vehicles (Total Capital, Total Capital Canada Ltd., Total Capital International) or the operational subsidiaries in its business segments, in particular in Africa, such as Total Gabon<sup>(1)</sup>.

TOTAL also holds a majority stake in SunPower (56.73% on December 31, 2016), an American company listed on NASDAQ, and minority interests in other companies, including PAO Novatek (18.9% on December 31, 2016), a Russian company listed on the Moscow Interbank Currency Exchange and the London Stock Exchange.

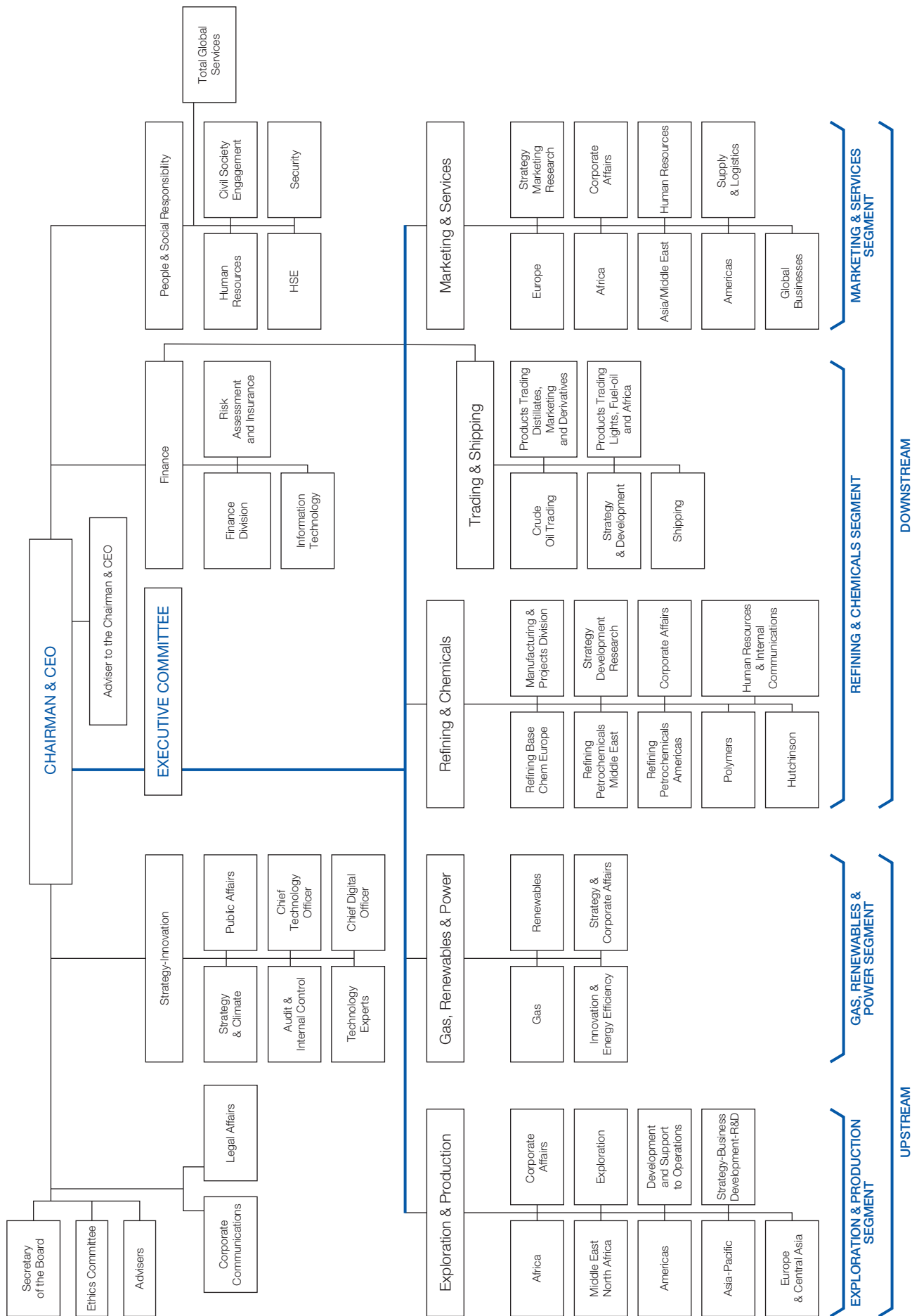
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(1) Total Gabon is a company under Gabonese law, the shares of which are listed on Euronext Paris and owned by TOTAL (58.28%), the Republic of Gabon (25%) and the public (16.72%).

## 7. Organization charts







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# Risks and control

1.	Risk Factors	62
1.1.	Risks related to market environment and other financial risks	.62
1.2.	Industrial and environmental risks and risks related to climate issues	.63
1.3.	Risks related to critical IT systems security	.65
1.4.	Risks related to the development of major projects and reserves	.65
1.5.	Risks related to equity affiliates and management of assets operated by third parties	.66
1.6.	Risks related to political or economic factors	.67
1.7.	Risks related to competition and lack of innovation	.68
1.8.	Ethical misconduct and non-compliance risks	.68
1.9.	Countries targeted by economic sanctions	.69
2.	Legal and arbitration proceedings	73
3.	Insurance and risk management	75
3.1.	Organization	.75
3.2.	Risk and insurance management policy	.75
3.3.	Insurance policy	.75
4.	Internal control and risk management procedures (Article L. 225-37 of the French Commercial Code)	76
4.1.	Basic elements of internal control	.76
4.2.	Control environment	.77
4.3.	Risk assessment and management	.78

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

# 1. Risk Factors

The Group conducts its activities in an ever-changing environment and is exposed to risks that, if they were to occur, could have a material adverse effect on its business, financial condition, including its operating income and cash flow, reputation or outlook.

The Group employs a continuous process of identifying and analyzing risks in order to determine those that could prevent it from achieving its objectives. This chapter presents the significant risks to which the Group believes it is exposed as of the date of this Registration Document. However, as of such date, the Group may

not be aware of other risks that could, or other risks may not have been considered by the Group as being likely to, have a material adverse impact on the Group, its business, financial condition, including its operating income and cash flow, reputation or outlook.

The main internal control and risk management procedures, which are part of the report of the Chairman of the Board of Directors prepared pursuant to Article L. 225-37 of the French Commercial Code, are described in point 4 of this chapter.

## 1.1. Risks related to market environment and other financial risks

**The financial performance of TOTAL is sensitive to a number of market environment related factors, the most significant being hydrocarbon prices, refining margins and exchange rates.**

Generally, a decline in hydrocarbon prices has a negative effect on the Group's results due to a decrease in revenues from oil and gas production. Conversely, a rise in hydrocarbon prices increases the Group's results.

In 2016, crude oil prices reached their lowest point in January and then strengthened progressively, notably due to the OPEC/non-OPEC agreement concluded in November 2016, while remaining low. The market remains highly volatile.

For the year 2017, according to the scenarios retained below, the Group estimates that an increase of \$10 per barrel in the price of Brent crude would increase annual adjusted net operating income<sup>(1)</sup> by approximately \$2 billion and cash flow from operations by approximately \$2.5 billion. Conversely, a decrease of \$10 per barrel in the price of Brent crude would decrease annual adjusted net operating income by approximately \$2 billion and cash flow from operations by approximately \$2.5 billion.

The impact of changes in crude oil and gas prices on downstream operations depends upon the speed at which the prices of finished products adjust to reflect these changes. The Group estimates that a decrease in its European Refining Margin Indicator ("ERMI") of \$10 per ton would decrease annual adjusted net operating income by approximately \$0.5 billion and cash flow from operations by approximately \$0.6 billion. Conversely, an increase in its ERMI of \$10 per ton would increase annual adjusted net operating income by approximately \$0.5 billion and cash flow from operations by approximately \$0.6 billion.

All of the Group's activities are, for various reasons and to varying degrees, sensitive to fluctuations in the dollar/euro exchange rate. The Group estimates that a decrease of \$0.10 per euro (strengthening of the dollar versus the euro) would increase adjusted net operating income by approximately \$0.1 billion and have a limited impact on cash flow from operations. Conversely, an increase of \$0.10 per euro (weakening of the dollar versus the euro) would decrease adjusted net operating income by approximately \$0.1 billion and have a limited impact on cash flow from operations.

Market impact environment 2017 <sup>(a)</sup>	Scenario retained	Change	Estimated impact on adjusted net operating income	Estimated impact on cash flow from operations
Brent	50 \$/b	+10 \$/b	+2 B\$	+2.5 B\$
European Refining Margin Indicator (ERMI) \$/€	35 \$/t	-10 \$/t	-0.5 B\$	-0.6 B\$
	1.1 \$/€	-0.1 \$ per €	+0.1 B\$	≈0 B\$

(a) Sensitivities revised once per year upon publication of the previous year's fourth quarter results. Indicated sensitivities are approximate and based upon TOTAL's current view of its 2017 portfolio. Results may differ significantly from the estimates implied by the application of these sensitivities. The impact of the \$/€ sensitivity on adjusted net operating income is primarily attributable to the Refining & Chemicals segment.

**In addition to the adverse effect on the Group's revenues, margins and profitability, a prolonged period of low oil and natural gas prices could lead the Group to review its projects and the evaluation of its assets and oil and natural gas reserves.**

Prices for oil and natural gas may fluctuate widely due to many factors over which TOTAL has no control. These factors include:

- variations in global and regional supply of and demand for energy;
- global and regional economic and political developments in natural resource-producing regions, particularly in the Middle East, Africa and South America, as well as in Russia;

- the ability of the Organization of the Petroleum Exporting Countries (OPEC) and other producing nations to influence global production levels and prices;
- prices of unconventional energies as well as evolving approaches for developing oil sands and shale oil, which may affect the Group's realized prices, notably under its long-term gas sales contracts and asset valuations, particularly in North America;
- cost and availability of new technology;
- regulations and governmental actions;
- global economic and financial market conditions;

(1) Adjusted results are defined as income at replacement cost, excluding non-recurring items and the impact of fair value changes.

- the security situation in certain regions, the magnitude of international terrorist threats, war or other conflicts;
- changes in demographics, including population growth rates and consumer preferences; and
- adverse weather conditions that can disrupt supplies or interrupt operations of the Group's facilities.

Prolonged periods of low oil and natural gas prices may reduce the economic viability of projects in production or in development, and reduce the Group's liquidity, thereby decreasing its ability to finance capital expenditures and/or causing it to cancel or postpone investment projects.

If TOTAL were unable to finance its investment projects, the Group's opportunities for future revenue and profitability growth would be reduced, which could materially impact the Group's financial condition, including its operating income and cash flow.

Prolonged periods of low oil and natural gas prices may reduce the Group's reported reserves and cause the Group to revise the price assumptions upon which asset impairment tests are based that could have a significant adverse effect on the Group's results in the period in which it occurs. For additional information on impairments recognized on the Group's assets, refer to Note 3 to the Consolidated Financial Statements (point 7 of chapter 10).

Conversely, in a high oil and gas price environment, the Group can experience significant increases in cost and government take, and, under some production-sharing contracts, the Group's production rights could be reduced. Higher prices can also reduce demand for the Group's products.

The Group's earnings from its Refining & Chemicals and Marketing & Services segments are primarily dependent upon the supply and demand for petroleum products and the associated margins on sales of these products, with the impact of changes in oil and gas prices on earnings on these segments being dependent upon the speed at which the prices of petroleum products adjust to reflect movements in oil and gas prices. In 2016, the negative effects of lower oil and gas prices on the Group's results were

partially offset by the results of the Refining & Chemicals segment. During 2016, the Group's refining margins, while remaining at a good level, fluctuated throughout the year. In 2017, there can be no assurance that the Group's refining margins will remain at such level.

The activities of Trading & Shipping (oil, gas and power trading and shipping activities) are particularly sensitive to market risk and more specifically to price risk as a consequence of the volatility of oil and gas prices, to liquidity risk (inability to buy or sell cargoes at market prices) and to counterparty risk (when a counterparty does not fulfill its contractual obligations). The Group uses various energy derivative instruments and freight-rates instruments to adjust its exposure to price fluctuations of crude oil, petroleum products, natural gas, power and freight-rates. Although TOTAL believes it has established appropriate risk management procedures, large market fluctuations may adversely affect the Group's activities and financial condition, including its operating income and cash flow.

For more detailed information on the impact of the lower oil and gas prices on the Group's 2016 results, financial condition (including impairments, significant reductions to capital expenditures and operating costs, and divestments completed under the Group's asset sale program) and outlook, refer to chapter 3.

#### **TOTAL is exposed to other financial risks related to its financing and cash management activities.**

The Group is exposed to changes in interest rates and foreign exchange rates. Even though the Group generally seeks to minimize the currency exposure of each entity to its functional currency (primarily the dollar, the euro, the pound sterling and the Norwegian krone), the Group's financial condition, including its operating income and cash flow, could be impacted by a significant change in the value of these currencies. In addition, as TOTAL mostly turns to financial markets for its financing, its financial condition and operations could be materially impacted if access to those markets were to become more difficult. For further information on financial risks, refer to Notes 15 and 16 to the Consolidated Financial Statements (point 7 of chapter 10).

## 1.2. Industrial and environmental risks and risks related to climate issues

### **TOTAL is exposed to risks related to the safety and security of its operations.**

The Group's activities involve a wide range of operational risks, such as explosions, fires, accidents, equipment failures, leakage of toxic products, emissions or discharges into the air, water or soil, that can potentially cause death or injury, or impact natural resources and ecosystems.

The industrial event that could have the most significant impact is a major industrial accident, e.g., blow out, explosion, fire, leakage of highly toxic products or massive leakage, resulting in death or injury and/or accidental pollution on a large-scale or at an environmentally sensitive site.

Acts of terrorism or malicious acts against the Group's employees, plants, sites, pipelines and transportation or computer systems could also disrupt the Group's business activities and could cause harm or damage to people, property and the environment.

Certain activities of the Group face specific additional risks. TOTAL's Upstream segment is exposed to risks related to the physical characteristics of oil and gas fields, particularly during drilling

operations, which can cause blow outs, explosions, fires or other damage, in particular to the environment, and lead to a disruption of the Group's operations or reduce its production. In addition to the risks of explosions and fires, the activities of the Refining & Chemicals and Marketing & Services business segments entail risks related to the overall life cycle of the products manufactured, as well as the materials used. With regard to transportation, the likelihood of an operational accident depends not only on the hazardous nature of the products transported, but also on the volumes involved and the sensitivity of the regions through which they are transported (quality of infrastructure, population density, environmental considerations).

TOTAL's workforce and the public are exposed to risks inherent to the Group's operations, which could lead to legal proceedings against the Group's entities and legal representatives, notably in cases of death, injury and property and environmental damage. Such proceedings could also damage the Group's reputation. In addition, like most industrial groups, TOTAL is affected by reports of occupational illnesses, particularly those caused by past exposure of Group employees to asbestos.

To manage the operational risks to which it is exposed, the Group has adopted a preventive and remedial approach by putting in place centralized HSE (healthy, safety and environment) and security management systems that seek to take all necessary measures to reduce the related risks (refer to point 4.3.1 of this chapter). In addition, the Group maintains worldwide third-party liability insurance coverage for all its subsidiaries. TOTAL also has insurance to protect against the risk of damage to Group property and/or business interruption at its main refining and petrochemical sites. TOTAL's insurance and risk management policies are described in point 3 of this chapter. However, the Group is not insured against all potential risks. In certain cases, such as a major environmental disaster, TOTAL's liability may exceed the maximum coverage provided by its third-party liability insurance. The Group cannot guarantee that it will not suffer any uninsured loss and there can be no guarantee, particularly in the event of a major environmental disaster or industrial accident, that such loss would not have a material adverse effect on the Group's financial condition, including its operating income and cash flow, and its reputation.

**Crisis management systems are necessary to effectively respond to emergencies, avoid potential disruptions to TOTAL's business and operations and minimize impacts on third parties or the environment.**

TOTAL has crisis management plans in place to deal with emergencies (refer to point 4 of this chapter). However, these plans cannot exclude the risk that the Group's business and operations may be severely disrupted in a crisis situation or ensure the absence of impacts on third parties or the environment. TOTAL has also implemented business continuity plans to continue or resume operations following a shutdown or incident. An inability for the Group to resume its activities in a timely manner could prolong the impact of any disruption and thus could have a material adverse effect on its financial condition, including its operating income and cash flow.

**TOTAL is subject to increasingly stringent environmental, health and safety laws and regulations in numerous countries and may incur material related compliance costs.**

The Group's activities are subject to numerous laws and regulations pertaining to the environment, health and safety. In most countries where the Group operates, particularly in Europe and the United States, sites and products are subject to increasingly strict laws governing the protection of the environment (e.g., water, air, soil, noise, protection of nature, waste management, impact assessments), health (e.g., occupational safety, chemical product risk), and the safety of personnel and residents.

Product quality and consumer protection are also subject to increasingly strict regulations. The Group's entities ensure that their products meet applicable specifications and abide by all applicable consumer protection laws. Failure to do so could lead to personal injury, property damage, environmental harm and loss of customers, which could negatively impact the Group's financial condition, including its operating income and cash flow, and its reputation.

TOTAL incurs, and will continue to incur, substantial expenditures to comply with increasingly complex laws and regulations aimed at protecting health, safety and the environment. Such expenditures could have a material adverse effect on the Group's financial condition.

The introduction of new laws and regulations could compel the Group to curtail, modify or cease certain operations or implement temporary shutdowns of facilities, which could diminish its productivity and have a material adverse impact on its financial condition.

Moreover, most of the Group's activities will eventually, at site closure, require decommissioning followed by environmental remediation after operations are discontinued, in compliance with applicable regulations. Costs related to such activities may materially exceed the Group's provisions and adversely impact its operating results. With regard to the permanent shutdown of an activity, the Group's environmental contingencies and asset retirement obligations are addressed in the "Asset retirement obligations" and "Provisions for environmental contingencies" sections of the Group's consolidated balance sheet (refer to Note 12 to the Consolidated Financial Statements, point 7 of chapter 10). Future expenditures related to asset retirement obligations are accounted for in accordance with the accounting principles described in the same Note.

**Laws and regulations related to climate change may adversely affect the Group's business and financial condition.**

Growing public concern over greenhouse gas ("GHG") emissions and climate change, which notably led to the signature of the Paris Agreement on December 12, 2015 as part of the United Nations Climate Change Conference (COP 21), is likely to continue to lead to further regulation in these areas. These additional regulatory requirements could lead the Group to curtail, change or cease certain of its operations, and submit the Group's facilities to additional compliance obligations, which could adversely affect the Group's businesses and financial condition, including its operating income and cash flow.

Regulations designed to gradually limit fossil fuel use may, depending on the GHG emission limits and time horizons set, negatively and significantly affect the development of projects, as well as the economic value of certain of the Group's assets. Internal studies conducted by TOTAL have shown that a long term CO<sub>2</sub> price of \$40/t<sup>(1)</sup> applied worldwide would have an impact of around 5% on the discounted present value of the Group's assets (upstream and downstream)<sup>(2)</sup>. In response to these possible developments, natural gas, which is the fossil energy that emits the least amount of GHG, represented nearly 48% of TOTAL's production in 2016, compared to approximately 35% in 2005, and the Group's objective is to grow this percentage over the long term with the expected growth of gas markets. In addition, the Group ceased its coal production activities and is developing its activities in the realms of solar energy production and energy from biomass (renewable energies).

In Europe, the regulations concerning the market for CO<sub>2</sub> emission allowances, the EU Emissions Trading System (EU-ETS), entered a third phase on January 1, 2013. This phase marks the end of the overall free allocation of emission allowances: certain emissions, such as those related to electricity production, no longer benefit from free allowances, while for others free allowances have been significantly reduced. Free allocations are now established based on the emission level of the top-performing plants (i.e., the least GHG-emitting) within the same sector ("top 10 benchmark"). Lower-performing plants must purchase, at market price, the

(1) As from 2021 or the current price in a given country.

(2) Sensitivity calculated for a crude oil price of \$60/80/b compared to a reference scenario that takes into account a CO<sub>2</sub> price in the regions already covered by a carbon pricing system.

necessary allowances to cover their emissions over these free allocations. The plants also need to indirectly bear the cost of allowances for all electricity consumed (including electricity generated internally at the facilities).

The 2014 update to the EU-ETS list of sectors exposed to carbon leakage confirmed that refining activities in Europe are an exposed sector and should continue to benefit from free allocations partially covering its deficits. Based on available information, the Group has estimated that approximately 25% of its emissions subject to the EU-ETS will not be covered by free allowances during the period 2013-2020 and at least 30% during the period 2021-2030. The financial risk related to the foreseeable purchase of CO<sub>2</sub> emission allowances on the market is expected to rise due to the effects of the ongoing reform of the EU-ETS. At year-end 2016, the price of CO<sub>2</sub> emission allowances stood at approximately €6/t CO<sub>2</sub>. The forecast for 2020 indicates that the price could rise to approximately €20/t<sup>(1)</sup> CO<sub>2</sub> due to the combined effects of backloading<sup>(2)</sup> (having removed 900 Mt from phase 3 allowance auctions), of the foreseeable cancellation of quotas and the establishment of a “market stability reserve” at the end of this phase. The Group believes that the price of CO<sub>2</sub> emission allowances could rise to at least €30/t during phase 4 (2021-2030).

#### **The physical effects of climate change may adversely affect the Group's business.**

TOTAL's businesses operate in varied locales where the potential physical impacts of climate change, including changes in weather patterns, are highly uncertain and may adversely impact the results of the Group's operations.

Climate change potentially has multiple effects that could harm the Group's operations. The increasing scarcity of water resources may negatively affect the Group's operations in some regions of the world, high sea levels may harm certain coastal activities, and the multiplication of extreme weather events may damage offshore and onshore facilities. These climate risk factors are continually assessed in TOTAL's management and risk management plans.

The Group believes that it is impossible to guarantee that the contingencies or liabilities related to the matters mentioned in point 1.2 of this chapter will not have a material adverse impact on its business, financial condition, including its operating income and cash flow, reputation or outlook.

### 1.3. Risks related to critical IT systems security

#### **Disruption to or breaches of TOTAL's critical IT services or information security systems could adversely affect the Group's operations.**

The Group's activities depend heavily on the reliability and security of its information technology (IT) systems. If the integrity of its IT systems were compromised due to, for example, technical failure,

cyber attack, viruses and computer intrusions, power or network outages or natural disasters, the Group's activities and assets could sustain serious damage, material intellectual property could be divulged and, in some cases, personal injury, property damage, environmental harm and regulatory violations could occur, potentially having a material adverse effect on the Group's financial condition, including its operating income and cash flow.

### 1.4. Risks related to the development of major projects and reserves

#### **The Group's production growth and profitability depend on the delivery of its major development projects.**

Growth of production and profitability of the Group rely heavily on the successful execution of its major development projects that are increasingly complex and capital-intensive. These major projects may face a number of difficulties, including, in particular, those related to:

- economic or political risks, including threats specific to a certain country or region, such as terrorism, social unrest or other conflicts (refer to point 1.6 of this chapter);
- negotiations with partners, governments, local communities, suppliers, customers and other parties;
- obtaining project financing;
- controlling capital and operating costs;
- earning an adequate return in a low oil and/or gas price environment;
- adhering to project schedules; and
- the timely issuance or renewal of permits and licenses by public agencies.

Poor delivery of any major project that underpins production or production growth could adversely affect the Group's financial condition, including its operating income and cash flow.

#### **The Group's long-term profitability depends on cost-effective discovery, acquisition and development of economically viable new reserves; if the Group is unsuccessful, its financial condition, including its operating income and cash flow, would be materially and adversely affected.**

A large portion of the Group's revenues and operating results are derived from the sale of oil and gas that the Group extracts from underground reserves developed as part of its Exploration & Production activities. The development of oil and gas fields, the construction of facilities and the drilling of production or injection wells is capital intensive and requires advanced technology. Due to constantly changing market conditions and environmental challenges, cost projections can be uncertain. For TOTAL's Exploration & Production activities to continue to be profitable, the Group needs to replace its reserves with new proved reserves that can be developed and produced in an economically viable manner.

(1) Company data.

(2) Backloading: authorization given to the European Commission to intervene at its own discretion in the CO<sub>2</sub> allowance auction calendar.

In addition, TOTAL's ability to discover or acquire and develop new reserves successfully is uncertain and can be negatively affected by a number of factors, including:

- the geological nature of oil and gas fields, notably unexpected drilling conditions including pressure or unexpected heterogeneities in geological formations;
- the risk of dry holes or failure to find expected commercial quantities of hydrocarbons;
- equipment failures, fires, blow-outs or accidents;
- shortages or delays in the availability or delivery of appropriate equipment;
- the Group's inability to develop or implement new technologies that enable access to previously inaccessible fields;
- the Group's inability to anticipate market changes in a timely manner;
- adverse weather conditions;
- the inability of the Group's partners to execute or finance projects in which the Group holds an interest or to meet their contractual obligations;
- the inability of service companies to deliver contracted services on time and on budget;
- compliance with both anticipated and unanticipated governmental requirements, including U.S. and EU regulations that may give a competitive advantage to companies not subject to such regulations;
- economic or political risks, including threats specific to a certain country or region, such as terrorism, social unrest or other conflicts (refer to point 1.6 of this chapter);
- competition from oil and gas companies for the acquisition and development of assets and licenses (refer to point 1.7 of this chapter);
- increased taxes and royalties, including retroactive claims and changes in regulations and tax reassessments;
- disputes related to property titles.

These factors could lead to cost overruns and could impair the Group's ability to complete a development project or make production economical. Some of these factors may also affect the Group's projects and facilities further down the oil and gas chain.

If TOTAL fails to develop new reserves cost-effectively and in sufficient quantities, the Group's financial condition, including its operating income and cash flow, could be materially affected.

**The Group's oil and gas reserves data are estimates only and subsequent downward adjustments are possible. If actual production from such reserves proves to be lower than current**

**estimates indicate, the Group's financial condition, including its operating income and cash flow, could be negatively impacted.**

The Group's proved reserves figures are estimates prepared in accordance with SEC rules. Proved reserves are those reserves which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically recoverable – from a given date forward, from known reservoirs and under existing economic conditions, operating methods and government regulations – prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. Reserves are estimated by teams of qualified, experienced and trained geoscientists, petroleum engineers and project engineers, who rigorously review and analyze in detail all available geoscience and engineering data (e.g., seismic data, electrical logs, cores, fluids, pressures, flow rates, facilities parameters). This process involves making subjective judgments, including with respect to the estimate of hydrocarbons initially in place, initial production rates and recovery efficiency, based on available geological, technical and economic data. Consequently, estimates of reserves are not exact measurements and are subject to revision.

A variety of factors that are beyond the Group's control could cause such estimates to be adjusted downward in the future, or cause the Group's actual production to be lower than its currently reported proved reserves indicate. Such factors include:

- a prolonged period of low prices of oil or gas, making reserves no longer economically viable to exploit and therefore not classifiable as proved;
- an increase in the price of oil or gas, which may reduce the reserves to which the Group is entitled under production sharing and risked service contracts and other contractual terms;
- changes in tax rules and other regulations that make reserves no longer economically viable to exploit; and
- the actual production performance of the Group's deposits.

The Group's reserves estimates may therefore require substantial downward revisions should its subjective judgments prove not to have been conservative enough based on the available geoscience and engineering data, or the Group's assumptions regarding factors or variables that are beyond its control prove to be incorrect over time. Any downward adjustment could indicate lower future production amounts, which could adversely affect the Group's financial condition, including its operating income and cash flow.

## 1.5. Risks related to equity affiliates and management of assets operated by third parties

**Many of the Group's projects are conducted by equity affiliates or are operated by third parties. For these projects, the Group's degree of control, as well as its ability to identify and manage risks, may be reduced.**

A significant number of the Group's projects are conducted by equity affiliates. In cases where the Group's company is not the operator, such company may have limited influence over, and control of, the behavior, performance and costs of the partnership, its ability to manage risks may be limited and it may, nevertheless, be prosecuted by regulators or claimants in the event of an incident.

For additional information, refer to Note 8 ("Equity affiliates, other titles and related parties") to the Consolidated Financial Statements (point 7 of chapter 10).

Additionally, the partners of the Group may not be able to meet their financial or other obligations to the projects, which may threaten the viability of a given project. These partners may also not have the financial capacity to fully indemnify the Group or third parties in the event of an incident.

With respect to joint ventures, contractual terms generally provide that the operator, whether an entity of the Group or a third party, assumes full liability for damages caused by its gross negligence or willful misconduct.



In the absence of the operator's gross negligence or willful misconduct, other liabilities are generally borne by the joint venture and the cost thereof is assumed by the partners of the joint venture in proportion to their respective ownership interests.

With respect to third-party providers of goods and services, the amount and nature of the liability assumed by the third party depends on the context and may be limited by contract. Contracts may also contain obligations to indemnify TOTAL or for TOTAL to indemnify co-contracting parties or third parties.

## 1.6. Risks related to political or economic factors

**TOTAL has significant production and reserves located in politically, economically and socially unstable areas, where the likelihood of material disruption of the Group's operations is relatively high.**

A significant portion of TOTAL's oil and gas production and reserves is located in countries that are not part of the Organisation for Economic Co-operation and Development (OECD). In recent years, a number of these countries have experienced varying degrees of one or more of the following: economic or political instability, civil war, violent conflict, social unrest, actions of terrorist groups and the application of international economic sanctions. Any of these conditions alone or in combination could disrupt the Group's operations in any of these regions, causing substantial declines in production or revisions to reserves estimates.

In Africa, which represented 26%<sup>(1)</sup> of the Group's 2016 combined liquids and gas production, certain of the countries in which the Group has production have recently suffered from some of these conditions, including Nigeria, which is one of the main contributing countries to the Group's production of hydrocarbons, and Libya (refer to point 2.1.1.8 of chapter 2).

The Middle East, which represented 21%<sup>(2)</sup> of the Group's 2016 combined liquids and gas production, has in recent years suffered increased political volatility in connection with violent conflict and social unrest, including Syria, where European Union (EU) and U.S. economic sanctions have prohibited TOTAL from producing oil and gas since 2011. In Yemen, the deterioration of security conditions in the vicinity of Balhaf caused the company Yemen LNG, in which the Group holds a stake of 39.62%, to stop its commercial production and export of LNG and to declare *force majeure* to its various stakeholders in 2015. The plant has been put in preservation mode. In Iran, following the suspension on January 16, 2016 of UN economic sanctions, most U.S. secondary sanctions and most EU economic sanctions, the Group has engaged in certain activities. However, sanctions could be reinstated unilaterally in the event of a dispute over Iran's compliance with its nuclear commitments or in certain other cases. For additional information, refer to points 1.9.1 and 1.9.2 of this chapter.

In South America, which represented 6% of the Group's 2016, combined liquids and gas production, certain of the countries in which TOTAL has production have recently suffered from some of the above-mentioned conditions, including Argentina, Brazil and Venezuela.

Since July 2014, international economic sanctions have been adopted against certain Russian persons and entities, including various entities operating in the financial, energy and defense sectors. As of December 31, 2016, TOTAL held nearly 21% of its proved reserves in Russia, where from the Group had 14% of its combined oil and gas production in 2016. For additional information, refer to point 1.9.1 of this chapter.

Furthermore, in addition to current production, TOTAL is also exploring for and developing new reserves in other regions of the world that are historically characterized by political, social and economic instability, such as the Caspian Sea region where TOTAL has large projects currently underway.

The occurrence and magnitude of incidents related to economic, social and political instability are unpredictable. It is possible that they could have a material adverse impact on the Group's production and operations in the future and/or cause certain investors to reduce their holdings of TOTAL's securities.

TOTAL, like other major international energy companies, has a geographically diverse portfolio of reserves and operational sites, which allows it to conduct its business and financial affairs so as to reduce its exposure to political and economic risks. However, there can be no assurance that such events will not have a material adverse impact on the Group.

**Intervention by host country authorities can adversely affect the Group's activities and its operating results.**

TOTAL has significant exploration and production activities, and in some cases refining, marketing or chemicals operations, in countries whose governmental and regulatory framework is subject to unexpected change and where the enforcement of contractual rights is uncertain. The legal framework of TOTAL's exploration and production activities, established through concessions, licenses, permits and contracts granted by or entered into with a government entity, a state-owned company or, sometimes, private owners, is subject to risks of renegotiation that, in certain cases, can reduce or challenge the protections offered by the initial legal framework and/or the economic benefit to TOTAL.

In addition, the Group's exploration and production activities in such countries are often undertaken in conjunction with state-owned entities, for example as part of a joint venture in which the state has a significant degree of control. In recent years, in various regions globally, TOTAL has observed governments and state-owned enterprises impose more stringent conditions on companies pursuing exploration and production activities in their respective countries, increasing the costs and uncertainties of the Group's business operations. TOTAL expects this trend to continue.

Potential increasing intervention by governments in such countries can take a wide variety of forms, including:

- the award or denial of exploration and production interests;
- the imposition of specific drilling obligations;
- price and/or production quota controls and export limits;
- nationalization or expropriation of assets;
- unilateral cancellation or modification of license or contract rights;
- increases in taxes and royalties, including retroactive claims and changes in regulations and tax reassessments;

(1) Excluding North Africa.

(2) Including North Africa.

- the renegotiation of contracts;
- the imposition of increased local content requirements;
- payment delays; and
- currency exchange restrictions or currency devaluation.

If a host government were to intervene in one of these forms in a country where TOTAL has substantial operations, including exploration, the Group could incur material costs or the Group's production or asset value could decrease, which could potentially

have a material adverse effect on its financial condition, including its operating income and cash flow.

For example, the Nigerian government has been contemplating new legislation to govern the petroleum industry which, if passed into law, could have an impact on the existing and future activities of the Group in that country through increased taxes and/or operating costs and could adversely affect financial returns from projects in that country.

## 1.7. Risks related to competition and lack of innovation

**The Group operates in a highly competitive environment. Its competitiveness could be adversely impacted if the Group's level of innovation lagged behind its competitors.**

TOTAL's main competitors are comprised of national and international oil companies. The evolution of the energy sector has opened the door to new competitors and increased market price volatility.

TOTAL is subject to competition in the acquisition of assets and licenses for the exploration and production of oil and natural gas as well as for the sale of manufactured products based on crude and refined oil. In the gas sector, major producers increasingly compete in the downstream value chain with established distribution companies. Increased competitive pressure could have a significant negative effect on the prices, margins and market shares of the Group's companies.

The pursuit of unconventional gas development, particularly in the United States, has contributed to falling market prices and a marked difference between spot and long-term contract prices. The competitiveness of long-term contracts indexed to oil prices could be affected if this discrepancy persists and if it should prove difficult to invoke price revision clauses.

The Group's activities are carried out in a constantly changing environment with new products and technologies continuously emerging. The Group may not be able to anticipate these changes, identify and integrate technological developments in order to maintain its competitiveness, maintain a high level of performance and operational excellence, and best meet the needs and demands of its customers. The Group's innovation policy requires significant investment, notably in R&D, of which the expected impact cannot be guaranteed.

In the field of R&D, the multiplication of research partnerships, in particular in related technical fields, may make it difficult for the Group to track technical information exchanged with research partners and monitor related contractual restrictions (e.g., confidentiality, limited use). New and increasingly complex digital technologies as well as the multiplication of partnerships are all likely to increase contamination risks, which could, as a result, limit TOTAL's ability to exploit innovations.

## 1.8. Ethical misconduct and non-compliance risks

**Ethical misconduct or breaches of applicable laws by employees of the Group could expose TOTAL to criminal and civil penalties and be damaging to TOTAL's reputation and shareholder value.**

The Group's Code of Conduct, which applies to all of its employees, defines TOTAL's commitment to business integrity and compliance with all applicable legal requirements and high ethical standards. This commitment is supported by a "zero tolerance" principle. Ethical misconduct (notably with respect to human rights) or non-compliance with applicable laws and regulations (including corruption, fraud and competition laws) by TOTAL or any third party acting on its behalf could expose TOTAL and/or its employees to criminal and civil penalties and could be damaging to TOTAL's reputation and shareholder value.

In addition, such misconduct or non-compliance may lead the competent authorities to impose other measures, such as the appointment of an independent monitor in charge of assessing the Group's compliance and internal control procedures and, if need be, recommending improvements. For an overview of the settlements between TOTAL, the SEC and the Department of Justice (DoJ) providing for the appointment of an independent monitor, refer to point 4.3 of this chapter and point 3.7 of chapter 7.

Generally, entities of the Group could potentially be subject to administrative, judicial or arbitration proceedings that could have a material adverse impact on the Group's financial condition and reputation (refer to point 2 of this chapter).

## 1.9. Countries targeted by economic sanctions

**TOTAL has activities in certain countries targeted by economic sanctions. If the Group's activities are not conducted in accordance with applicable laws and regulations, TOTAL could be sanctioned.**

Various members of the international community have targeted certain countries, including Iran and Syria, as well as certain economic sectors in Russia, with economic sanctions and other restrictive measures. U.S. and European restrictions relevant to the Group and certain disclosure concerning the Group's limited activities or presence in certain targeted countries are outlined below in points 1.9.1 and 1.9.2, respectively.

### 1.9.1. U.S. and European legal restrictions

TOTAL continues to closely monitor the possible impacts of international economic sanctions regimes on its activities. The Group does not believe that its activities in targeted countries are in violation of applicable economic sanctions administered by the United States, the European Union ("EU") and other members of the international community. However, the Group cannot assure that current or future regulations or developments related to economic sanctions will not have a negative impact on its business, financial condition or reputation. A violation by the Group of applicable laws or regulations could result in criminal, civil and/or material financial penalties.

#### Restrictions against Iran

On July 14, 2015, the EU, China, France, Russia, the United Kingdom, the United States and Germany reached an agreement with Iran, known as the Joint Comprehensive Plan of Action (the "JCPOA"), regarding limits on Iran's nuclear activities and relief under certain U.S., EU and UN economic sanctions regarding Iran. On January 16, 2016, the International Atomic Energy Agency ("IAEA") confirmed that Iran had met its initial nuclear compliance commitments under the JCPOA. Therefore, as from that date, UN economic sanctions, most U.S. secondary sanctions (*i.e.*, those covering non-U.S. persons<sup>(1)</sup>) and most EU economic sanctions were suspended<sup>(2)</sup>. Sanctions could, however, be reinstated unilaterally by any participant in the event of a dispute over Iran's compliance with its nuclear commitments or in certain other cases. TOTAL is closely monitoring developments in this regard.

With respect to the Group's activities conducted under the sanctions framework that was in place prior to the JCPOA sanctions relief, the U.S. Department of State made a determination on September 30, 2010 that certain historical activities would not be deemed sanctionable and that, so long as TOTAL acts in accordance with its commitments related to this determination, it will not be regarded as a company of concern for its past Iran-related activities. Since 2011, TOTAL has had no production in Iran.

Certain U.S. states have adopted legislation with respect to Iran requiring, in certain conditions, state pension funds to divest securities in any company with active business operations in Iran

and state contracts not to be awarded to such companies. State regulators have adopted similar initiatives relating to investments by insurance companies. These measures are generally still in effect despite the JCPOA sanctions relief. If TOTAL's activities in Iran were determined to fall within the scope of these prohibitions, and in the absence of any available exemptions, certain U.S. institutions holding interests in TOTAL may be required to sell their interests.

On November 8, 2016, TOTAL signed a heads of agreement ("HOA") with the National Iranian Oil Company ("NIOC"), which was removed on January 16, 2016 from the U.S. and EU sanctions designation lists. The HOA contemplates that the parties will negotiate an agreement for the development of phase 11 of South Pars gas field in Iran. For additional information regarding this HOA, refer to point 1.9.2, below.

TOTAL believes that its current activities in Iran or involving Iranian persons comply with the EU and U.S. sanctions that remain in force in respect of Iran.

#### Restrictions against Syria

The EU adopted measures in 2011 regarding trade with and investment in Syria that are applicable to European persons and to entities constituted under the laws of an EU Member State, including, notably, a prohibition on the purchase, import or transportation from Syria of crude oil and petroleum products. The United States also has adopted comprehensive measures that broadly prohibit trade and investment in Syria. Since 2011, the Group has ceased activities that contribute to oil and gas production in Syria and has not purchased hydrocarbons from Syria.

#### Restrictions against Russia

Since July 2014, international economic sanctions have been adopted against certain Russian persons and entities, including various entities operating in the financial, energy and defense sectors.

The economic sanctions adopted by the EU since 2014 do not materially affect TOTAL's activities in Russia. TOTAL has been formally authorized by the French government, which is the competent authority for granting authorization under the EU sanctions regime, to continue all its activities in Russia (on the Kharyaga and Termokarstovoye fields and the Yamal LNG project).

The United States has notably adopted economic sanctions targeting PAO Novatek<sup>(3)</sup> ("Novatek"), as well as entities in which Novatek (individually or with other similarly targeted persons or entities collectively) owns an interest of at least 50%, including OAO Yamal LNG<sup>(4)</sup> ("Yamal LNG") and Terneftegas<sup>(5)</sup>. These sanctions prohibit U.S. persons from transacting in, providing financing for or otherwise dealing in debt issued by these entities after July 16, 2014 of greater than 90 days maturity. Consequently, the use of the U.S. dollar for such financing, including for Yamal LNG, is effectively prohibited.

The Yamal LNG project's financing was finalized in successive steps in 2016 in compliance with applicable regulations.

(1) For purposes of this chapter, "U.S. person" means any U.S. citizen and permanent resident alien wherever they are in the world, entity organized under the laws of the United States or any jurisdiction within the United States, including foreign branches, or any person or entity located in the United States.

(2) Certain limited U.S. and EU human rights-related and terrorism-related sanctions remain in force.

(3) A Russian company listed on the Moscow and London stock exchanges and in which the Group held an interest of 18.9% as of December 31, 2016.

(4) A company jointly owned by PAO Novatek (50.1%), Total E&P Yamal (20%), CNODC (20%), a subsidiary of China National Petroleum Corporation ("CNPC") and Silk Road Fund (9.9%).

(5) A company jointly owned by PAO Novatek (51%) and Total Termokarstovoye BV (49%).

TOTAL's activities in Russia are also not materially affected by restrictive measures adopted by the United States in August 2015 imposing export controls and restrictions relating to the export of certain goods, services, and technologies destined for projects located in Russia in the field of oil exploration.

As of December 31, 2016, TOTAL held nearly 21% of its proved reserves in Russia, where from the Group had 14% of its combined oil and gas production in 2016.

TOTAL continues to closely monitor the different international sanctions regimes targeting certain sectors of the economy of Russia, and in particular, it closely monitors the potential imposition of additional sanctions.

### 1.9.2. Information concerning certain limited activities in Iran and Syria

Provided in this section is certain information concerning TOTAL's activities related to Iran that took place in 2016 that is required to be disclosed pursuant to Section 13(r) of the Securities Exchange Act of 1934, as amended ("U.S. Exchange Act"). In addition, information for 2016 is provided concerning the various types of payments made by Group affiliates to the government of any country identified by the United States as a state sponsor of terrorism (currently, Iran, Syria and Sudan<sup>(1)</sup>) or any entity controlled by those governments. TOTAL believes that these activities are not sanctionable and has not been informed that it is at risk of possible imposition of sanctions for activities previously disclosed. For more information on certain U.S. and EU restrictions relevant to TOTAL in these jurisdictions, see point 1.9.1 above.

#### Iran

The Iran Threat Reduction and Syria Human Rights Act of 2012 ("ITRA") added Section 13(r) to the U.S. Exchange Act, which requires TOTAL to disclose whether it or any of its affiliates has engaged during the calendar year in certain Iran-related activities, including those targeted under ISA, without regard to whether such activities are sanctionable under ISA, and any transaction or dealing with the Government of Iran that is not conducted pursuant to a specific authorization of the U.S. government. While neither TOTAL S.A. nor any of its affiliates have engaged in any activity that would be required to be disclosed pursuant to subparagraphs (A), (B) or (C) of Section 13(r) (1), affiliates of the Company may be deemed to have engaged in certain transactions or dealings with the government of Iran that would require disclosure pursuant to Section 13(r) (1)(D), as discussed below.

#### Upstream

Following the suspension of certain international economic sanctions against Iran on January 16, 2016 (as described in point 1.9.1 of this chapter), the Group commenced various business development activities in Iran. TOTAL entered into a memorandum of understanding ("MOU") with the National Iranian Oil Company ("NIOC"), pursuant to which NIOC provided technical data on certain oil and gas projects so that TOTAL could assess potential developments in Iran in compliance with the remaining applicable international economic sanctions. TOTAL subsequently proposed to develop and operate the South Pars Phase 11 gas field offshore Iran in the Persian Gulf along the international border with Qatar. This resulted in the negotiation and signing, on November 8, 2016,

of a heads of agreement ("HOA") for the development and operation of the field. The parties to the HOA are NIOC, Total E&P South Pars S.A.S. (a wholly owned affiliate of TOTAL S.A.), CNPC International Ltd. (a wholly owned affiliate of China National Petroleum Company) and Petropars Ltd. (a wholly owned affiliate of NIOC). The HOA contains the key principles and commercial terms that will be adopted in a definitive contract for the development and operation of South Pars Phase 11, should such definitive contract be finally agreed. The project is expected to have a production capacity of 370,000 boe/d and the produced gas will be fed into Iran's gas network. TOTAL is expected to operate the project with a 50.1% interest alongside Petropars (19.9%) and CNPC (30%). The required investment is expected to be approximately \$4 billion, of which TOTAL would finance 50.1%, with all equity contributions and payments in non-U.S. currency. In preparation for the South Pars Phase 11 project, TOTAL commenced engineering and reservoir studies, which were presented in part to Pars Oil & Gas Company (a NIOC affiliate) in 2016 during a technical workshop. In the event of new or reinstated international economic sanctions, if such sanctions were to prevent the Group from performing under the anticipated contract for South Pars Phase 11, TOTAL expects to be able to terminate the contract and recover its past costs from NIOC (unless prevented by sanctions).

Regarding other potential oil and gas projects covered by the aforementioned MOU, TOTAL held technical meetings in 2016 with representatives of NIOC and its affiliated companies and carried out a technical review of the South Azadegan oil field in Iran as well as the Iran LNG Project (a project contemplating a 10 Mt/y LNG production facility at Tombak Port on Iran's Persian Gulf coast), the results of which were partially disclosed to NIOC and relevant affiliated companies.

In addition, in connection with anticipated activities under the aforementioned MOU and HOA, TOTAL attended meetings in 2016 with the Iranian oil and gas ministry and several Iranian companies with ties to the government of Iran.

Also in 2016, TOTAL was selected, along with other international oil and gas companies, to form an advisory group to the oil and gas ministries of Iran and Oman concerning a possible future gas pipeline between the two countries. In that regard, TOTAL entered into a confidentiality agreement and attended meetings with these companies and ministries.

In addition, TOTAL registered in 2016 a branch office of a new entity, Total Iran B.V., a wholly-owned affiliate of TOTAL S.A., the purpose of which is to serve as the representation office for the Group in Iran. This entity replaces Total E&P Iran, which previously served the same purpose, but only for Exploration & Production.

Neither revenues nor profits were recognized from any of the aforementioned activities in 2016, and the Group expects to conduct similar business development activities in 2017.

Some payments are yet to be reimbursed to the Group with respect to past expenditures and remuneration under buyback contracts entered into between 1997 and 1999 with NIOC for the development of the South Pars 2&3 and Dorood fields. With respect to these contracts, development operations were completed in 2010 and the Group is no longer involved in the operation of these fields.

(1) Since the independence of the Republic of South Sudan on July 9, 2011, TOTAL is no longer present in Sudan.

Concerning payments to Iranian entities in 2016, Total E&P Iran (100%), Elf Petroleum Iran (99.8%), Total Sirri (100%) and Total South Pars (99.8%) collectively made payments of approximately IRR 3 billion (approximately \$0.1 million<sup>(1)</sup>) to (i) the Iranian administration for taxes and social security contributions concerning the personnel of the aforementioned local office and residual buyback contract-related obligations, and (ii) Iranian public entities for payments with respect to the maintenance of the aforementioned local office (e.g., utilities, telecommunications). TOTAL expects similar types of payments to be made by these affiliates in 2017 albeit in higher amounts due to increased business development activity in Iran. Neither revenues nor profits were recognized from the aforementioned activities in 2016.

Furthermore, Total E&P UK Limited ("TEP UK"), a wholly-owned affiliate of TOTAL, holds a 43.25% interest in a joint venture at the Bruce field in the UK with BP Exploration Operating Company Limited (37.5%, operator), BHP Billiton Petroleum Great Britain Ltd (16%) and Marubeni Oil & Gas (North Sea) Limited (3.75%). This joint venture is party to an agreement (the "Bruce Rhum Agreement") governing certain transportation, processing and operation services provided to a joint venture at the Rhum field in the UK that is co-owned by BP (50%, operator) and the Iranian Oil Company UK Ltd ("IOC"), a subsidiary of NIOC (50%) (together, the "Rhum Owners"). TEP UK owned and operated the pipeline of the Frigg UK Association and the St Fergus Gas Terminal and was party to an agreement governing provision of transportation and processing services to the Rhum Owners (the "Rhum FUKA Agreement") (the Bruce Rhum Agreement and the Rhum FUKA Agreement being referred to collectively as the "Rhum Agreements"). On August 27, 2015, TEP UK signed a sale and purchase agreement to divest its entire interest in the Frigg UK Association pipeline and St Fergus Gas Terminal to NSMP Operations Limited ("NSMP"). On March 15, 2016, the divestment was completed and TEP UK's interest in the Rhum FUKA Agreement was novated to NSMP. As from this date, TEP UK's only interest in the Rhum FUKA Agreement is in relation to the settlement of historical *force majeure* claims with the Rhum Owners relating to the period when the Rhum field was shut down. To TOTAL's knowledge, provision of all services under the Rhum Agreements was initially suspended in November 2010, when the Rhum field stopped production following the adoption of EU sanctions, other than critical safety-related services (i.e., monitoring and marine inspection of the Rhum facilities), which were permitted by EU sanctions regulations. On October 22, 2013, the UK government notified IOC of its decision to apply a temporary management scheme to IOC's interest in the Rhum field within the meaning of UK Regulations 3 and 5 of the Hydrocarbons (Temporary Management Scheme) Regulations 2013 (the "Hydrocarbons Regulations"). From October 22, 2013 until the termination of the temporary management scheme on March 16, 2016 (as further explained below), all correspondence by TEP UK in respect of IOC's interest in the Rhum Agreements was with the UK government in its capacity as temporary manager of IOC's interests. On December 6, 2013, the UK government authorized TEP UK, among others, under Article 43a of EU Regulation 267/2012, as amended by 1263/2012 and under Regulation 9 of the Hydrocarbons Regulations, to carry out activities in relation to the operation and production of the Rhum field. In addition, on

September 4, 2013, the U.S. Treasury Department issued a license to BP authorizing BP and certain others to engage in various activities relating to the operation and production of the Rhum field. Following receipt of all necessary authorizations, the Rhum field resumed production on October 26, 2014 with IOC's interest in the Rhum field and the Rhum Agreements subject to the UK government's temporary management pursuant to the Hydrocarbons Regulations. Services were provided by TEP UK under the Rhum Agreements from October 26, 2014 and TEP UK received tariff income and revenues from BP and the UK government (in its capacity as temporary manager of IOC's interest in the Rhum field) in accordance with the terms of the Rhum Agreements until the termination of the temporary management scheme in March 2016. As IOC ceased to be a listed person within the meaning of the Hydrocarbons Regulations on January 16, 2016, the UK government gave notice to IOC on January 22, 2016 of the termination of the temporary management scheme with effect from March 16, 2016 in accordance with regulation 26(1)(a) and 27(1)(a) of the Hydrocarbons Regulations. As a result, since March 16, 2016, TEP UK has liaised directly with IOC concerning its interest in the Bruce Rhum Agreement, and services have been provided by TEP UK under the Bruce Rhum Agreement to IOC as Rhum Owner. In 2016, these activities generated for TEP UK gross revenue of approximately £8 million (approximately \$9.8 million) and net profit of approximately £0.20 million (approximately \$0.25 million). Subject to the foregoing, TEP UK intends to continue such activities so long as they continue to be permissible under UK and EU law and not be in breach of remaining applicable international economic sanctions.

#### Downstream

The Group does not own or operate any refineries or chemicals plants in Iran and did not purchase Iranian hydrocarbons when prohibited by applicable EU and U.S. economic and financial sanctions (refer to point 1.9.1, above).

The Group resumed its trading activities with Iran in February 2016 via its wholly-owned affiliates Totsa Total Oil Trading S.A. and Total Trading Asia Pte Ltd. During 2016, approximately 50 Mb of crude oil from Iran were purchased for nearly €1.8 billion (nearly \$1.9 billion) pursuant to a mix of spot and term contracts. Most of this crude oil was used to supply the Group's refineries and, therefore, it is not possible to estimate the related gross revenue and net profit. However, approximately 1.4 Mb of this crude oil were sold to entities outside of the Group. In addition, in 2016 approximately 11 Mb of petroleum products were bought from/sold to entities with ties to the government of Iran. These operations generated gross revenue of nearly €374 million (nearly \$394 million) and net profit of approximately €2.7 million (approximately \$2.8 million). The affiliates expect to continue these activities in 2017.

Saft Groupe S.A. ("Saft"), a wholly-owned affiliate of the Group, in 2016 sold signaling and backup battery systems for metros and railways as well as products for the utilities and oil and gas sectors to companies in Iran, including some having direct or indirect ties with the Iranian government. In 2016, this activity generated gross revenue of approximately €5.6 million (approximately \$5.9 million) and net profit of approximately €0.80 million (approximately \$0.84 million). Saft expects to continue this activity in 2017.

(1) Unless otherwise indicated, all non-USD currencies presented in this point 1.9.2 were converted to USD using the prevailing exchange rates available on February 28, 2017.

Saft also attended the Iran Oil Show in 2016, where it discussed business opportunities with Iranian customers, including those with direct or indirect ties with the Iranian government. Saft expects to conduct similar business development activities in 2017.

Total Solar (formerly named Total Énergie Développement), a wholly-owned affiliate of the Group, had preliminary discussions in 2016 regarding the potential development of solar projects with companies in Iran, including some having direct or indirect ties with the Iranian government. Neither revenues nor profits were recognized from this activity in 2016, and Total Solar expects to continue this activity in 2017.

TOTAL S.A. signed in 2016 a non-binding memorandum of understanding with the National Petrochemical Company, a company owned by the government of Iran, to consider a project for the construction in Iran of a steamcracker and polyethylene production lines. In relation to the early stages of this project, several visits to Iran were conducted in 2016. TOTAL S.A. recognized no revenue or profit from this activity in 2016 and similar activities are expected to continue in 2017.

Representatives of the companies Le Joint Français (a subsidiary of Hutchinson SA) and Hutchinson SNC, wholly-owned affiliates of the Group, conducted multiple visits to Iran in 2016 to discuss business opportunities in the car industry sector with several companies, including some having direct or indirect ties with the Iranian government. These companies recognized no revenue or profit from this activity in 2016 and expect to continue such discussions in the future.

Hutchinson GmbH, a wholly-owned affiliate of the Group, sold plastic tubing for automobiles in 2016 to Ikco, an affiliate of Iran Khodro, a company in which the government of Iran holds a 20% interest and which is supervised by Iran's Industrial Management Organization. In 2016, these activities generated gross revenue of approximately €1.05 million (approximately \$1.11 million) and net profit of approximately €150,000 (approximately \$158,000). This company expects to continue this activity in 2017.

Hanwha Total Petrochemicals ("HTC"), a joint venture in which Total Holdings UK Limited (a wholly-owned affiliate of TOTAL) holds a 50% interest and Hanwha General Chemicals holds a 50% interest, purchased nearly 25 Mb of condensates from NIOC for approximately KRW 1,300 billion (approximately \$1,1 billion). These condensates are used as raw material for certain of the Group's steamcrackers. HTC expects to continue this activity in 2017.

Total Research & Technology Feluy ("TRTF"), a wholly-owned affiliate of TOTAL, commenced in 2016 the process to file a patent in Iran concerning metallocene technology. Related to this process, TRTF had contacts with Iranian government officials, but no fees were paid. TRTF expects to continue the patent filing process in 2017.

Until December 2012, at which time it sold its entire interest, the Group held a 50% interest in the lubricants retail company Beh Total (now named Beh Tam) along with Behran Oil (50%), a company controlled by entities with ties to the government of Iran. As part of the sale of the Group's interest in Beh Tam, TOTAL S.A. agreed to license the trademark "Total" to Beh Tam for an initial 3-year period for the sale by Beh Tam of lubricants to domestic consumers in Iran. In 2014, Total E&P Iran ("TEPI"), a wholly-owned affiliate of TOTAL S.A., received, on behalf of TOTAL S.A., royalty payments of approximately IRR 24 billion (nearly \$1 million<sup>(1)</sup>) from

Beh Tam for such license. These payments were based on Beh Tam's sales of lubricants during the previous calendar year. In 2015, royalty payments were suspended due to a procedure brought by the Iranian tax authorities against TEPI. At the end of 2016, this procedure was still pending and no royalty payments had been received since 2015. Representatives of Total Outre Mer, a wholly-owned affiliate of the Group, made several visits to Beh Tam and Behran Oil during 2016 regarding the possible purchase of shares of Beh Tam. Subsequent to an internal reorganization, the matter was transferred to Total Oil Asia-Pacific Ltd, another wholly-owned affiliate of the Group, which had several exchanges with representatives of Behran Oil. As of the end of 2016, no agreement had been reached, no money was paid or received by either company. Similar discussions may take place in the future.

Total Marketing Middle East FZE ("TMME"), a wholly-owned affiliate of the Group, sold lubricants to Beh Tam in 2016. The sale in 2016 of approximately 54 t of lubricants and special fluids generated gross revenue of approximately AED 420,000 (approximately \$114,000) and net profit of approximately AED 360,000 (approximately \$98,000). TMME expects to continue this activity in 2017.

Total Marketing France ("TMF"), a company wholly-owned by Total Marketing & Services ("TMS"), itself a company wholly-owned by TOTAL S.A. and six Group employees, provided in 2016 fuel payment cards to the Iranian embassy in France for use in the Group's service stations. In 2016, these activities generated gross revenue of nearly €22,000 (approximately \$23,000) and net profit of nearly €900 (nearly \$950). TMF expects to continue this activity in 2017.

TMF also sold jet fuel in 2016 to Iran Air as part of its airplane refueling activities at Paris Orly airport in France. The sale of approximately 2.8 million liters of jet fuel generated gross revenue of approximately €982,000 (approximately \$1.03 million) and net profit of approximately €10,000 (approximately \$11,000). TMF expects to continue this activity in 2017.

Air Total International ("ATI"), a wholly-owned affiliate of the Group, on two occasions in 2016 sold jet fuel to a broker based at Le Bourget airport near Paris that was destined for the refueling of an Iranian government airplane (official presidential/ministerial visits). These sales generated gross revenue of approximately €8,000 (approximately \$8,400) and net profit of approximately €1,600 (approximately \$1,700). ATI may conduct similar activities in 2017.

Total Belgium ("TB"), a company wholly-owned by the Group, provided in 2016 fuel payment cards to the Iranian embassy in Brussels (Belgium) for use in the Group's service stations. In 2016, these activities generated gross revenue of approximately €1,500 (approximately \$1,600) and net profit of approximately €300 (approximately \$320). TB expects to continue this activity in 2017.

Proxifuel, a company wholly-owned by the Group, sold in 2016 heating oil to the Iranian embassy in Brussels. In 2016, these activities generated gross revenue of approximately €200 (approximately \$210) and net profit of approximately €80 (approximately \$85). Proxifuel expects to continue this activity in 2017.

Caldeo, a company wholly-owned by TMS, sold in 2016 approximately 3 m<sup>3</sup> of domestic heating oil to the Iranian embassy in France, which generated gross revenue of nearly €435 (nearly \$460) and net profit of nearly €115 (approximately \$120). Caldeo expects to continue this activity in 2017.

(1) Based on an average daily exchange rate of \$1 = IRR 0.000039 during 2014, as published by Bloomberg.

Total Namibia (PTY) Ltd (“TN”), a wholly-owned affiliate of Total South Africa (PTY) Ltd (of which the Group holds 50.1%), sold petroleum products and services during 2016 to Rössing Uranium Limited, a company in which the Iranian Foreign Investment Co. holds an interest of 15.3%. In 2016, these activities generated gross revenue of nearly N\$249 million (approximately \$19 million) and net profit of approximately N\$8 million (approximately \$0.6 million). TN expects to continue this activity in 2017.

## Syria

Since early December 2011, TOTAL has ceased its activities that contribute to oil and gas production in Syria and maintains a local office solely for non-operational functions. In late 2014, the Group initiated a downsizing of its Damascus office and reduced its staff to a few employees. In 2016, TOTAL made payments of nearly SYP 500,000 (approximately \$2,300) to Syrian government agencies in the form of taxes and contributions for public services rendered in relation to the maintenance of the aforementioned office and its personnel.

## 2. Legal and arbitration proceedings

There are no governmental, legal or arbitration proceedings, including any proceeding of which the Company is aware that are pending or threatened against the Company, that could have, or could have had during the last 12 months, a material impact on the Group’s financial situation or profitability.

Described below are the main administrative, legal and arbitration proceedings in which the Company and the other entities of the Group are involved.

### Alitalia

In the Marketing & Services segment, a civil proceeding was initiated in Italy, in 2013, against TOTAL S.A. and its subsidiary Total Aviazione Italia Srl before the competent Italian civil court. The plaintiff claims against TOTAL S.A., its subsidiary and other third parties, damages that it estimates to be nearly €908 million. This proceeding follows practices that had been condemned by the Italian competition authority in 2006. The parties have exchanged preliminary findings. The existence and the assessment of the alleged damages in this procedure involving multiple defendants remain contested.

### Blue Rapid and the Russian Olympic Committee – Russian regions and Interneft

Blue Rapid, a Panamanian company, and the Russian Olympic Committee filed a claim for damages with the Paris Commercial Court against Elf Aquitaine, alleging a so-called non-completion by a former subsidiary of Elf Aquitaine of a contract related to an exploration and production project in Russia negotiated in the early 1990s. Elf Aquitaine believed this claim to be unfounded and opposed it. On January 12, 2009, the Commercial Court of Paris rejected Blue Rapid’s claim against Elf Aquitaine and found that the Russian Olympic Committee did not have standing in the matter. On June 30, 2011, the Court of Appeal of Paris dismissed as inadmissible the claim of Blue Rapid and the Russian Olympic Committee against Elf Aquitaine, notably on the grounds of the contract having lapsed. The judgment of the Court of Appeal of Paris is now final and binding following two decisions issued on February 18, 2016 by the French Supreme Court to put an end to this proceeding.

In connection with the same facts, and 15 years after the aforementioned exploration and production contract was rendered null and void (“*caduc*”), a Russian company, which was held not to be the contracting party to the contract, and two regions of the Russian Federation that were not even parties to the contract, launched an arbitration procedure against the aforementioned

former subsidiary of Elf Aquitaine that was liquidated in 2005, claiming alleged damages of \$22.4 billion. For the same reasons as those successfully adjudicated by Elf Aquitaine against Blue Rapid and the Russian Olympic Committee, the Group considers this claim to be unfounded as a matter of law and fact.

The Group has lodged a criminal complaint to denounce the fraudulent claim of which the Group believes it is a victim and, has taken and reserved its rights to take all actions and measures to defend its interests.

### FERC

The Office of Enforcement of the U.S. Federal Energy Regulatory Commission (FERC) began in 2015 an investigation in connection with the natural gas trading activities in the United States of Total Gas & Power North America, Inc. (TGPNA), a U.S. subsidiary of the Group. The investigation covered transactions made by TGPNA between June 2009 and June 2012 on the natural gas market. TGPNA received a Notice of Alleged Violations from FERC on September 21, 2015. On April 28, 2016, FERC issued an order to show cause to TGPNA and two of its former employees, and to TOTAL S.A. and Total Gas & Power Ltd., regarding the same facts. A class action has been launched to seek damages from these three companies.

TGPNA has cooperated in the investigation with the U.S. authorities and contests the claims brought against it.

### Grande Paroisse

On September 21, 2001, an explosion occurred at the industrial site of Grande Paroisse (a former subsidiary of Atofina which became a subsidiary of Elf Aquitaine Fertilisants on December 31, 2004), in a stockpile of ammonium nitrate pellets. The explosion caused the death of thirty-one people, including twenty-one workers at the site, injured many others and caused significant damage on the site and to property in the city of Toulouse.

Grande Paroisse donated the former site of the plant to the greater agglomeration of Toulouse. A €10 million endowment was also granted to the InNaBioSanté research foundation as part of the setting up of a cancer research center at the site.

After many years, the investigating magistrate brought charges against Grande Paroisse and the former Plant Manager before the Toulouse Criminal Court. TOTAL S.A. and the CEO at the time of the event were summoned to appear in Court pursuant to a request by a victims association.

On November 19, 2009, the Toulouse Criminal Court acquitted both the former Plant Manager and Grande Paroisse due to the lack of reliable evidence for the explosion. The Court declared Grande Paroisse civilly liable for the damages caused by the explosion to the victims in its capacity as custodian and operator of the plant. The Court also ruled that the summonses were inadmissible.

On September 24, 2012, the Court of Appeal convicted the former Plant Manager and Grande Paroisse. The summonses were determined to be inadmissible.

On January 13, 2015, the French Supreme Court (*Cour de cassation*) fully quashed the decision of September 24, 2012. The French Supreme Court ruled that the Court of Appeal impartiality was questionable and that the application of the law on which the conviction was partially based was improper. The case has been referred back to the Court of Appeal of Paris for a new criminal trial, which began in January 2017.

A compensation mechanism for victims was set up immediately following the explosion. €2.3 billion was paid for the compensation of claims and related expenses amounts. A €4.7 million reserve remains booked in the Group's Consolidated Financial Statements as of December 31, 2016.

### Iran

In 2003, the Securities and Exchange Commission (SEC) followed by the Department of Justice (DoJ) issued a formal order directing an investigation against TOTAL, and others oil companies, for alleged violations of the Foreign Corrupt Practices Act (FCPA) and the Company's accounting obligations in connection with the pursuit of business in Iran in the 1990s.

In late May 2013, and after several years of discussions, TOTAL reached settlements with the U.S. authorities (a Deferred Prosecution Agreement with the DoJ and a Cease and Desist Order with the SEC). These settlements, which put an end to these investigations, were concluded without admission of guilt and in exchange for TOTAL respecting a number of obligations, including the payment of a fine and civil compensation for an aggregate amount of \$398.2 million. By virtue of these settlements, TOTAL also accepted the appointment of an independent compliance monitor to review the Group's compliance program and to recommend possible improvements.

In July 2016, the monitor submitted his third and final report, in which he certified that TOTAL had devised and implemented an appropriate compliance program. As a result of this certification, the U.S. authorities, after having reviewed the monitor's report,

concluded that TOTAL had fulfilled all of its obligations, thus bringing an end to the monitoring process. As a result, a court in the State of Virginia granted a motion to dismiss on November 9, 2016, thereby terminating the procedure directed at the Company, which can no longer be pursued in the United States for these same facts.

With respect to the same facts, TOTAL was placed under formal investigation in France in 2012. In October 2014, the investigating magistrate decided to refer the case to trial.

### Italy

As part of an investigation led by the Public Prosecutor of the Potenza Court in 2007, Total Italia and also certain Group employees were the subjects of an investigation related to alleged irregularities in connection with the purchase of lands and the award of calls for tenders in relation to the preparation and development of an oil field located in the south of Italy.

Pursuant to a judgment issued on April 4, 2016, the Potenza Criminal Court found four employees to be guilty of corruption, with two of these employees also being found guilty of misappropriation in connection with the purchase of land. The procedure with respect to Total Italia was sent back to the public prosecutor due to the imprecision of the terms of prosecution. The four employees decided to challenge the judgment before the Court of Appeal.

### Oil-for-Food Program

Several countries have launched investigations concerning possible violations of the UN resolutions relating to the Iraqi Oil-for-Food Program implemented as from 1996.

Pursuant to a French criminal investigation, certain current or former Group employees were placed under formal criminal investigation for possible charges as aiding and abetting the misappropriation of corporate assets and/or as aiding and abetting the corruption of foreign public agents. In 2010, TOTAL S.A. was indicted on bribery charges as well as aiding and abetting and concealing the influence peddling.

On July 8, 2013, TOTAL S.A. and the persons who were prosecuted were cleared of all charges by the Paris Criminal Court, which found that none of the offenses for which they had been prosecuted was established. The Prosecutor's office appealed the parts of the Criminal Court's decision acquitting TOTAL S.A. for corruption of foreign public agents. On February 26, 2016, the Court of Appeal of Paris overturned the Criminal Court's decision and TOTAL S.A. was convicted and ordered to pay a fine of €750,000. The Company has decided to appeal this decision before the French Supreme Court (*Cour de cassation*).



## 3. Insurance and risk management

### 3.1. Organization

TOTAL has its own reinsurance company, Omnium Reinsurance Company (ORC). ORC is integrated within the Group's insurance management and is used as a centralized global operations tool for covering the Group companies' insurable risks. It allows the Group's worldwide insurance program to be implemented in compliance with the specific requirements of local regulations applicable in the countries where the Group operates.

Some countries may require the purchase of insurance from a local insurance company. If the local insurer accepts to cover the subsidiary of the Group in compliance with its worldwide insurance program, ORC negotiates a retrocession of the covered risks from the local insurer. As a result, ORC enters into reinsurance contracts with the subsidiaries' local insurance companies, which transfer most of the risk to ORC.

At the same time, ORC negotiates a reinsurance program at the Group level with oil industry mutual insurance companies and commercial reinsurance markets. ORC allows the Group to better manage price variations in the insurance market by taking on a greater or lesser amount of risk corresponding to the price trends in the insurance market.

In 2016, the net amount of risk retained by ORC after reinsurance was, on the one hand, a maximum of \$70 million per onshore or offshore third-party liability insurance claim and, on the other hand, \$75 million per property damage and/or business interruption insurance claim. Accordingly, in the event of any loss giving rise to an aggregate insurance claim, the effect on ORC would be limited to its maximum retention of \$145 million per occurrence.

### 3.2. Risk and insurance management policy

In this context, the Group risk and insurance management policy is to work with the relevant internal department of each subsidiary to:

- define scenarios of major disaster risks (estimated maximum loss);
- assess the potential financial impact on the Group should a catastrophic event occur;

- help implement measures to limit the probability that a catastrophic event occurs and the financial consequences if such event should occur; and
- manage the level of financial risk from such events to be either covered internally by the Group or transferred to the insurance market.

### 3.3. Insurance policy

The Group has worldwide property insurance and third-party liability coverage for all its subsidiaries. These programs are contracted with first-class insurers (or reinsurers and oil and gas industry mutual insurance companies through ORC).

The amounts insured depend on the financial risks defined in the disaster scenarios and the coverage terms offered by the market (available capacities and price conditions).

More specifically for:

- third-party liability: since the maximum financial risk cannot be evaluated by a systematic approach, the amounts insured are based on market conditions and oil and gas industry practice. In 2016, the Group's third-party liability insurance for any liability (including potential accidental environmental liabilities) was capped at \$900 million (onshore) and \$850 million (offshore). In addition, the Group adopts, where appropriate, the necessary means to manage the compensation of victims in the event of an industrial accident for which it is liable; and
- property damage and business interruption: the amounts insured vary by sector and by site and are based on the estimated cost and scenarios of reconstruction under maximum loss situations and on insurance market conditions. The Group subscribed for business interruption coverage in 2016 for its main refining and petrochemical sites.

For example, for the Group's highest risks (North Sea platforms and main refineries or petrochemical plants), in 2016 the insurance limit for the Group share of the installations was approximately \$1.75 billion for the Refining & Chemicals segment and approximately \$2.15 billion for the Upstream segment.

Deductibles for property damage and third-party liability fluctuate between €0.1 and €10 million depending on the level of risk and liability, and are borne by the relevant subsidiaries. For business interruption, coverage is triggered 60 days after the occurrence giving rise to the interruption. In addition, the main refineries and petrochemical plants bear a combined retention for property damage and business interruption of \$75 million per insurance claim.

Other insurance contracts are bought by the Group in addition to property damage and third-party liability coverage, mainly in connection with car fleets, credit insurance and employee benefits. These risks are mostly underwritten by outside insurance companies.

The above-described policy is given as an example of a situation as of a given date and cannot be considered as representative of future conditions. The Group's insurance policy may be changed at any time depending on the market conditions, specific circumstances and on General Management's assessment of the risks incurred and the adequacy of their coverage.

TOTAL believes that its insurance coverage is in line with industry practice and sufficient to cover normal risks in its operations. However, the Group is not insured against all potential risks. In the event of a major environmental disaster, for example, TOTAL's liability may exceed the maximum coverage provided by its third-party liability insurance. The loss TOTAL could suffer in the event of such disaster would depend on all the facts and circumstances of the event and would be subject to a whole range of uncertainties,

including legal uncertainty as to the scope of liability for consequential damages, which may include economic damage not directly connected to the disaster. The Group cannot guarantee that it will not suffer any uninsured loss and there can be no guarantee, particularly in the event of a major environmental disaster or industrial accident, that such loss would not have a material adverse effect on the Group.

## 4. Internal control and risk management procedures (Article L. 225-37 of the French Commercial Code)

The information related to the internal control and risk management procedures implemented within the Group presented hereafter forms part of the Report of the Chairman of the Board of Directors prepared pursuant to Article L. 225-37 of the French Commercial Code [REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.].

The information contained in the Report of the Chairman of the Board of Directors was prepared with the assistance of several of the Company's functional departments, including in particular the Legal, Finance and Audit & Internal Control Divisions. After the sections relevant to their respective duties were reviewed by the Governance and Ethics Committee, the Compensation Committee and the Audit Committee, the information was approved by the Board of Directors.

### 4.1. Basic elements of internal control

The Group is structured around business segments to which the Group's operational entities report. The business segments' management are responsible, within their area of responsibility, for ensuring that operations are carried out in accordance with the strategic objectives defined by the Board of Directors and General Management. The functional departments at the Holding level help General Management define norms and standards, oversee their application and monitor activities. They also lend their expertise to the operational divisions.

The Group's internal control and risk management systems are structured around this three-level organization – Holding level, business segments, operational entities – where each level is directly involved and accountable in line with the level of delegation determined by General Management.

General Management constantly strives to maintain an efficient internal control system across the Group, based on the framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In this framework, internal control is a process intended to provide reasonable assurance that the objectives related to operations, reporting and compliance with applicable laws and regulations are achieved. As for any internal control system, it cannot provide an absolute guarantee that all risks are completely controlled or eliminated. The COSO framework is considered equivalent to the reference framework of the French Financial Markets Authority (*Autorité des marchés financiers*). The Group has also chosen to rely on this framework as part of its obligations under the Sarbanes-Oxley Act.

The Group's internal control and risk management systems are therefore based on the five components of this framework: control environment, risk assessment, control activities, monitoring and information, and communication.

The Group's risk management system draws on the main international standards (COSO Enterprise Risk Management integrated framework, ISO 31000: 2009 – Risk management) as well as on French standards (Reference framework of the French Financial Markets Authority). The internal Risk Management, Internal Control and Audit Charter forms the common framework on which the Group relies to ensure control of its activities.

The Group's internal control and risk management systems cover the processes of the fully consolidated entities and the most important equity affiliates.

Under these internal control principles, which are part of the corporate governance organization, the Audit Committee is responsible for monitoring the efficiency of internal control and risk management systems, assisted by the Corporate Audit & Internal Control Division and the internal control teams from the business segments. These rules are particularly designed to allow the Board of Directors to ensure that internal control is effective and that published information available to shareholders and financial markets is reliable.

Approximately 400 employees monitor the internal control systems within the Group. The assessment of the internal control and risk management system is mainly overseen by the Corporate Audit & Internal Control Division, which employed 77 people in 2016 and carried out more than 165 internal audits.

## 4.2. Control environment

TOTAL's control environment is based primarily on its Code of Conduct, which, in addition to safety, sets forth its core values (respect, responsibility and exemplary conduct) and business principles in terms of safety, security, health, protection of the environment, integrity and respect for human rights. This Code of Conduct builds trust between TOTAL and both its employees and stakeholders.

### Integrity and ethics

The Group's values and business principles are set out in its Code of Conduct (revised in 2014), its Business Integrity Guide and its Human Rights Guide (revised in 2015). These documents are distributed to all employees and are available on the intranet. They also set out the rules of individual behavior expected of all employees in the countries where the Group has a presence. The Group has pledged its adherence to recognized international standards related to human rights and, in particular, the core conventions of the International Labour Organization (ILO), the voluntary principles on security and human rights and the United Nations guiding principles on business and human rights.

The Financial Code of Ethics, which also refers to the Code of Conduct, sets forth specific rules for the Chairman and Chief Executive Officer, the Chief Financial Officer, the Vice President of the Corporate Accounting Division and the financial and accounting officers of the principal Group activities.

As a priority of General Management, the Group deploys ethics and compliance policies and programs, including in particular programs for the prevention of corruption, fraud and competition law infringement. These include awareness and training activities as well as compliance audits and ethical assessments (refer to point 3.7 of chapter 7). The Group also relies on the Ethics Committee, the role of which is to listen and provide assistance in these areas.

The relationship between the Group and its service providers is also based on adherence to the principles set forth in the Code of Conduct and on the Fundamental Principles of Purchasing attached to contracts. Suppliers and service providers are required to apply standards equivalent to those of the Group, particularly with respect to their employees, and to make every effort to encourage their own suppliers and subcontractors in turn to respect these principles (for further information about relations between the Group and its suppliers, refer to point 3.6 of chapter 7).

### Structure, authority and responsibility

General Management ensures that the organizational structure and reporting lines plan, execute, control and periodically assess the Group's activities. General Management regularly reviews the relevance of the organizational structures so as to be able to adapt them quickly to changes in the activities and in the environment in which they are carried out.

The Group has also defined central responsibilities that cover the three lines of defense of internal control: (1) operational management, which is responsible for implementing internal control, (2) support functions (such as Finance, Legal, Human Resources, etc.), which prescribe the internal control systems, verify their implementation and effectiveness and assist operational

employees, and (3) internal auditors who, through their internal control reports, provide recommendations to improve the effectiveness of the system.

In addition, an accountability system is defined and formalized at all levels of the organization, through organization notes, organization charts, appointment notes, job descriptions and delegations of powers. Each business segment has established clear rules applicable to its specific scope by directly integrating the Group's instructions.

### Policies and procedures

TOTAL incorporates the values, fundamental principles, strategic options and respective requirements of the businesses, at all levels of the organization, into a normative framework, supplemented by a set of practical recommendations and feedback. Like the Group's organization, this framework has a three-level structure: a Group level, with the REFLEX Group framework and the technical framework set out by the Corporate Technology Group, frameworks for each business segment; and a specific framework for each significant operational entity.

A document known as the governance framework details the relationship between these frameworks and describes their respective scope, the way in which the standards differ from one another (by adaptation, clarification or stricter requirements relative to higher level standards), exemption processes, if any, standards development processes and the monitoring system put in place.

The main procedures regarding financial controls established at the corporate level cover acquisitions and sales, capital expenditure, financing and cash management, budget control and financial reporting. Disclosure controls and procedures are in place (refer to point 4.3.2 below). At the operating levels, these procedures mainly pertain to directives, rules and recommendations regarding health, safety, industrial safety, IT security and the environment, as well as integrity and fraud and corruption prevention.

These documents, all of which are published on the Group's intranet, are reviewed regularly and their implementation is monitored.

At the business segment or operational entity levels, control activities are organized around the main operational processes: exploration and reserves, procurement, capital expenditure, production, sales, oil and gas trading, inventories, human resources, financing and cash management, and account closing process.

### Commitment to competence

The Group's human resources policy sets out rules and practices that reflect its commitment in terms of social responsibility and its expectations of employees, particularly in terms of competencies. Descriptions of jobs within the Group's various entities define the competencies and expertise required for employees to carry out their functions effectively.

In addition, the Human Resources function shapes and regularly updates policies aimed at attracting new talents, including employee training, assessment and retention policies (annual appraisals, training programs, compensation policies and career management – refer to point 1 of chapter 7).

## Accountability

The Board of Directors, with the support of the Audit Committee, ensures that the internal control functions are operating properly. The Audit Committee ensures that General Management implements internal control and risk management procedures based on the risks identified, such that the Group's objectives are achieved.

The general managements of the business segments and operational entities are responsible for designing and deploying specific components of this internal control and risk management system within their area of responsibility. A representation letter process deployed at the various levels of the organization reinforces the effectiveness of the internal control system, particularly over financial reporting.

The Internal Control Department has pursued a process aimed at strengthening the assessment of the role and involvement of all employees in terms of internal control. Training initiatives tailored to the various stakeholders involved in the internal control process are regularly launched within the Group. In 2016, an internal control seminar brought together over 100 Group employees in addition to online participants.

## Control activities and assessment

The Group regularly examines and assesses the design and effectiveness of the key operational, financial and information technology controls related to internal control over financial reporting, pursuant to Section 404 of the Sarbanes-Oxley Act. In 2016, this assessment was performed with the assistance of the Group's main entities and the Corporate Audit & Internal Control Division. The system used covers:

- the most significant entities, which assess the key operational controls of their significant processes and respond to a Group questionnaire for assessing the internal control system; and
- other less significant entities, which respond only to the Group questionnaire for assessing the internal control system.

## 4.3. Risk assessment and management

To implement its strategy, General Management ensures that clear and precise objectives are defined at the various levels of the organization with regard to operations, reporting and compliance.

Operational objectives focus on the definition and efficient use of human, financial and technical resources. In particular, they are defined during the budgetary processes and in the long-term plan, and are regularly monitored as part of the self-assessment process.

The monitoring of operational objectives (financial and non-financial) helps in decision-making and monitoring performance of activities at each level of the organization.

TOTAL has set up an ongoing process to identify and analyze risks that may affect its employees, assets and environment, and preclude the achievement of its objectives. The Group takes into account risks at all levels of the organization and in all its entities, and examines factors that influence the severity, probability of occurrence of risks or the loss of its assets and the potential impact on operations, reporting (financial and non-financial) and compliance with applicable laws and regulations.

These two categories of entities account for approximately 80% and 10%, respectively, of the financial aggregates in the Group's Consolidated Financial Statements.

In addition, any activity, process or management system may be the subject of an internal audit conducted by Group Audit, in accordance with the international internal audit framework and its Code of Ethics. The Corporate Audit & Internal Control Division also conducts joint audits with third-party auditors and provides assistance (advice, analysis, input regarding methodology). The audit plan, which is based on an analysis of the risks and risk management systems, is submitted annually to the Executive Committee and the Audit Committee for approval. The statutory auditors also review the internal controls that they deem necessary as part of their certification of the financial statements. In 2016, they reviewed the implementation of the Group's internal control framework and the design and effectiveness of key internal controls at its main entities regarding financial reporting. Based on their review, the statutory auditors stated that they had no remarks on the information and statements presented in this present Report of the Chairman of the Board of Directors on internal control and risk management procedures.

The reports on the work performed by the Group Audit and statutory auditors are periodically summarized and presented to the Audit Committee and, thereby, to the Board of Directors. The Senior Vice President, Audit & Internal Control attended all Audit Committee meetings held in 2016. The Audit Committee also interviews the statutory auditors at least once a year without any Company representatives present.

If areas of improvement are identified by these internal audits and operational controls, then corrective action plans are drawn up and shared with operational management, who along with the Corporate Audit & Internal Control Division, monitor them closely.

Based on the internal reviews, General Management has reasonable assurance of the effectiveness of the Group's internal control.

The Group has developed a control framework in line with the risk assessments performed and implements initiatives necessary for addressing specific risks by enforcing Group-wide rules. These initiatives must reduce the probability of occurrence of risks and their possible impact. They also cover the main processes outsourced via subcontracting agreements.

TOTAL also identifies changes that could have a significant impact on its internal control system, particularly changes related to assets consolidated by the business segments. To this end, the Group relies on governance bodies adapted to its various activities and capable of making and implementing decisions necessary for quickly responding to material changes that the Group must deal with.

The risk-mapping activities carried out by the Group's entities as part of a regular risk assessment process help identify and analyze key ongoing or foreseeable changes.

### 4.3.1. Monitoring of risk management systems

The Executive Committee, with the assistance of the Group Risk Management Committee created in 2011, is responsible for identifying and analyzing internal and external risks that could impact TOTAL's performance. The main responsibilities of the Group Risk Management Committee include ensuring that the Group has an up-to-date map of the risks to which it is exposed and that efficient risk management systems are in place.

The Group Risk Management Committee relies on the work carried out by the business segments and functional departments, which concurrently establish their own risk mapping. These maps are drawn up according to a methodological framework developed by the Group. The activities of the Group Risk Management Committee, the major risks identified by the Group and the risk mappings of the business segments are regularly reported to the Audit Committee.

The Group's business segments and entities are responsible for defining and implementing a risk management policy suited to their specific activities. However, the handling of certain transverse risks is more closely coordinated by the respective functional departments.

General Management exercises operational control over TOTAL's activities through the Executive Committee's approval of investments and commitments for projects based on defined thresholds. The Risk Committee (CORISK) is tasked with reviewing these projects in advance and informing the Executive Committee of its findings. As part of this review, the CORISK verifies the analysis of the various project-related risks.

The Group strives to implement effective control systems for the main risks identified.

#### Financial risks

The management and conditions procedures for using financial instruments are governed by strict rules that are defined by the Group's General Management, and which provide for centralization by the Treasury Division of liquidity, interest exchange rate positions, management of financial instruments and access to capital markets.

The Group's financing policy consists of incurring long-term debt at a floating rate or at a fixed rate depending on interest rates. Debt is mainly incurred in dollars or euros according to the Group's general corporate needs.

The Group's cash balances, which mainly consist of dollars and euros, are managed to maintain liquidity based on daily interest rates in the given currency. Maximum amounts are set for transactions exceeding one month, with placements not to exceed 12 months. TOTAL S.A. also has confirmed credit facilities granted by international banks. These credit facilities, along with the Group's net cash position, allow it to continually maintain a high level of liquidity in accordance with targets set by General Management.

In terms of counterparty risk in financial transactions, the Group adheres to a cautious policy, and only makes commitments with institutions featuring a high degree of financial soundness, as based on a multi-criteria analysis. An overall credit limit is set for each authorized financial counterparty and allocated among the Group's subsidiaries. In addition, to reduce market value risk on its commitments, the Treasury Division has entered into margin call contracts with its significant counterparties.

The Group seeks to minimize its currency exposure, on the one hand by financing its long-term assets in the functional currency of the entity to which they belong and, on the other hand, by systematically hedging the currency exposure generated by

commercial activity. These risks are managed centrally by the Treasury Department, which operates within a set of limits defined by General Management.

The policy for managing risks related to financing and cash management activities as well as the Group's currency exposure and interest rate risks is described in detail in Note 15 to the Consolidated Financial Statements (point 7 of chapter 10).

#### Industrial and environmental risks and risks related to climate issues

The Group has developed a Safety Health Environment Quality Charter that sets out the basic principles applicable to the protection of people, property and the environment and also covers the aspects of safety and health (H3SEQ). This Charter is implemented at several levels within the Group through its management systems.

Along these lines, TOTAL implements management systems such as the internal management system MAESTRO, which meets all of the requirements of the standards ISO 14001, ISO 9001 and OHSAS 18001, as well as the future ISO 45001. The Group performs regular assessments, following various procedures, of the risks and impacts of its activities in the areas of industrial safety (particularly process safety), the environment and the protection of workers and local residents:

- prior to approving new investment, acquisition and disposal projects;
- during operations (safety studies, environmental impact assessments, health impact studies); and
- prior to releasing new substances on the market (toxicological and ecotoxicological studies and life cycle analyses).

These assessments incorporate the regulatory requirements of the countries where the Group's activities are carried out and generally accepted professional practices.

In countries where prior administrative authorization and supervision is required, projects are not undertaken without the authorization of the relevant authorities based on the studies provided to them.

In particular, TOTAL has developed a common methodology for analyzing technological risks that is being gradually applied to all activities carried out by the companies of the Group (refer to point 2.2.2 of chapter 7). TOTAL develops risk management measures based on risk and impact assessments. These measures involve facility and structure design, the reinforcement of safety devices and environmental remediation.

In addition to developing management systems as described above, the Group strives to minimize industrial, safety and environmental risks inherent in its operations by conducting thorough inspections and audits, training personnel and raising awareness among all those involved.

In addition, performance indicators (particularly in the areas of HSE) and risk monitoring have been put in place, objectives have been set and action plans have been implemented to achieve these objectives (refer to point 2 of chapter 7).

Although the emphasis is on preventing risks, TOTAL takes regular steps to prepare for crisis management based on identified risk scenarios. The Group has a crisis management process that relies on a permanent on-call system, regular drills, training courses in crisis management and a set of tools. The organization set up in the event of a crisis is deployed at two closely coordinated levels:

## 4 Risks and control

### Internal control and risk management procedures

- at the local level (country, site or entities), a crisis unit is responsible for ensuring operational management and implementing emergency plans; and
- at the head office level, a crisis unit consisting of a multidisciplinary team is tasked with assessing the situation and overseeing crisis management. This central unit provides the necessary expertise and mobilizes additional resources to assist the local crisis unit when necessary and intervene directly when the situation cannot be handled locally.

Concerning the area of security, the Group has put in place the means to monitor and analyze threats and risks at a central level in order to anticipate and take all necessary preventive measures so as to diminish its exposure to security risks in the countries where it operates.

In addition, TOTAL has developed emergency plans and procedures to respond to an oil spill or leak. These plans and procedures are specific to each subsidiary and adapted to its organization, activities and environment, and are consistent with the Group's anti-pollution plan. They are reviewed regularly and tested through drills (refer to point 2.2.3 of chapter 7).

At the Group level, TOTAL has set up an organization structured around the Plan to Mobilize Resources Against Pollution (PARAPOL) alert scheme to facilitate crisis management and provide assistance regardless of geographical restrictions in the event of pollution of marine, coastal or inland waters. Its main objective is to facilitate access to internal and external experts and physical response resources (FOST, Cedre, OSRL).

With regard to risks related to climate issues, TOTAL is committed to managing its energy consumption and develops processes to improve its energy performance and that of its customers, in accordance with its Safety Health Environment Quality Charter.

In its decision-making process, the risks and associated climate issues (flaring, greenhouse gas emissions, CO<sub>2</sub> price sensitivity) are assessed prior to the presentation of the projects to the Executive Committee.

In order to ensure the viability of its projects and long-term strategy in light of the challenges raised by climate change, the Group integrates, into the financial evaluation of investments presented to the Executive Committee, either a long-term CO<sub>2</sub> price of \$30 to \$40 per ton (depending on the price of crude), or the actual price of CO<sub>2</sub> in a given country if higher. The Group performs sensitivity tests to assess the ability of its asset portfolio to withstand an increase in the price per ton of CO<sub>2</sub>.

In addition, TOTAL takes into account the 2°C scenario of the International Agency for Energy (IAE) in its analysis of changes in energy markets (notably that of hydrocarbons) and its development strategy. As a result, the Group is prioritizing its projects and focusing on hydrocarbon assets with moderate production and processing costs that meet the highest environmental and safety standards.

Finally, the Group assesses the vulnerability of its facilities to climatic events so that their consequences do not affect the integrity of the facilities or the safety of individuals. More generally, natural hazards (climate-related risks as well as seismic, tsunami, soil strength and other risks) are taken into account in the conception of industrial facilities, which are designed to withstand both normal and extreme conditions. The Group carries out a systematic assessment of the possible repercussions of climate

change on its future projects. These analyses include a review by type of risk (e.g., sea level, storms, temperature, permafrost) and take into account the life span of the projects and their capacity to gradually adapt. These studies have not identified any facilities that cannot withstand the consequences of climate change known today.

### Risks related to information systems

TOTAL's IT Department has developed and distributed governance and security rules that describe the recommended infrastructure, organization and procedures in order to maintain information systems that are appropriate to the organization's needs and the risks associated with information systems and their data. These rules are implemented across the Group under the responsibility of the various business segments.

The Group has also developed control activities at various levels of the organization relating to areas where information systems cover all or part of the processes. Information Technology General Controls aim to guarantee that information systems function and are available as required, and that data integrity is guaranteed and changes controlled.

Information Technology Automated Controls aim to ensure the integrity of data generated or supported by business applications, particularly those that impact financial flows.

The outsourcing of some components of the Group's IT infrastructure to service providers poses specific risks and requires the selection and development of additional controls of the completeness, accuracy and validity of the information supplied and received from such service providers. Accordingly, to ensure continuous improvement, the Group assesses whether suitable controls are implemented by the service providers concerned and what controls are necessary within its own organization to maintain these risks at an acceptable level.

In addition, in light of increasing legal risks (such as document retention, personal data protection or copyright) and security risks (such as loss of information, external and internal threats or fraud), the Group deploys information protection, document retention and personal data protection policies. In order to reduce these risks, the Group has employed an Operational Security Center to detect and analyze IT system security events.

### Risks related to the protection of intellectual assets

To mitigate the risks of third parties infringing its intellectual property and the leak of know-how, TOTAL protects its rights under research partnership agreements negotiated by the Group's intellectual property specialists, the terms and conditions of which are consistent with the Group's industrial and commercial strategy. The Group has a policy of filing and maintaining patents, it monitors technological developments in terms of freedom of use, and it takes, when necessary, all appropriate measures to ensure the protection of its rights.

In addition, since some of its employees have access to confidential documents while performing their duties, TOTAL adopted internal rules concerning the management of confidential information. The Group's intellectual property specialists also carry out awareness-raising activities with the R&D teams so that the teams are better informed about restrictions that may apply to the use of information and data.

## Ethical misconduct and non-compliance risks

### Fraud prevention

The Group deploys an anti-fraud and fraud prevention program and has implemented a range of procedures and programs that help to prevent, detect and limit different types of fraud. This effort is supported by the business principles and values of individual behavior described in the Group's Code of Conduct and other standards applied by the Group's business segments.

The Group has issued a directive for handling incidents of fraud that has been widely distributed to employees, and has created an alert system that employees can use to report acts including those that may constitute fraud.

In 2015, a large campaign on fraud risks to raise awareness of all Group employees was launched. A guide on "Prevention and Fight Against Fraud", which highlights the different actions conducted through the anti-fraud program, was distributed. A map of fraud risks in the Group was finalized in late 2015, allowing priority actions to be defined for 2016. A guide to the different types of fraud risk, with descriptions of the main risks, was distributed in 2016. Fraud risk analyses are carried out in the subsidiaries. An awareness campaign relating to the four major fraud risks was launched at the end of 2016, particularly by means of videos widely distributed within the Group.

The deployment of the anti-fraud and fraud prevention program relies on the network of fraud risks coordinators within the business segments and operational entities.

### Prevention of corruption risks

General Management constantly reiterates the principle of zero tolerance with regard to corruption. The Corruption Prevention Policy was updated in 2016, thus reaffirming the Group's commitment to the matter. Internal rules have been published since 2011 in this area. They cover various areas where particular risks of exposure to corruption may exist (business partnerships, representatives dealing with public officials, procurement and sales, donations, acquisitions, joint ventures, human resources, gifts and invitations, etc.) in an effort to detect, assess and address risks at a very early stage through an appropriate due diligence process.

To support this program, awareness campaigns aimed at all employees are conducted and training is regularly given to those in positions with the greatest risk of exposure. For more information, refer to point 3.7 of chapter 7.

In addition, more than 370 Compliance Officers have been appointed and trained within the business segments and operational entities. Their role is to ensure that the program is implemented at the local level.

Finally, under the settlements reached in 2013 between TOTAL, the U.S. Securities and Exchange Commission and the U.S. Department of Justice, an independent monitor had been appointed for three years to conduct a review of anti-corruption compliance and related internal control procedures implemented by the Group and to recommend improvements, where necessary. In July 2016, the monitor submitted his third and final report, in which he certified that TOTAL had devised and implemented an appropriate compliance program. As a result of this certification, the U.S. authorities concluded, after having reviewed the monitor's report, that TOTAL had fulfilled all of its obligations, thus bringing an end to the monitoring process. As a result, a court in the State of Virginia granted a motion to dismiss on November 9, 2016, thereby terminating the procedure directed at the Company, which can no

longer be pursued in the United States for these same facts. The mobilization of the entire Group and its efforts in this area continue with the goal of ensuring the durability, evolution and continuous improvement of this compliance program.

### Prevention of competition law infringement

A Group policy aimed at ensuring compliance with, and preventing infringement of, competition law has been in place since 2014 and is a follow-up to the various measures previously implemented by the business segments. Its deployment is based, in particular, on management and staff involvement, training courses that include an e-learning module and an organization responsible for implementing the program.

### Prevention of market abuse and conflict of interests

The Group implements a policy to prevent market abuse linked to trading on the financial markets that is based, in particular, on internal ethics rules that are updated on a regular basis and widely distributed to employees. In addition, the Group's senior executives and certain employees, in light of their positions, are asked to refrain from carrying out any transactions, including hedging transactions, on TOTAL shares or ADRs and in collective investment plans (FCPE) invested primarily in TOTAL shares (as well as derivatives related to such shares) on the day on which the Company discloses its periodic results publications (quarterly, interim and annual) as well as during the 30 calendar-day period preceding such date. An annual campaign specifies the applicable "blackout" periods.

To prevent conflicts of interest, each of the Group's senior executives completes an annual statement declaring any conflicts of interest to which they may be subject. By completing this declaration, each senior executive also agrees to report to their supervisor any conflict of interest that he or she has had or of which he or she is aware in performing his or her duties. An internal rule named "Conflicts of Interests", published in 2015, reminds all employees of their obligation to report to their supervisor any situation that might give rise to a conflict of interests.

## 4.3.2. Internal control procedures related to the preparation and processing of accounting and financial information

### Accounting information

The Group's Accounting Department, which reports to the Group's Chief Financial Officer, draws up the Group's Consolidated Financial Statements according to IFRS standards based on the reporting packages prepared quarterly by the consolidated entities, as well as the statutory financial statements of TOTAL S.A. as parent company and those of certain French entities. Each quarter, the Consolidated Financial Statements and statutory financial statements of TOTAL S.A. are reviewed by the Audit Committee and the Board of Directors.

The Consolidated Financial Statements are prepared based on the following principles:

- homogeneity of the accounting framework and standards; to this end, the interpretation of accounting standards applicable to the Consolidated Financial Statements is centralized by the Group's Accounting Department, which also distributes these standards through formal procedures and an internal financial reporting manual. The department monitors the effective implementation of these standards through periodic formal communication with managers of the business segments; and

## 4 Risks and control

### Internal control and risk management procedures

- a supervised account closing process based mainly on formalization of economic assumptions, judgments and estimates, treatment of complex accounting transactions and on respect of established timetables announced through Group instructions disclosed to each entity.

Off-balance sheet commitments, which are valued according to the financial reporting manual are reported on a quarterly basis to the Audit Committee.

Internal control of accounting information is mainly focused around the following areas:

- a monthly financial report is formalized by Group and business segment control panels. This report and the Consolidated Financial Statements use the same framework and standards. In addition, the quarterly closing schedule is the same for preparing the Consolidated Financial Statements and financial reporting;
- a detailed analysis of differences as part of the quarterly reconciliation between the Consolidated Financial Statements and financial reporting is supervised by the Accounting and Budget-Controlling Divisions, which are part of the Finance Division;
- a detailed analysis of differences between actual amounts and the yearly budget established on a monthly basis is realized at each level of the organization;
- an annual reconciliation between the parent company financial statements and the financial statements based on IFRS standards is performed by entity;
- periodic controls are designed to ensure the reliability of accounting information and mainly concern the processes for preparing aggregated financial items;
- a regular process for the signature of representation letters is deployed at each level of the organization; and
- the Disclosure Committee ensures the application of the procedures in place.

Because of the important contribution of the equity affiliates to the Group's aggregated financial items, an annual review of the control on these companies' financial statements is implemented based on a detailed questionnaire completed by each entity. This system is integrated into the Group's internal control framework.

#### Other financial information

Proved oil and gas reserves are evaluated annually by the relevant entities. They are reviewed by the Reserves Committee, approved by Exploration & Production's senior management and then validated by the Group's General Management. They are also presented to the Audit Committee each year.

The internal control process related to estimating reserves is formalized in a special procedure described in detail in point 2.1.1.2 of chapter 2. The reserves evaluation and the related internal control processes are audited periodically.

The strategic outlook published by the Group is prepared, in particular, according to the long-term plans drawn up at the business segment and Group levels, and on the work carried out at each relevant level of the organization. The Board of Directors reviews the strategic outlook each year.

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]



# Corporate governance

1.	Composition and practices of the Board of Directors	86
1.1.	Composition of the Board of Directors .....	87
1.2.	Practices of the Board of Directors .....	97
1.3.	Statement regarding corporate governance .....	111
2.	General Management	112
2.1.	The Executive Committee .....	112
2.2.	The Group Performance Management Committee .....	112
3.	Shares held by the administration and management bodies	112

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

**Report of the Chairman of the Board of Directors (Article L. 225-37 of the French Commercial Code)**

Pursuant to Article L. 225-37 of the French Commercial Code, the Report of the Chairman of the Board of Directors must include certain information related to corporate governance, in particular the composition of the Board of Directors, the Board of Directors' application of the principle of balanced representation of men and women, the preparation and organization of the work of the Board of Directors, internal control and risk management procedures implemented by the Company, any limits set by the Board of Directors concerning the powers of the Chief Executive Officer, the financial risks related to the effects of climate change and measures adopted by the company to reduce them and implement a low-carbon strategy in all its activities, the bylaws concerning participation in Shareholders' Meetings, the principles and rules applied to determine the compensation and other benefits granted to the executive and non-executive directors (*mandataires sociaux*), and the information required by Article L. 225-100-3 of the French Commercial Code.

The information related to the composition of the Board of Directors, the Board of Directors' application of the principle of balanced representation of men and women, the preparation and organization of the work of the Board of Directors and any limits set by the Board of Directors concerning the powers of the Chief Executive Officer is presented below in point 1.

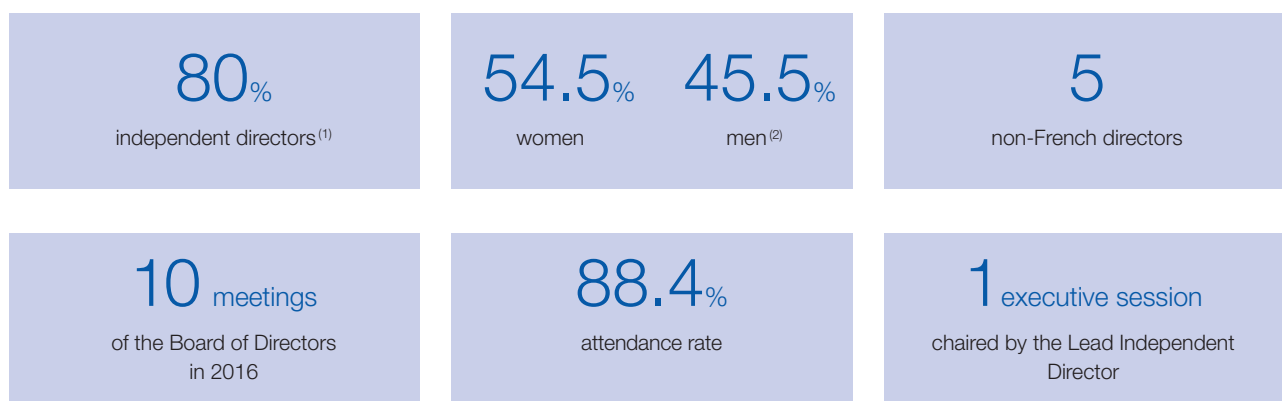
Information related to the internal control and risk management procedures implemented within the Group and to financial risks related to the effects of climate change and measures adopted by the Company to reduce them and implement a low-carbon strategy in all its activities is presented in chapter 4, points 1 and 4; information related to bylaws concerning participation in Shareholders' Meetings is presented in chapter 9, point 2.4; information related to the principles and rules applied to determine the compensation and other benefits granted to the executive and non-executive directors (*mandataires sociaux*) is presented in chapter 6, point 6, and information likely to have an impact in the event of a public offering and required by Article L. 225-100-3 of the French Commercial Code is presented in chapter 8, point 4.5.

This information collectively forms the Report of the Chairman of the Board of Directors prepared pursuant to Article L. 225-37 of the French Commercial Code [REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED].

The information contained in the Report of the Chairman of the Board of Directors was prepared with the assistance of several of the Company's corporate functional divisions, including in particular the Legal, Finance and Corporate Audit & Internal Control Departments. After the sections relevant to their respective duties were reviewed by the Governance and Ethics Committee, the Compensation Committee and the Audit Committee, the information was approved by the Board of Directors at its meeting on March 15, 2017.

## 1. Composition and practices of the Board of Directors

As of February 8, 2017, the Company is administered by a Board of Directors composed of 12 members, including: 11 directors elected by the Annual Shareholders' Meeting, including 1 director elected on the proposal of the employee shareholders, and 1 director representing employees appointed by the Central Works Council.



(1) Excluding the director elected on the proposal of the employee shareholders and the director representing employees, in accordance with the recommendations of the AFEP-MEDEF Code (point 8.3).

(2) Excluding the director representing employees, in accordance with Article L. 225-27-1 of the French Commercial Code.

## 1.1. Composition of the Board of Directors

The Company is administered by a Board of Directors composed of 12 members. The members of the Board of Directors include one director elected on the proposal of the employee shareholders pursuant to the provisions of Article L. 255-23 of the French Commercial Code (hereafter referred to as the “director representing employee shareholders”), and one director representing employees appointed by the Central Works Council pursuant to the provisions of Article L. 225-27-1 of the French Commercial Code.

Directors are appointed for a three-year term (Article 11 of the Company’s bylaws) by the Annual Shareholders’ Meeting, with the exception of the director representing employees, who is appointed by the Central Works Council.

The terms of office of the members of the Board are staggered to space more evenly the renewal of appointments and to ensure the continuity of the work of the Board of Directors and its Committees, in accordance with the recommendations made in the AFEP-MEDEF Code, which the Company uses as a reference.

As of February 8, 2017, the Board of Directors had eight independent directors, *i.e.*, 80%<sup>(1)</sup> of the directors (refer to point 1.1.3).

Mr. Patrick Pouyanné has served as Chairman of the Board of Directors since December 19, 2015, the date on which the functions of Chairman of the Board of Directors and Chief Executive Officer of TOTAL S.A. were combined following the decision made by the Board of Directors at its meeting on December 16, 2015 (refer to point 1.2.1). Since December 19, 2015, Mr. Pouyanné has therefore been Chairman and Chief Executive Officer of TOTAL S.A.

At its meeting on December 16, 2015, the Board of Directors also appointed Ms. Patricia Barbizet as Lead Independent Director for the duration of her term of office as director. Her designation took effect on December 19, 2015. Her duties are described in point 1.2.2 below.

The profiles, experience and expertise of the directors are detailed in the biographies below.

### Overview of the Board of Directors

As of February 8, 2017	Age	Sex	Independent	Audit Committee	Governance and Ethics Committee	Compensation Committee	Strategic Committee	First appointment	Years' service on the Board	Expiry of term of office
<b>Chairman and Chief Executive Officer – Director</b>										
Patrick Pouyanné	53	M					C	2015	2	2018
<b>Directors</b>										
Patrick Artus	65	M	•	•			•	2009	8	2018
Patricia Barbizet <sup>(a)</sup>	61	F	•		C	•	•	2008	9	2017
Marie-Christine Coisne-Roquette	60	F	•	C		•		2011	6	2017
Paul Desmarais, Jr	62	M						2002	15	2017
Maria van der Hoeven	67	F	•					2016	1	2019
Anne-Marie Idrac	65	F	•			•		2012	5	2018
Barbara Kux	62	F	•			•	•	2011	6	2017
Gérard Lamarche	55	M	•	•			C	2012	5	2019
Jean Lemierre	66	M	•					2016	1	2019
<b>Director representing employee shareholders</b>										
Renata Perycz	53	F	n/a					2016	1	2019
<b>Director representing employees</b>										
Marc Blanc <sup>(b)</sup>	62	M	n/a				•	2014	3	2017

(a) Lead Independent Director.

(b) Designated by the Central Works Council of UES Amont Holding on November 4, 2014. Marc Blanc's office will expire at the end of the Annual Shareholders' Meeting of May 26, 2017 and the UES Amont Central Works Council – Global Services – Holding shall designate the new director representing employees pursuant to the provisions of Article L. 225-27-1 of the French Commercial Code and of the Company's bylaws. The new director representing employees will be designated for a three-year term to expire at the end of the Annual Shareholders' Meeting held in 2020 to approve the 2019 financial statements.

C: Chairperson of the Committee.

(1) Excluding the director representing employee shareholders and the director representing employees, in accordance with the recommendations of the AFEP-MEDEF Code (point 8.3).

## Changes to the composition of the Board of Directors and Committees

As of February 8, 2017	Date	Departure	Appointment	Renewal
<b>Board of Directors</b>				
	05/24/2016	Thierry Desmarest	Maria van der Hoeven <sup>(a)</sup>	Gérard Lamarche
		Gunnar Brock <sup>(a)</sup>	Jean Lemierre <sup>(a)</sup>	
		Charles Keller <sup>(b)</sup>	Renata Perycz <sup>(b)</sup>	
<b>Audit Committee</b>				
	05/24/2016	Charles Keller <sup>(b)</sup>		
<b>Governance and Ethics Committee</b>				
	05/24/2016	Thierry Desmarest		
		Gunnar Brock <sup>(a)</sup>		
<b>Compensation Committee</b>				
	05/24/2016	Gunnar Brock <sup>(a)</sup>		
<b>Strategic Committee</b>				
	05/24/2016	Thierry Desmarest		
		Gunnar Brock <sup>(a)</sup>		

(a) Independent director.

(b) Director representing employee shareholders.

### 1.1.1. Profile, experience and expertise of the directors (information as of December 31, 2016<sup>(1)</sup>)

#### Patrick Pouyanné

Born on June 24, 1963 (French).

Chairman and Chief Executive Officer of TOTAL S.A. Director of TOTAL S.A. since May 29, 2015 until 2018. Chairman of the Strategic Committee. Holds 72,470 TOTAL shares and 8,177.02 units of the TOTAL ACTIONNARIAT FRANCE collective investment fund.

#### Main function: Chairman and Chief Executive Officer of TOTAL S.A.\*

A graduate of *École Polytechnique* and a Chief Engineer of France's *Corps des Mines*, Mr. Pouyanné held, between 1989 and 1996, various administrative positions in the Ministry of Industry and other cabinet positions (technical advisor to the Prime Minister – Édouard Balladur – in the fields of the Environment and Industry from 1993 to 1995, Chief of staff for the Minister for Information and Aerospace Technologies – François Fillon – from 1995 to 1996). In January 1997, he joined TOTAL's Exploration & Production division, first as Chief Administrative Officer in Angola, before becoming Group representative in Qatar and President of the Exploration and Production subsidiary in that country in 1999. In August 2002, he was appointed President, Finance, Economy and IT for Exploration & Production. In January 2006, he became Senior Vice President, Strategy, Business Development and R&D in Exploration & Production and was appointed a member of the Group's Management Committee in May 2006. In March 2011, Mr. Pouyanné was appointed Deputy General Manager, Chemicals, and Deputy General Manager, Petrochemicals. In January 2012, he became President, Refining & Chemicals and a member of the Group's Executive Committee.

On October 22, 2014, he was appointed Chief Executive Officer of TOTAL. On May 29, 2015, he was appointed by the Annual Shareholders' Meeting as director of TOTAL S.A. for a three-year term. At its meeting on December 16, 2015, the Board of Directors of TOTAL appointed him as Chairman of the Board of Directors as of December 19, 2015 for the remainder of his term of office as director. Mr. Pouyanné is therefore now Chairman and Chief Executive Officer.

#### Current directorships

– Chairman and Chief Executive Officer of TOTAL S.A.\*

#### Directorships that have expired in the previous five years

– Chairman and Director of Total Raffinage Chimie until 2014  
– Chairman and Director of Total Petrochemicals & Refining SA/NV until 2014

(1) Including information pursuant to point 4 of Article L. 225-102-1 of the French Commercial Code or item 14.1 of Annex I of EC Regulation No. 809/2004 of April 29, 2004.  
For information related to directorships, company names marked with an asterisk are publicly listed companies and underlined companies are companies that do not belong to the group in which the director has his or her main duties.

## Patrick Artus

Born on October 14, 1951 (French).

Director of TOTAL S.A. since 2009. Last renewal: May 29, 2015 until 2018. Independent director.  
Member of the Audit Committee and the Strategic Committee. Holds 1,000 TOTAL shares.

### Main function: Head of the research department and member of the Executive Committee of Natixis

A graduate of *École Polytechnique*, *École Nationale de la Statistique et de l'Administration Économique (ENSAE)* and *Institut d'études politiques de Paris*, Mr. Artus began his career at INSEE (the French National Institute for Statistics and Economic Studies) where his work included economic forecasting and modeling. He then worked at the Economics Department of the OECD (1980), later becoming the Head of Research at the ENSAE from 1982 to 1985. He was scientific advisor at the research department of the Banque de France, before joining the Natixis Group as the head of the research department, and has been a member of its Executive Committee since May 2013. He is an associate professor at the University of Paris I, Sorbonne. He is also a member of the Cercle des Économistes.

#### Current directorships

- Director of TOTAL S.A.\*
- Director of IPSOS\*

#### Directorships that have expired in the previous five years

None.

## Patricia Barbizet

Born on April 17, 1955 (French).

Director of TOTAL S.A. since 2008. Last renewal: May 16, 2014 until 2017. Independent director. Lead Independent Director, Chairwoman of the Governance and Ethics Committee, member of the Compensation Committee and Strategic Committee. Holds 1,034 TOTAL shares.

### Main function: Chief Executive Officer of Artémis

A graduate of *École Supérieure de Commerce de Paris* in 1976, Ms. Barbizet started her career in the Treasury division of Renault Véhicules Industriels, and then as CFO of Renault Crédit International (1984-1989). In 1989, Ms. Barbizet joined the group of François Pinault as CFO. Then appointed as Deputy Director of Finance and Communication of Pinault-CFAO, she participated, in 1992, in the creation of Artémis, of which she was also appointed CEO. Ms. Barbizet is Vice Chairperson of the Board of Directors of the group Pinault-Printemps-Redoute, which has become Kering in 2013. Ms. Barbizet has been Chairwoman of the Board of Christie's from 2002 to 2016, and CEO of the auction house from 2014 to 2016, while maintaining her role of Chairwoman. She has served as Director of the Boards of Bouygues, Air France-KLM and PSA Peugeot-Citroën. She has been Chairwoman of the Investment Committee of the Fonds Stratégique d'Investissement (FSI) from 2008 to 2013.

#### Current directorships

- Director of TOTAL S.A.\*
- Director and Vice Chairperson of the Board of Directors of Kering S.A.\*
- Vice Chairwoman of Christie's International Plc (England)
- Director of Groupe Fnac\* (S.A.)
- Director and Chief Executive Officer of Artémis (S.A.)
- Chief Executive Officer (non-Director) of Financière Pinault (S.C.A.)
- Member of the Supervisory Board of Financière Pinault (S.C.A.)
- Permanent representative of Artémis, member of the Board of Directors of Agefi (S.A.)
- Permanent representative of Artémis, member of the Board of Directors of Sebdo le Point (S.A.)
- Member of the Management Board of Société Civile du Vignoble de Château Latour (*société civile*)
- Director of Yves Saint Laurent (S.A.S.)
- Deputy manager of Palazzo Grazi (Italy)
- Member of the supervisory board of Ponant
- Permanent representative of Artémis, member of the supervisory board of Collection Pinault Paris.

#### Directorships that have expired in the previous five years

- Chairwoman of Christie's International Plc until January 1, 2017
- CEO of Christie's International Plc until January 1, 2017
- Member of the supervisory board of Peugeot S.A.\* until April 26, 2016
- Director of Société Nouvelle du Théâtre Marigny (S.A.) until 2015
- Director of Air France-KLM\* (S.A.) until 2013
- Director of Fonds Stratégique d'Investissement (S.A.) until 2013
- Director of Bouygues\* (S.A.) until 2013
- Director of TF1\* (S.A.) until 2013
- Board member of Gucci Group NV until 2013
- Non-executive Director of Tawa Plc\* until 2012
- Deputy Chief Executive Officer of Société Nouvelle du Théâtre Marigny until 2012

## Marc Blanc

Born on December 7, 1954 (French).

Director representing employees of TOTAL S.A. as of November 4, 2014 until 2017.

Member of the Strategic Committee. Holds 326 TOTAL shares and 847.51 units of the TOTAL ACTIONNARIAT FRANCE collective investment fund and 21.33 units of the TOTAL FRANCE CAPITAL + fund.

### Main function: Group Employee

After joining the Group in 1980 as a refinery operator at the Grandpuits Refinery, Mr. Blanc has, since 1983, exercised a number of trade union functions, in particular as Secretary of the European Elf Aquitaine Committee and then at TOTAL S.A. from 1991 to 2005. From 1995 to 1997, he worked as Secretary General of the CFDT Seine-et-Marne trade union for the Chemicals industry (Syndicat Chimie CFDT), and then, from 1997 to 2001, as Deputy Secretary General of the CFDT trade union for the power and Chemicals industries in the Île-de-France region (Syndicat Énergie Chimie, SECIF), where he became Secretary General in 2001 and continued in this role until 2005. Subsequently, from 2005 to 2012, Mr. Blanc acted as Federal Secretary of the CFDT chemical and power industry federation (Fédération Chimie Énergie) where he was responsible first for industrial policy and then for Sustainable Development, Corporate Social Responsibility, international affairs (excluding Europe), and the oil and chemicals sectors. From 2009 to 2014, he was Director of the Chemicals and Power Industry Research and Training Institute (IDEFORCE association) as well as Advisor to the Economic, Social and Environmental Council (Conseil Économique, Social et Environnemental, CESE) where he sat as a member of the Economic and Finance section as well as of the Environment section. In particular, he was responsible for submitting a report on the societal challenges of biodiversity (*La biodiversité, relever le défi sociétal*) in June 2011, and was the co-author with Alain Bougrain-Dubourg of a follow-up opinion entitled "Acting for Biodiversity" (*Agir pour la Biodiversité*) submitted in 2013. Mr. Blanc was also a member of the CESE's temporary Committee on the "annual report on the state of France" in October 2013.

### Current directorships

– Director representing employees of TOTAL S.A.\*

### Directorships that have expired in the previous five years

None.

## Marie-Christine Coisne-Roquette

Born on November 4, 1956 (French).

Director of TOTAL S.A. since 2011. Last renewal: May 16, 2014 until 2017. Independent director.

Chairwoman of the Audit Committee and member of the Compensation Committee. Holds 3,778 TOTAL shares.

### Main function: Chairwoman of Sonepar S.A.S.

Ms. Coisne-Roquette has a Bachelor's Degree in English. A lawyer by training, with a French Masters' in Law and a Specialized Law Certificate from the New York bar, she started a career as an attorney in 1981 at the Paris and New York bars, as an associate of Cabinet Sonier & Associés in Paris. In 1984, she joined the Board of Sonepar as a director and gave up her law career in 1988 to work full time for the family group. As Chairwoman of the family holding company, Colam Entreprendre, and later of the Sonepar Supervisory Board, she consolidated family ownership, reorganized the Group structures and reinforced the shareholders' Group to sustain its growth strategy. Chairwoman and Chief Executive Officer of Sonepar as of 2002, and then Chairwoman of the Board of Directors, Marie-Christine Coisne-Roquette became Chairwoman of Sonepar S.A.S. on May 27, 2016. At the same time, she heads Colam Entreprendre as its Chairwoman and Chief Executive Officer. Formerly a member of the Young Presidents' Organization (YPO), she served the MEDEF (France's main employers' association) as Executive Committee member for 13 years and was Chairwoman of its Tax Commission from 2005 to 2013. She was a member of the Economic, Social and Environmental Council from 2013 and 2015 and is currently a Director of TOTAL S.A.

### Current directorships

– Director of TOTAL S.A.\*  
– Chairwoman of Sonepar S.A.S.  
– Chairwoman and Chief Executive Officer of Colam Entreprendre  
– Permanent representative of Colam Entreprendre, co-manager of Sonedis (*société civile*)

– Permanent representative of Colam Entreprendre, Director of Sovemarco Europe (S.A.)  
– Chief Executive Officer of Sonepack S.A.S.  
– Co-manager of Développement Mobilier & Industriel (D.M.I.) (*société civile*)  
– Manager of Ker Coro (*société civile immobilière*)

#### Directorships that have expired in the previous five years

- Chairwoman of the Board of Directors of Sonepar S.A. until 2016
- Permanent representative of Sonepar, Director of Sonepar France until 2014
- Director of Hagemeyer Canada, Inc. until 2013
- Chairwoman of the Supervisory Board of Otrá N.V. until 2013
- Director of Sonepar Canada, Inc. until 2013
- Chairwoman of the Supervisory Board of Sonepar Deutschland GmbH until 2013
- Director of Sonepar Ibérica until 2013
- Director of Sonepar Italia Holding until 2013
- Director of Sonepar Mexico until 2013
- Member of the Supervisory Board of Sonepar Nederland B.V. until 2013
- Director of Sonepar USA Holdings, Inc. until 2013
- Director of Feljas et Masson S.A.S. until 2013
- Permanent representative of Colam Entreprendre, member of the Board of Directors at Cabus & Raulot (S.A.S.) until 2013
- Chief Executive Officer of Sonepar S.A. until 2012
- Permanent representative of Sonepar S.A., co-manager of Sonedis (*société civile*) until 2012
- Permanent representative of Sonepar International (S.A.S.) until 2012
- Chairwoman of the Board of Directors of Sonepar Mexico until 2012

#### Paul Desmarais, Jr

Born on July 3, 1954 (Canadian).

Director of TOTAL S.A. since 2002. Last renewal: May 16, 2014 until 2017. Holds 2,000 ADRs (corresponding to 2,000 TOTAL shares).

#### Main function: Chairman of the Board & Co-Chief Executive Officer of Power Corporation of Canada\*

A graduate of McGill University in Montreal and Institut européen d'administration des affaires (INSEAD) in Fontainebleau, Mr. Desmarais was first appointed as Vice President (1984), and then as President and Chief Operating Officer (1986), Executive Vice Chairman of the Board (1989), Executive Chairman of the Board (1990), Chairman of the Executive Committee (2006) and Executive Co-Chairman of the Board (2008) of Power Financial Corporation, a company he helped found in 1984. Since 1996, he has also served as Chairman of the Board and Co-Chief Executive Officer of Power Corporation of Canada.

#### Current directorships

- Director of TOTAL S.A.\*
- Chairman of the Board & Co-Chief Executive Officer of Power Corporation of Canada\*
- Executive Co-Chairman of the Board of Power Financial Corporation\* (Canada)
- Executive Chairman of the Board of Directors and Co-Chief Executive Officer of Pargesa Holding S.A.\* (Switzerland)
- Director and member of the Executive Committee of Great-West Lifeco Inc.\* (Canada)
- Director and member of the Executive Committee of Great-West Life Assurance Company (Canada)
- Director and member of the Executive Committee of Great-West Life & Annuity Insurance Company (United States of America)
- Director of Great-West Financial (Canada) Inc. (Canada)
- Vice Chairman of the Board, Director and member of the Standing Committee of Groupe Bruxelles Lambert S.A.\* (Belgium)
- Director and member of the Executive Committee of Investors Group Inc. (Canada)
- Director and member of the Executive Committee of London Insurance Group Inc. (Canada)
- Director and member of the Executive Committee of London Life Insurance Company (Canada)
- Director and member of the Executive Committee of Mackenzie Inc.
- Director and Deputy Chairman of the Board of La Presse, Itée (Canada)
- Director and Deputy Chairman of Gesca Itée (Canada)
- Director and member of the Nomination, Compensation and Governance Committee of LafargeHolcim Ltd\* (Switzerland)
- Director and member of the Executive Committee of The Canada Life Assurance Company (Canada)
- Director and member of the Executive Committee of The Canada Life Financial Corporation (Canada)
- Director and member of the Executive Committee of IGM Financial Inc.\* (Canada)
- Director and Chairman of the Board of 171263 Canada Inc. (Canada)
- Director of 152245 Canada Inc. (Canada)
- Director of GWL&A Financial Inc. (United States of America)
- Director of Great-West Financial (Nova Scotia) Co. (Canada)
- Director of Great-West Life & Annuity Insurance Company of New York (United States of America)
- Director of Power Communications Inc. (Canada)
- Director and Chairman of the Board of Power Corporation International (Canada)
- Director and member of the Executive Committee of Putnam Investments, LLC (United States of America)
- Member of the Supervisory Board of Power Financial Europe B.V. (Netherlands)
- Director and member of the Executive Committee of The Canada Life Insurance Company of Canada (Canada)
- Director and Deputy Chairman of the Board of Groupe de Communications Square Victoria Inc. (Canada)
- Member of the Supervisory Board of Parjointco N.V. (Netherlands)
- Director of SGS S.A.\* (Switzerland)

#### Directorships that have expired in the previous five years

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- Director of Canada Life Capital Corporation Inc. (Canada) until 2015
- Director of Lafarge\* (France) until 2015
- Director of GDF Suez\* (France) until 2014
- Director and member of the Executive Committee of Crown Life Insurance Company (Canada) until 2012

#### Maria van der Hoeven

Born on September 13, 1949 (Dutch).

Director of TOTAL S.A. since 2016 until 2019. Independent director. Holds 1,000 TOTAL shares.

#### Main function: Independent director

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Ms. van der Hoeven, after a teaching training, was a professor in economic sciences and administration then a school counselor. She was then Executive Director of the Administrative Center for vocational training for adults in Maastricht for seven years and then Director of the technologic Center of Limbourg. She was member of the Dutch Parliament, served as Minister of Education, Culture and Science from 2002 to 2007, and was Minister of Economic Affairs of the Netherlands from 2007 to 2010. Ms. van der Hoeven then served as Executive Director of the International Energy Agency (IEA) from September 2011 to August 2015. During this period, she contributed to increasing the number of members of the Agency and emphasized the close link between climate and energy policy. In October 2015, Ms. van der Hoeven joined the Board de Trustees of Rocky Mountain Institute (USA) and in September 2016, member of the supervisory board of Innogy SE\* (Germany).

#### Current directorships

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- Director of TOTAL S.A.\*
- Member of the Supervisory Board of Innogy SE\*
- Member of the Board de Trustees of Rocky Mountain Institute (USA)

#### Directorships that have expired in the previous five years

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- Member of the Supervisory Board of RWE AG (Germany)

#### Anne-Marie Idrac

Born on July 27, 1951 (French).

Director of TOTAL S.A. since 2012. Last renewal: May 29, 2015 until 2018. Independent director. Member of the Governance and Ethics Committee. Holds 1,250 TOTAL shares.

#### Main function: Chairwoman of the Supervisory Board of Toulouse-Blagnac Airport

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A graduate of Institut d'Etudes Politiques de Paris and formerly a student at École Nationale d'Administration (ENA -1974), Ms. Idrac began her career holding various positions as a senior civil servant at the Ministry of Infrastructure (Ministère de l'Équipement) in the fields of environment, housing, urban planning and transportation. She served as Executive Director of the public institution in charge of the development of Cergy-Pontoise (Établissement public d'Aménagement de Cergy-Pontoise) from 1990 to 1993 and Director of land transport from 1993 to 1995. Ms. Idrac was State Secretary for Transport from May 1995 to June 1997, elected member of Parliament for Yvelines from 1997 to 2002, regional councilor for Île-de-France from 1998 to 2002 and State Secretary for Foreign Trade from March 2008 to November 2010. She also served as Chairwoman and Chief Executive Officer of RATP from 2002 to 2006 and then as Chairwoman of SNCF from 2006 to 2008.

#### Current directorships

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- Director of TOTAL S.A.\*
- Director of Bouygues\*
- Director of Saint Gobain\*
- Chairwoman of the Supervisory Board of Toulouse-Blagnac Airport

#### Directorships that have expired in the previous five years

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- Member of the Supervisory Board of Vallourec\* until 2015
- Director of Mediobanca S.p.A.\* (Italy) until 2014



## Barbara Kux

Born on February 26, 1954 (Swiss).

Director of TOTAL S.A. since 2011. Last renewal: May 16, 2014 until 2017. Independent director. Member of the Governance and Ethics Committee and the Strategic Committee. Holds 1,000 shares.

### Main function: Independent director

Holder of an MBA (with honors) from INSEAD in Fontainebleau, Ms. Kux joined McKinsey & Company in 1984 as a Management Consultant, where she was responsible for strategic assignments for international groups. After serving as manager for development of emerging markets at ABB and then at Nestlé between 1989 and 1999, she was appointed Executive Director of Ford in Europe from 1999 to 2003. In 2003, Ms. Kux became a member of the Executive Committee of the Philips group and, starting in 2005, was in charge of the supply chain and Sustainable Development. From 2008 to 2013, she was a member of the Executive Board of Siemens AG, a global leader in high technology present in the energy and renewable energy sector. She was responsible for Sustainable Development and the supply chain of the group. Since 2013, she has been a director of various world-class international companies and is also a member of the Advisory Board of INSEAD. In 2016, she has been appointed by the European Commission to the newly established high level Decarbonisation Pathways Panel.

### Current directorships

- Director of TOTAL S.A.\*
- Director of Engie S.A.\*
- Director of Pargesa Holding S.A.\*
- Member of the Supervisory Board of Henkel\*
- Director of Umicore\*
- Member of the Board of Directors of Firmenich S.A.

### Directorships that have expired in the previous five years

- Member of the Management Board of Siemens AG\* until 2013

## Gérard Lamarche

Born on July 15, 1961 (Belgian).

Director of TOTAL S.A. since 2012. Last renewal: May 24, 2016 until 2019. Independent director. Chairman of the Compensation Committee and member of the Audit Committee. Holds 2,929 TOTAL shares.

### Main function: Deputy Managing Director of Groupe Bruxelles Lambert\*

Mr. Lamarche graduated in economic science from Louvain-La-Neuve University and is also a graduate of INSEAD business school (Advanced Management Program for Suez Group Executives). He also attended the Global Leadership Series training course at the Wharton International Forum in 1998-99. He started his career at Deloitte Haskins & Sells in Belgium in 1983, before becoming a consultant in mergers and acquisitions in the Netherlands in 1987. In 1988, Mr. Lamarche joined Société Générale de Belgique as an investment manager. He was promoted to the position of management controller in 1989 before becoming a consultant in strategic operations from 1992 to 1995. He joined Compagnie Financière de Suez as a project manager for the Chairman and Secretary of the Executive Committee (1995-1997), before being appointed as the acting Managing Director in charge of Planning, Management Control and Accounts. In 2000, Mr. Lamarche moved to NALCO (the American subsidiary of the Suez group and the world leader in the treatment of industrial water) as Director and Chief Executive Officer. He was appointed Chief Financial Officer of the Suez group in 2003. In April 2011, Mr. Lamarche became a director on the Board of Directors of Groupe Bruxelles Lambert (GBL). He has been the Deputy Managing Director since January 2012. Mr. Lamarche is currently a director of LafargeHolcim Ltd (Switzerland), TOTAL S.A. and SGS S.A.

### Current directorships

- Director of TOTAL S.A.\*
- Deputy Managing Director of Groupe Bruxelles Lambert\*
- Director and Chairman of the Audit Committee of LafargeHolcim Ltd\* (Switzerland)
- Director of SGS S.A.\* (Switzerland)

### Directorships that have expired in the previous five years

- Director of Lafarge until 2016
- Director and Chairman of the Audit Committee of Legrand\* until 2016
- Non-voting member (*censeur*) of Engie S.A.\* until 2015

## Jean Lemierre

Born on June 26, 1950 (French).

Director of TOTAL S.A. since 2016 until 2019. Independent director. Holds 1,000 TOTAL shares.

### Main function: Chairman of the Board of Directors of BNP Paribas\*

Mr. Lemierre is a graduate of the Institut d'études politiques de Paris and the École Nationale d'Administration; he also has a law degree. Mr. Lemierre held various positions at the French tax authority, including as Head of the fiscal legislation department and Director-General of Taxes. He was then appointed as Cabinet Director at the French Ministry of Economy and Finance before becoming Director of the French Treasury in October 1995. Between 2000 and 2008, he was President of the European Bank for Reconstruction and Development (EBRD). He became an advisor to the Chairman of BNP Paribas in 2008 and has been Chairman of BNP Paribas since December 1, 2014.

During his career, Mr. Lemierre has also been a member of the European Monetary Committee (1995-1998), Chairman of the European Union Economic and Financial Committee (1999-2000) and Chairman of the Paris Club (1999-2000). He then became a member of the International Advisory Council of China Investment Corporation (CIC) and the International Advisory Council of China Development Bank (CDB). He is currently Chairman of the Centre d'Études Prospectives et d'Informations Internationales (CEPII), and a member of the Institute of International Finance (IIF).

### Current directorships

- Chairman of the Board of Directors of BNP Paribas\*
- Director of TEB Holding AS (Turkey)
- Director of TOTAL S.A.\*
- Chairperson of Centre d'Études Prospectives et d'Informations Internationales (CEPII)
- Member of Institute of International Finance (IIF)
- Member of International Advisory Board of Orange
- Member of International Advisory Council of China Development Bank (CDB)
- Member of International Advisory Council of China Investment Corporation (CIC)
- Member of International Advisory Panel (IAP) of Monetary Authority of Singapore (MAS)

### Directorships that have expired in the previous five years

- Director of Bank Gospodarki Zydnowsciowej (BGZ) (Pologne) until 2014

## Renata Perycz

Born on November 05, 1963 (Polish).

Director representing employee shareholders of TOTAL S.A. since 2016 until 2019. Holds 280 TOTAL shares and 1,211.30 units of the TOTAL ACTIONNARIAT INTERNATIONAL CAPITALISATION and 36.10 units of the Total INTL Capital collective investment funds.

### Main function: Human Resources and Internal Communications Director of Total Polska sp. z.o.o.

Ms. Perycz is a graduate of the University of Warsaw, the Ecole des Hautes Etudes Commerciales (HEC) and the SGH Warsaw School of Economics. Ms. Perycz entered the Group in 1993 as a logistics and sales manager for Total Polska. In 2000, she became a supplies and logistics manager before becoming head of the subsidiary's purchasing department in 2003. In 2007, she became Total Polska sp. z.o.o.'s Human Resources and Purchasing director. Since 2013, Ms. Perycz has been the subsidiary's Human Resources and Internal Communications director. She has also been an elected member, representing unit-holders, of the Supervisory Board of FCPE Total Actionariat International Capitalisation since 2012.

### Current directorships

- Director representing employee shareholders of TOTAL S.A.\*

### Directorships that have expired in the previous five years

None.

## Directorships of TOTAL S.A. expired in 2016

### Thierry Desmarest

Born on December 18, 1945 (French).

A graduate of *École Polytechnique* and an Engineer of France's *Corps des Mines* engineering school, Mr. Desmarest served as Director of Mines and Geology in New Caledonia, then as technical advisor at the Offices of the Minister of Industry and the Minister of Economy. He joined TOTAL in 1981, where he held various management positions, then served as President of Exploration & Production until 1995. He served as Chairman and Chief Executive Officer of TOTAL from May 1995 until February 2007, and then as Chairman of the Board of TOTAL until May 21, 2010. He was then appointed Honorary Chairman of TOTAL where he remains a director, and was Chairman of the Total Foundation until January 2015. On October 22, 2014, he was again appointed as Chairman of the Board of Directors for a term of office that expired on December 18, 2015.

Main function: Honorary Chairman of TOTAL S.A.\*  
Director of TOTAL S.A. since 1995.

Last renewal: May 17, 2013 until 2016.

Member of the Governance and Ethics Committee and the Strategic Committee until 2016.

#### Current directorships

- Director of Air Liquide\*
- Director of Renault S.A.\*
- Director of Renault S.A.S.

#### Directorships that have expired in the previous five years

- Director of TOTAL S.A.\* until 2016
- Chairman of the Board of Directors of TOTAL S.A.\* until 2015
- Director of Bombardier Inc.\* (Canada) until 2014
- Director of Sanofi\* until 2014

### Gunnar Brock

Born on April 12, 1950 (Swedish).

A graduate of Stockholm School of Economics with an MBA in Economics and Business Administration, Mr. Brock held various international positions at Tetra Pak. He served as Chief Executive Officer of Alfa Laval from 1992 to 1994 and as Chief Executive Officer of Tetra Pak from 1994 to 2000. After serving as Chief Executive Officer of Thule International, he was appointed Chief Executive Officer of Atlas Copco AB from 2002 to 2009. He is currently Chairman of the Board of Stora Enso Oy. Mr. Brock is also a member of the Royal Swedish Academy of Engineering Sciences and of the Board of Directors of the Stockholm School of Economics.

Main function: Chairman of the Board of Directors of Stora Enso Oy\*.

Director of TOTAL S.A. since 2010.

Last renewal: May 17, 2013 until 2016.

Independent director. Member of the Compensation Committee, the Governance and Ethics Committee and the Strategic Committee until 2016.

#### Current directorships

- Chairman of the Board of Directors of Stora Enso Oy\*
- Member of the Board of Investor AB\*

- Member of the Board of Syngenta AG\*
- Chairman of the Board of Mölnlycke Health Care Group
- Member of the Board of Stena AB

#### Directorships that have expired in the previous five years

- Director of TOTAL S.A.\* until 2016
- Chairman of the Board of Rolling Optics until 2016
- Member of the Supervisory Board of Spencer Stuart Scandinavia until 2011

### Charles Keller

Born on November 15, 1980 (French).

A graduate of *École Polytechnique* and *École des Hautes Études Commerciales* (HEC), Mr. Keller joined the Group in 2005 at the refinery in Normandy as a performance auditor. In 2008, he was named Project Manager at the Grandpuits refinery to improve the site's energy efficiency and oversee its reliability plan. In 2010, he joined Exploration & Production and Yemen LNG as head of the Production Support department in charge of optimizing the plant. Since February 2014, he has been a reservoir engineer at the head office in La Défense. While performing his duties in the refining sector, Mr. Keller sat on the Works Committees of the two refineries and contributed to the activities of the Central Works Council of UES Aval, first as an elected member and then as a union representative. Mr. Keller has been an elected member, representing holders of fund units, of the Supervisory Board of the TOTAL ACTIONNARIAT FRANCE collective investment fund since November 2012.

Main function: Engineer.

Director of TOTAL S.A. representing employee shareholders since May 17, 2013 and until 2016.

Member of the Audit Committee until 2016.

#### Current directorships

None.

#### Directorships that have expired in the previous five years

- Director of TOTAL S.A.\* representing employee shareholders until 2016.

### 1.1.2. Absence of conflicts of interest or convictions

The Board of Directors noted the absence of potential conflicts of interest between the directors' duties with respect to the Company and their private interests. To the Company's knowledge, there is no family relationship among the members of the Board of Directors of TOTAL S.A., there is no arrangement or agreement with customers or suppliers under which a director was selected, and there is no service agreement that binds a director to TOTAL S.A. or to any of its subsidiaries and provides for special benefits under the terms thereof.

The Board of Directors' Rules of Procedure stipulate the specific rules for preventing conflicts of interest as applicable to directors (refer to article 2.5 of the Rules of Procedure – Duty of Loyalty).

The current members of the Board of Directors of the Company have declared to the Company that they have not been convicted,

have not been associated with a bankruptcy, receivership or liquidation, and have not been incriminated or publicly sanctioned or disqualified, as stipulated in item 14.1 of Annex I of EC Regulation No. 809/2004 of April 29, 2004.

### 1.1.3. Director independence

At its meeting on February 8, 2017, the Board of Directors, on the recommendation of the Governance and Ethics Committee, reviewed the independence of the Company's directors as of December 31, 2016. At the Committee's proposal, the Board considered that, pursuant to the AFEP-MEDEF Code, a director is independent when "he or she has no relationship of any kind with the company, its group or its management, that may compromise the exercise of his or her freedom of judgment".

For each director, this assessment relies on the independence criteria set forth in point 8.5 of the AFEP-MEDEF Code, revised in November 2016, as described below:

- not to be an employee or executive director of the Company, or an employee, executive director or director of its parent company or of a company consolidated by its parent company, and not having been in such a position for the previous five years;
- not to be an executive director of a company in which the Company holds a directorship, directly or indirectly, or in which an employee appointed as such or an executive director of the Company (currently in office or having held such office for less than five years) is a director;
- not to be a significant customer, supplier, investment banker or commercial banker of the Company or Group or for which the Company or the Group represents a material part of their business (the assessment of the materiality or non-materiality of the relationship must be discussed by the Board and the quantitative and qualitative criteria on which this assessment was based (continuity, economic dependence, exclusivity, etc.) must be explained in the annual report;
- not to be related by close family ties to a director of the Company;
- not to have been a statutory auditor of the Company within the previous five years; and
- not to have been a director of the Company for more than 12 years. Loss of the status of independent director occurs on the date at which this period of 12 years is reached.

The AFEP-MEDEF Code stipulates that non-executive directors cannot be considered independent if they receive variable compensation in cash or in the form of shares or any other compensation linked to the performance of the Company or Group.

It also stipulates that directors representing major shareholders of the corporation or its parent company may be considered as being independent provided that these shareholders do not take part in control of the corporation. Nevertheless, beyond a 10% holding of stock or 10% of the voting rights, the Board, upon a report from the nominations committee, should systematically review the qualification of a director as independent in the light of the make-up of the corporation's capital and the existence of a potential conflict of interest.

With regard to the criterion of 12 years of service, the Board of Directors, at its meeting on February 10, 2016, noted that as of December 31, 2015, Mr. Desmarais, Jr was disqualified from being considered as independent within the meaning of the AFEP-MEDEF Code, because he had served on the Board for more than 12 years.

The Board of Directors, at its meeting on February 8, 2017, based on the proposals of the Governance and Ethics Committee, thus noted that Mr. Desmarais, Jr could not be considered as independent as of December 31, 2016.

Concerning the independence of Ms. Kux and Mr. Lemierre, the Board of Directors, at its meeting on February 8, 2017, based on the proposals of the Governance and Ethics Committee, confirmed that the independence analysis carried out in 2016 continues to be relevant.

Accordingly, Meses. Barbizet, Coisne-Roquette, Idrac, van der Hoeven and Kux and Messrs. Artus, Lamarche and Lemierre were deemed to be independent directors.

The percentage of independent directors on the Board based on its composition as of December 31, 2016 was 80%<sup>(1)</sup>.

The rate of independence of the Board of Directors is higher than that recommended by the AFEP-MEDEF Code, which specifies that at least half of the members of the Board in widely-held companies with no controlling shareholders must be independent.

### 1.1.4. Diversity policy of the Board of Directors

The Board of Directors places a great deal of importance on its composition and the composition of its Committees. In particular, it relies on the work of the Governance and Ethics Committee, which reviews annually and proposes, as circumstances may require, desirable changes to the composition of the Board of Directors and Committees based on the Group's strategy.

The Governance and Ethics Committee conducts its work within the framework of a formal procedure so as to ensure that the directors' fields of speciality are complementary and that their profiles are diverse, to maintain an overall proportion of independent members that is appropriate to the Company's governance structure and shareholder base, to allow for a balanced representation of men and women on the Board, and to promote an appropriate representation of directors of different nationalities.

As part of an effort that began several years ago, the composition of the Board of Directors has changed significantly since 2010 to achieve better gender balance and an openness to more international profiles.

As of February 8, 2017, the Board of Directors had, among its twelve members, five non-French members, as well as six male directors and six female directors.

The director(s) representing employees appointed in accordance with Article L. 225-27-1 of the French Commercial Code are not taken into account to apply provisions on the balanced representation of men and women on the Board. Therefore, the proportion of women on the Board was 54.5% as of December 31, 2016 (six women out of eleven directors).

The 40% proportion of directors from each gender has thus been reached since the Shareholders' Meeting held on May 24, 2016 (six women and five men over eleven directors), by early application of the legal provisions providing for the same 40% threshold applicable as from January 1, 2017.

### 1.1.5. Training of directors

Directors may ask to receive training in the specifics of the Company, its businesses and its business sector, as well as any training that may help them perform their duties as directors.

(1) Excluding the director representing employee shareholders and the director representing employees, in accordance with the recommendations of the AFEP-MEDEF Code (point 8.3).

The director representing employees also receives 20 hours of training per year, which covers in-house training at the Company and/or training in economics offered by an outside company chosen by the director, after the Board Secretary has accepted the company and the training program.

Since 2013, the Board of Directors has met each year at a Group site. In October 2016, the Board of Directors met in Scotland in the West of Shetland area at the Laggan project site. Meetings of the Board held at sites contribute to the integration of new directors.

### 1.1.6. Appointment and renewal of directorships proposed to the Shareholders' Meeting of May 26, 2017

#### Renewal of the directorship of Mses. Patricia Barbizet and Marie-Christine Coisne-Roquette

Directorships of Mses. Patricia Barbizet, Marie-Christine Coisne-Roquette, Barbara Kux and of Mr. Paul Desmarais, jr. will expire at the end of the Annual Shareholders' Meeting of May 26, 2017. Ms. Barbara Kux and Mr. Paul Desmarais, jr. have not requested the renewal of their directorship.

As a result, at its meeting of February 8, 2017, and further to a proposal by the Governance and Ethics Committee, the Board of Directors decided to submit to the Annual Shareholders' Meeting of May 26, 2017 the renewal of the directorship of Mses. Patricia Barbizet and Marie-Christine Coisne-Roquette for a three-year term to expire at the end of the Annual Shareholders' Meeting held in 2020 to approve the 2019 financial statements.

#### Appointment of Mr. Mark Cutifani and Mr. Carlos Tavares

At its meeting of February 8, 2017, and further to a proposal by the Governance and Ethics Committee, the Board of Directors decided to submit to the same Shareholders' Meeting the appointment of Mr. Mark Cutifani and Mr. Carlos Tavares as directors for a three-year term to expire at the end of the Shareholders' Meeting to be held in 2020 to approve the 2019 financial statements.

Mr. Mark Cutifani, of Australian nationality, Chief Executive of the Anglo-American Plc. company, will, in particular, bring to the Board his knowledge of industry and raw-material cyclical economy, Mark Cutifani having in addition a professional experience in several countries where the Group is developing (Australia, South Africa, Brazil, Canada, UK).

Mr. Carlos Tavares, of Portuguese nationality, Chairman of the Management Board of the company Peugeot S.A., will, in particular, bring to the Board his knowledge of the industrial world and the inland transport sector, downstream from the oil and gas sector.

The Board of Directors considered that Mr. Mark Cutifani and Mr. Carlos Tavares could be deemed to be independent following an assessment based on the independence criteria set forth in the AFEP-MEDEF Code.

Following the Shareholders' Meeting of May 26, 2017, if the proposed resolutions are approved, the Board of Directors will have twelve members (as previously), of which five would be non-French nationals. The proportion of directors from each gender would be higher than 40% in accordance with the provisions of Article L. 225-18-1 of the French Commercial Code (five women and six men over eleven directors)<sup>(1)</sup>.

## 1.2. Practices of the Board of Directors

### 1.2.1. Governance structure

#### Combination of the management positions

At its meeting on December 16, 2015, the Board of Directors decided to reunify the positions of Chairman and Chief Executive Officer of TOTAL S.A. as of December 19, 2015. As a result, since that date, Mr. Pouyanné has held the position of Chairman and Chief Executive Officer of TOTAL S.A.

Following the death of TOTAL's former Chairman and Chief Executive Officer, Mr. de Margerie, the Board of Directors decided, at its meeting on October 22, 2014, to separate the functions of Chairman and Chief Executive Officer in order to best ensure the transition of the General Management. The Board of Directors therefore appointed Mr. Pouyanné as Chief Executive Officer for a term of office expiring at the end of the Annual Shareholders' Meeting called in 2017 to approve the 2016 financial statements<sup>(2)</sup>, and Mr. Desmarest as Chairman of the Board of Directors for a term of office expiring on December 18, 2015, in accordance with the age limit set out in the bylaws. It was announced that, on that date, the functions of Chairman and Chief Executive Officer of TOTAL S.A. would be combined.

The decision to reunify the positions of Chairman of the Board of Directors and Chief Executive Officer was made further to work

done by the Governance and Ethics Committee and in the best interests of the Company. The Board of Directors deemed that a unified Management Form was most appropriate to the Group's organization, *modus operandi* and business, and to the specificities of the oil and gas sector. In its decision, the Board in particular noted the advantage for the Group of having a unified management in strategic negotiations with governments and the Group's partners.

The Board also wanted the Group's governance structure to ensure a balanced distribution of powers. To this end, at its meeting on December 16, 2015, the Board amended the provisions of its Rules of Procedure to provide for the appointment of a Lead Independent Director in case of the combination of the positions of Chairman of the Board of Directors and Chief Executive Officer. The Lead Independent Director's duties, resources and rights are described in the Rules of Procedure of the Board of Directors.

The balance of powers within the Company's bodies is also ensured by the composition of the Board of Directors and that of its four Committees, particularly given the high proportion of members who are independent directors. It is further ensured by the directors' full involvement in the work of the Board and the Committees, and by their diverse profiles, skills and expertise (refer to point 1.1 above).

(1) Excluding the director representing employees, in accordance with Article L.225-27-1 of the French Commercial Code.

(2) The Board of Directors of December 16, 2015 decided to prorogate the term of this office to the end of the 2018 Annual Shareholders' Meeting, date of expiry of the term of office of Mr. Pouyanné as Director.

In addition, the Board's Rules of Procedure provide that investments and divestments considered by the Group exceeding 3% of equity must be approved by the Board, which is also informed of any significant events related to the Company's operations, particularly investments and divestments in amounts exceeding 1% of equity.

Finally, the Company's bylaws also offer the necessary guarantees to ensure compliance with best governance practices under a unified Management Form. In particular, they stipulate that a Board meeting may be convened by any means, including verbally, and at short notice in case of urgency, by the Chairman, a Vice Chairman, or by a third of its members, at any time and as often as required to ensure the best interests of the Company. The Rules of Procedure of the Board of Directors also state that each director must notify the Board of Directors of any existing or potential conflict of interest with the Company or any Group company and must refrain from participating in any vote related to the corresponding resolution as well as in any discussion preceding such vote.

### Lead Independent Director

At its meeting on December 16, 2015, the Board of Directors appointed Ms. Barbizet as Lead Independent Director as of December 19, 2015. Pursuant to the provisions of the Rules of Procedure of the Board of Directors, she therefore chairs the Governance and Ethics Committee.

The duties of the Lead Independent Director are described in detail in the Rules of Procedure of the Board of Directors, the full version of which is provided in point 1.2.2 below.

### 1.2.2. Working procedures of the Board of Directors

The working procedures of the Board of Directors are set out in its Rules of Procedure, which specify the mission of the Board of Directors and the rules related to the organization of its work. The Board's Rules of Procedure also specify the obligations of each director, as well as the role and powers of the Chairman and the Chief Executive Officer.

Mr. Charles Paris de Bollardière has served as Secretary of the Board of Directors since his appointment by the Board of Directors on September 15, 2009.

Since November 4, 2014, the date of the first appointment of the director representing employees on the Board of Directors, a member of the Central Works Council attends Board meetings in an advisory capacity, pursuant to Article L. 2323-65 of the French Labor Code.

The Rules of Procedure of the Board of Directors are reviewed on a regular basis to adapt them to changes in governance rules and practices. In 2014, changes were made to include, in particular, new provisions relating to information of the Board of Directors in the event of new directorships being assumed by the directors or changes in existing directorships, together with a reminder of the obligations of confidentiality inherent to the work of the Board. In December 2015, changes were made to provide for the appointment of a Lead Independent Director in the event of the unification of the Management Form and to define his or her duties.

The text of the latest unabridged version of the Rules of Procedure of the Board of Directors, as approved by the Board of Directors at its meeting on December 16, 2015, is provided below. It is also available on the Company's website under "Our Group/Governance".

The Board of Directors of TOTAL S.A.<sup>(1)</sup> approved the following Rules of Procedure.

## 1. ROLE OF THE BOARD OF DIRECTORS

The Board of Directors is a collegial body that determines the strategic direction of the Company and supervises the implementation of this vision. With the exception of the powers and authority expressly reserved for shareholders and within the limits of the Company's legal purpose, the Board may address any issue related to the Company's operation and make any decision concerning the matters falling within its purview. Within this framework, the Board's duties and responsibilities include, but are not limited to, the following:

- appointing the executive directors<sup>(2)</sup> and supervising the handling of their responsibilities;
- defining the Company's strategic orientation and, more generally, that of the Group;
- approving investments or divestments being considered by the Group that exceed 3% of shareholders' equity;
- reviewing information on significant events related to the Company's operations, in particular for investments and divestments involving amounts exceeding 1% of shareholders' equity;
- conducting any audits and investigations it deems appropriate. In particular, the Board, with the assistance of the Audit Committee, ensures that:
  - authority has been properly defined and that the various corporate bodies of the Company make proper use of their powers and responsibilities,
  - no individual is authorized to commit to pay or to make payments, on behalf of the Company, without proper supervision and control,
  - the internal control function operates properly and the statutory auditors are able to perform their mission satisfactorily, and
  - the Committees it has created duly perform their responsibilities;
- ensuring the quality of the information provided to shareholders and financial markets through the financial statements that it approves as well as the annual reports, or when major transactions are conducted;
- convening and setting the agenda for Shareholders' Meetings or meetings of bond holders;
- preparing on an annual basis the list of directors it deems to be independent according to generally accepted corporate governance criteria; and
- appointing a Lead Independent Director under the conditions set out in article 7, when the Chairman of the Board of Directors is also the Chief Executive Officer pursuant to a decision by the Board of Directors.

(1) TOTAL S.A. is referred to in these Rules of Procedure as the "Company" and collectively with all its direct and indirect subsidiaries as the "Group".

(2) The term "executive director" refers to the Chairman and Chief Executive Officer, if the Chairman of the Board of Directors is also responsible for the management of the Company; the Chairman of the Board of Directors and the Chief Executive Officer, if the two roles are carried out separately; and, where applicable, any Deputy Chief Executive Officers or Chief Operating Officers, depending on the organizational structure adopted by the Board of Directors.

## 2. OBLIGATIONS OF THE DIRECTORS OF TOTAL S.A.

Before accepting a directorship, all candidates receive a copy of TOTAL S.A.'s bylaws and these rules of procedure. They must ensure that they have broad knowledge of the general and particular obligations related to their duty, especially the laws and regulations governing directorships in French limited liability companies (*sociétés anonymes*) whose shares are listed in one or several regulated markets. They must also ensure that they are familiar with the guidelines set out in the Corporate Governance Code to which the Company refers.

Accepting a directorship creates an obligation to comply with applicable regulations relating in particular to the functioning of the Board of Directors, and with the ethical rules of professional conduct for directors as described in the Corporate Governance Code to which the Company refers. It also creates an obligation to comply with these rules of procedure and to uphold the Group's values as described in its Code of Conduct.

When directors participate in and vote at meetings of the Board of Directors, they are required to represent all of the Company's shareholders and to act in the interest of the Company as a whole.

### 2.1. INDEPENDENCE OF JUDGMENT

Directors undertake to maintain, in all circumstances, the independence of their analysis, judgment, decision-making and actions as well as not to be unduly influenced, directly or indirectly, by other directors, particular groups of shareholders, creditors, suppliers or, more generally, any third party.

### 2.2. OTHER DIRECTORSHIPS OR FUNCTIONS

Directors must keep the Board of Directors informed of any position they hold on the management team, Board of Directors or Supervisory Board of any other company, whether French or foreign, listed or unlisted. This includes any positions as a non-voting member (*censeur*) of a board. To this end, directors expressly undertake to promptly notify the Chairman of the Board of Directors, and the Lead Independent Director if one has been appointed, of any changes to the positions held, for any reason, whether appointment, resignation, termination or non-renewal.

### 2.3. PARTICIPATION IN THE BOARD'S WORK

Directors undertake to devote the amount of time required to duly consider the information they are given and otherwise prepare for meetings of the Board of Directors and of the Committees of the Board of Directors on which they sit. They may request from the executive directors any additional information they deem necessary or useful to their duties. If they consider it necessary, they may request training on the Company's specificities, businesses and industry sector, and any other training that may be of use to the effective exercise of their duties as directors.

Unless unable, in which case the Chairman of the Board shall be provided with advance notice, directors are to attend all meetings of the Board of Directors, meetings of Committees of the Board of Directors on which they serve and Shareholders' Meetings.

The Chairman of the Board ensures that directors receive all relevant information concerning the Company, including that of a negative nature, particularly analyst reports, press releases and the most important media articles.

### 2.4. CONFIDENTIALITY

Directors and any other person who attends all or part of any meeting of the Board of Directors or its Committees are under the strict obligation not to disclose any details of the proceedings.

All documents reviewed at meetings of the Board of Directors, as well as information conveyed prior to or during the meetings, are strictly confidential.

With respect to all non-public information acquired during the exercise of their functions, directors are bound by professional secrecy not to divulge such information to employees of the Group or to outside parties. This obligation goes beyond the mere duty of discretion provided for by law.

Directors must not use confidential information obtained prior to or during meetings for their own personal benefit or for the benefit of anyone else, for whatever reason. They must take all necessary steps to ensure that the information remains confidential. Confidentiality and privacy are lifted when such information is made publicly available by the Company.

### 2.5. DUTY OF LOYALTY

Directors must not take advantage of their office or duties to gain, for themselves or a third party, any monetary or non-monetary benefit.

They must notify the Chairman of the Board of Directors and the Lead Independent Director, if one has been appointed, of any existing or potential conflict of interest with the Company or any Group company and they must refrain from participating in the vote relating to the corresponding resolution as well as in any discussion preceding such vote.

Directors must inform the Board of Directors of their participation in any transaction that directly involves the Company, or any Group company, before such transaction is finalized.

Directors must not assume personal responsibilities in companies or businesses having activities in competition with those of the Company or any Group company without first having informed the Board of Directors.

Directors undertake not to seek or accept from the Company, or from companies directly or indirectly connected to the Company, any advantages liable to be considered as being of a nature that may compromise their independence.

## 2.6. DUTY OF EXPRESSION

Directors undertake to clearly express their opposition if they deem a decision being considered by the Board of Directors is contrary to the Company's corporate interest and they must endeavor to convince the Board of Directors of the pertinence of their position.

## 2.7. TRANSACTIONS IN THE COMPANY'S SECURITIES AND STOCK EXCHANGE RULES

While in office, directors are required to hold the minimum number of registered shares of the Company as set by the bylaws.

Generally speaking, directors must act with the highest degree of prudence and vigilance when completing any personal transaction involving the financial instruments of the Company, its subsidiaries or affiliates that are listed or that issue listed financial instruments.

To that end, directors must comply with the following requirements:

1. Any shares or ADRs of TOTAL S.A. or its listed subsidiaries are to be held in registered form, either with the Company or its agent, or as administered registered shares with a French broker (or North American broker for ADRs), whose contact details are communicated by the director to the Secretary of the Board of Directors.
2. Directors shall refrain from directly or indirectly engaging in (or recommending engagement in) transactions involving the financial instruments (shares, ADRs or any other securities related to such financial instruments) of the Company or its listed subsidiaries, or any listed financial instruments for which the director has insider information.  
Insider information is specific information that has not yet been made public and that directly or indirectly concerns one or more issuers of financial instruments or one or more financial instruments and which, if it were made public, could have a significant impact on the price of the financial instruments concerned or on the price of financial instruments related to them.
3. Any transaction in the Company's financial instruments (shares, ADRs or related financial instruments) is strictly prohibited during the thirty calendar days preceding the publication by the Company of its periodic results (quarterly, half-year or annual) as well as on the day of any such announcement.
4. Moreover, directors shall comply, where applicable, with the provisions of Article L. 255-197-1 of the French Commercial Code, which stipulates that free shares may not be sold:
  - during the ten trading days preceding and the three trading days following the date on which the Consolidated Financial Statements or, failing that, the annual financial statements, are made public; and
  - during the period from the date on which the Company's corporate bodies become aware of information that, if it were made public, could have a significant impact on the Company's share price, until ten trading days after such information is made public.
5. Directors are prohibited from carrying out transactions on any financial instruments related to the Company's share (Paris option market (MONEP), warrants, exchangeable bonds, etc.) and from buying on margin or short selling such financial instruments.
6. Directors are also prohibited from hedging the shares of the Company and any financial instruments related to them, and in particular:
  - all Company shares that they hold; and, where applicable;
  - Company share subscription or purchase options;
  - rights to Company shares that may be awarded free of charge; and
  - Company shares obtained from the exercise of options or granted free of charge.
7. Directors must make all necessary arrangements to declare, pursuant to the form and time frame provided by applicable law, to the French Financial Markets Authority (*Autorité des marchés financiers*), as well as to the Secretary of the Board of Directors, any transaction involving the Company's securities conducted by themselves or by any other person to whom they are closely related.

## 3. FUNCTIONING OF THE BOARD OF DIRECTORS

### 3.1. BOARD MEETINGS

The Board of Directors meets at least four times a year and whenever circumstances require.

Prior to each Board meeting, the directors receive the agenda and, whenever possible, all other materials necessary to consider for the session.

Directors may be represented by another director at a meeting of the Board, provided that no director holds more than one proxy at any single meeting.

Whenever authorized by law, directors are considered present for *quorum* and majority purposes who attend Board meetings through video conferencing or other audiovisual means that are compliant with the technical requirements set by applicable regulations.

### 3.2. DIRECTORS' FEES

The Board of Directors allocates annual directors' fees within the total amount authorized by the Annual Shareholders' Meeting.

Compensation includes a fixed portion and a variable portion that takes into account each directors' actual participation in the work of the Board of Directors and its Committees together with, if applicable, the duties of the Lead Independent Director.

The Chief Executive Officer or, if the functions are combined, the Chairman and Chief Executive Officer, does not receive any director's fees for his participation in the work of the Board and its Committees.



### 3.3. SECRETARY OF THE BOARD OF DIRECTORS

The Board of Directors, based on the recommendation of its Chairman, appoints a Secretary of the Board who assists the Chairman in organizing the Board's activities, and particularly in preparing the annual work program and the schedule of Board meetings.

The Secretary drafts the minutes of Board meetings, which are then submitted to the Board for approval. The Secretary is authorized to dispatch Board meeting minutes and to certify copies and excerpts of the minutes.

The Secretary is responsible for all procedures pertaining to the functioning of the Board of Directors. These procedures are reviewed periodically by the Board.

All Board members may ask the Secretary for information or assistance.

### 3.4. EVALUATION OF THE FUNCTIONING OF THE BOARD OF DIRECTORS

The Board evaluates its functioning at regular intervals not exceeding three years. The evaluation is carried out under the supervision of the Lead Independent Director, if one has been appointed, or under the supervision of the Governance and Ethics Committee, with the assistance of an outside consultant. The Board of Directors also conducts an annual review of its practices.

## 4. ROLE AND AUTHORITY OF THE CHAIRMAN

The Chairman represents the Board of Directors and, except under exceptional circumstances, has sole authority to act and speak on behalf of the Board of Directors.

The Chairman organizes and oversees the work of the Board of Directors and ensures that the Company's corporate bodies operate effectively and in compliance with good governance principles. The Chairman coordinates the work of the Board of Directors and its Committees. The Chairman establishes the agenda for each Board meeting, including items suggested by the Chief Executive Officer.

The Chairman ensures that directors receive, in a timely manner and in a clear and appropriate format, the information they need to effectively carry out their duties.

In liaison with the Group's General Management, the Chairman is responsible for maintaining relations between the Board of Directors and the Company's shareholders. The Chairman monitors the quality of information disclosed by the Company.

In close cooperation with the Group's General Management, the Chairman may represent the Company in high-level discussions with government authorities and major partners, both at a national and international level.

The Chairman is regularly informed by the Chief Executive Officer of significant events and situations relating to the Group, particularly with regard to strategy, organization, monthly financial reporting, major investment and divestment projects and key financial transactions.

The Chairman may ask the Chief Executive Officer or other senior executives of the Company, provided that the Chief Executive Officer is informed, to supply any information that may help the Board or its Committees to carry out their duties.

The Chairman may meet with the statutory auditors in order to prepare the work of the Board of Directors and the Audit Committee.

Every year, the Chairman presents a report to the Annual Shareholders' Meeting describing the preparation and organization of the Board of Directors' work, any limits set by the Board of Directors concerning the powers of the Chief Executive Officer, and the internal control procedures implemented by the Company. To this end, the Chairman obtains the necessary information from the Chief Executive Officer.

## 5. AUTHORITY OF THE CHIEF EXECUTIVE OFFICER

The Chief Executive Officer is responsible for the Company's overall management. He represents the Company in its relationships with third parties and chairs the Executive Committee. The Chief Executive Officer is vested with the broadest powers to act on behalf of the Company in all circumstances, subject to the powers that are, by law, restricted to the Board of Directors and to the Annual Shareholders' Meeting, as well as to the Company's corporate governance rules and in particular these rules of procedure of the Board of Directors.

The Chief Executive Officer is responsible for presenting the Group's results and prospects to shareholders and the financial community on a regular basis.

At each meeting of the Board of Directors, the Chief Executive Officer presents an overview of significant Group events.

## 6. BOARD COMMITTEES

The Board of Directors approved the creation of:

- an Audit Committee;
- a Governance and Ethics Committee;
- a Compensation Committee; and
- a Strategic Committee.

The roles and composition of each Committee are set forth in their respective rules of procedure, which have been approved by the Board of Directors.

The Committees perform their duties under the authority and for the benefit of the Board of Directors.

Each Committee reports on its activities to the Board of Directors.

## **7. LEAD INDEPENDENT DIRECTOR**

### **7.1. APPOINTMENT OF THE LEAD INDEPENDENT DIRECTOR**

When the functions of the Chairman of the Board and Chief Executive Officer are combined, the Board of Directors appoints a Lead Independent Director, on the recommendation of the Governance and Ethics Committee, from among the directors considered to be independent by the Board of Directors.

The appointed Lead Independent Director holds this position while in office as director, unless otherwise decided by the Board of Directors, which may choose to terminate his or her duties at any time. If for any reason the director is no longer deemed to be independent, his or her position as Lead Independent Director will be terminated.

The Lead Independent Director, if one is appointed, chairs the Governance and Ethics Committee.

### **7.2. DUTIES OF THE LEAD INDEPENDENT DIRECTOR**

The Lead Independent Director's duties include:

1. Convening meetings of the Board of Directors – Meeting Agenda

The Lead Independent Director may request that the Chairman and Chief Executive Officer call a meeting of the Board of Directors to discuss a given agenda.

He or she may request that the Chairman and Chief Executive Officer include additional items on the agenda of any meeting of the Board of Directors.

2. Participation in the work of the Committees

If not a member of the Compensation Committee, the Lead Independent Director is invited to attend meetings and participates in the work of the Compensation Committee relating to the annual review of the executive directors' performance and recommendations regarding their compensation.

3. Acting as Chairperson of Board of Directors' meetings

When the Chairman and Chief Executive Officer is unable to attend all or part of a meeting of the Board of Directors, the Lead Independent Director chairs the meeting. In particular, he or she chairs those Board meetings the proceedings of which relate to the evaluation of the performance of the executive directors and the determination of their compensation, which take place in their absence.

4. Evaluation of the functioning of the Board of Directors

The Lead Independent Director manages the evaluation process relating to the functioning of the Board of Directors and reports on this evaluation to the Board of Directors.

5. Prevention of conflicts of interest

Within the Governance and Ethics Committee, the Lead Independent Director organizes the performance of due diligence in order to identify and analyze potential conflicts of interest within the Board of Directors. He or she informs the Chairman and Chief Executive Officer of any conflicts of interest identified as a result and reports to the Board of Directors on these activities.

Pursuant to the obligation to declare conflicts of interest set out in article 2.5 of these Rules, any director affected by an existing or potential conflict of interest must inform the Chairman and Chief Executive Officer and the Lead Independent Director.

6. Monitoring of the satisfactory functioning of the Board and compliance with the Rules of Procedure

The Lead Independent Director ensures compliance with the rules of the Corporate Governance Code to which TOTAL S.A. refers and with the Rules of Procedure of the Board of Directors. He or she may make any suggestions or recommendations that he deems appropriate to this end.

He or she ensures that the directors are in a position to carry out their tasks under optimal conditions and that they have sufficient information to perform their duties.

With the agreement of the Governance and Ethics Committee, the Lead Independent Director may hold meetings of the directors who do not hold executive or salaried positions on the Board of Directors. He or she reports to the Board of Directors on the conclusions of such meetings.

7. Relationships with Shareholders

The Chairman and Chief Executive Officer and the Lead Independent Director are the shareholders' dedicated contacts on issues that fall within the remit of the Board.

When a shareholder approaches the Chairman and Chief Executive Officer in relation to such issues, they may seek the opinion of the Lead Independent Director before responding appropriately to the shareholder's request.

When the Lead Independent Director is approached by a shareholder in relation to such issues, he or she must inform the Chairman and Chief Executive Officer, providing his or her opinion, so that the Chairman and Chief Executive Officer may respond appropriately to the request. The Chairman and Chief Executive Officer must inform the Lead Independent Director of the response given.

### **7.3. RESOURCES, CONDITIONS OF OFFICE AND ACTIVITY REPORT**

The Chairman and Chief Executive Officer must regularly update the Lead Independent Director on the Company's activities.

The Lead Independent Director has access to all of the documents and information necessary for the performance of his or her duties.

The Lead Independent Director may consult the Secretary of the Board and use the latter's services in the performance of his or her duties.

Under the conditions set out in article 3.2 of these Rules and those established by the Board of Directors, the Lead Independent Director may receive additional director's fees for the duties entrusted to him or her.

The Lead Independent Director must report annually to the Board of Directors on the performance of his or her duties. During Annual General Meetings, the Chairman and Chief Executive Officer may invite the Lead Independent Director to report on his or her activities.

### 1.2.3. Activity of the Board of Directors

Directors are generally given written notice of Board meetings during the week preceding the meetings. Whenever possible, documents to be considered for decisions to be made at Board meetings are sent with the notice of meetings. The minutes of the previous meeting are expressly approved at the following Board meeting.

The Board of Directors held 10 meetings in 2016. The attendance rate for all the directors was 88.4%. The Audit Committee held 7 meetings, with an attendance rate of 92.9%; the Compensation Committee met 3 times, with 100% attendance; the Governance and Ethics Committee held 2 meetings, with 100% attendance; and the Strategic Committee met twice, with 90% attendance.

A table summarizing individual attendance at the Board of Directors and Committee meetings is provided below.

#### Directors' attendance at Board and Committee meetings in 2016

Directors	Board of Directors		Audit Committee		Compensation Committee		Governance and Ethics Committee		Strategic Committee	
	Attendance rate	Number of meetings	Attendance rate	Number of meetings	Attendance rate	Number of meetings	Attendance rate	Number of meetings	Attendance rate	Number of meetings
Patrick Pouyanné	100%	10/10	-	-	-	-	-	-	100%	2/2
Thierry Desmarest <sup>(a)</sup>	100%	5/5	-	-	-	-	100%	1/1	100%	1/1
Patrick Artus	80%	8/10	100%	7/7	-	-	-	-	100%	2/2
Patricia Barbizet	90%	9/10	-	-	100%	3/3	100%	2/2	100%	2/2
Marc Blanc	100%	10/10	-	-	-	-	-	-	50%	1/2
Gunnar Brock <sup>(a)</sup>	60%	3/5	-	-	100%	2/2	100%	1/1	100%	1/1
Marie-Christine Coisne-Roquette	100%	10/10	100%	7/7	100%	3/3	-	-	100% <sup>(b)</sup>	2/2 <sup>(b)</sup>
Paul Desmarais, Jr	40%	4/10	-	-	-	-	-	-	50% <sup>(b)</sup>	1/2 <sup>(b)</sup>
Maria van der Hoeven <sup>(c)</sup>	80%	4/5	-	-	-	-	-	-	100% <sup>(b)</sup>	1/1 <sup>(b)</sup>
Anne-Marie Idrac	100%	10/10	-	-	-	-	100%	2/2	100% <sup>(b)</sup>	2/2 <sup>(b)</sup>
Charles Keller <sup>(a)</sup>	100%	5/5	100%	3/3	-	-	-	-	100% <sup>(b)</sup>	1/1 <sup>(b)</sup>
Barbara Kux	100%	10/10	-	-	-	-	100%	2/2	100%	2/2
Gérard Lamarche	90%	9/10	71.5%	5/7	100%	3/3	-	-	-	-
Jean Lemierre <sup>(c)</sup>	80%	4/5	-	-	-	-	-	-	-	-
Renata Perycz <sup>(c)</sup>	100%	5/5	-	-	-	-	-	-	100% <sup>(b)</sup>	1/1 <sup>(b)</sup>
<b>Attendance rate</b>	<b>88.4%</b>		<b>92.9%</b>		<b>100%</b>		<b>100%</b>		<b>90%<sup>(d)</sup></b>	

(a) Director until May 24, 2016.

(b) Voluntary participation (director not a member of the Strategic Committee).

(c) Director since May 24, 2016.

(d) Excluding voluntary participation.

The Board meetings included, but were not limited to, a review of the following subjects:

#### February 10

- 2015 accounts (Consolidated Financial Statements, parent company accounts) after the Audit Committee's report and work performed by the statutory auditors;
- draft allocation of the profits of TOTAL S.A., setting of the dividend, ex-dividend and payment dates, option for the payment of the balance of the dividend in shares;
- main financial communications, including industrial safety aspects;
- examination of the Report of the Chairman of the Board of Directors (Article L. 225-37 of the French Commercial Code);
- information about the results of the option to receive the payment of the second interim dividend for fiscal year 2015 in shares;
- information on the credit ratings of the long-term debt of TOTAL S.A.;

- renewal of the authorization to issue bonds;
- renewal of the authorization to issue security, commitments and guarantees;
- debate on the Board of Directors' practices based on a summary presented by the Governance and Ethics Committee of the evaluation carried out in the form of a detailed questionnaire to which each director responded; definition of the proposed strategic directions;
- assessment of the directors' independence and report on the absence of conflicts of interest;
- opinion on the candidates for the position of director representing employee shareholders;
- proposal to appoint and renew directorships;
- determination of the amount of directors' fees due for fiscal year 2015;
- the Chairman and Chief Executive Officer's compensation (in the absence of the Chairman and Chief Executive Officer).

#### March 15

- presentation to the Board of the work of the Audit Committee at its meeting on March 11, 2016;
- presentation to the Board of the work of the Compensation Committee, and acknowledgment of the acquisition rate of performance shares under the 2013 plan;
- presentation of the report of the independent monitor designated by the American authorities: summary and outlook;
- review of various chapters of the Registration Document forming the Management Report within the meaning of the French Commercial Code;
- preparation of the Annual Shareholders' Meeting: agenda, resolutions and reports;
- setting the schedule related to the payment of interim dividends and the balance of the dividend for 2017;
- distribution of the third interim dividend for the 2015 fiscal year and setting of the new share issue price for the option to receive the interim dividend in shares.

#### April 26

- summary of the Strategic Committee meeting of March 15, 2016;
- presentation of the Group's map of risks;
- results for the first quarter of 2016 after the Audit Committee's report and work performed by the statutory auditors;
- presentation to the Board of the work of the Audit Committee at its meeting on April 22, 2016;
- setting of a first interim dividend;
- information about the results of the option to receive the payment of the third interim dividend for fiscal year 2015 in shares;
- request for authorization to issue guarantees;
- information on declarations of thresholds in the Company's capital to be declared;
- preparation of the Annual Shareholders' Meeting: review of a request made by the shareholders to include a point on the Annual Shareholders' Meeting agenda; the Board of Directors' position on this request;
- the economic and financial situation of the Company: communication of the opinion of the Central Works Council meeting on March 31, 2016.

#### May 9

- information on the project to acquire Saft Groupe.

#### May 24 – pre-Shareholders' Meeting

- review of the draft responses to the written questions submitted by shareholders;
- presentation of the report "Total and the climate";
- setting of the share issue price for the payment of the balance of the 2015 dividend in shares, subject to the adoption of the resolution by the Annual Shareholders' Meeting of May 24, 2016;
- information on bond issues;
- request for authorization to issue guarantees;
- information on the public offer made by the Company for Saft Groupe;
- delegation of powers to operate on Company shares, subject to the adoption of the resolution of the Shareholders' Meeting on May 24, 2016;
- information on the project to acquire an interest in the permits in Papua New Guinea.

#### July 27

- information on the Al-Shaheen field and request for authorization to issue the related guarantees;
- strategic perspectives of the Refining & Chemicals segment including safety and energy efficiency aspects and prevention of major environmental risks;

- results for the second quarter 2016 and the first half of 2016 after the Audit Committee's report and work performed by the statutory auditors;
- setting of a second interim dividend;
- presentation to the Board of the work of the Compensation Committee;
- share capital increase reserved for Group employees and free grant of shares as a deferred contribution;
- performance share grants on the recommendation of the Compensation Committee;
- information about the results of the votes on the resolutions at the Annual Shareholders' Meeting held on May 24, 2016, the results of the option to receive the payment of the remaining balance of the dividend for fiscal year 2015 in shares;
- information on bond issues;
- information on the public offer launched on Saft Groupe;
- information on the notifications received of the crossings of thresholds in the Company's capital.

#### September 21

- presentation of the project to sell Atotech;
- summary of the Strategic Committee meeting of September 21, 2016;
- strategic perspectives of Exploration & Production activities with a presentation of safety indicators and environmental objectives;
- mid-2016 financial communications: presentation of the outlook and objectives for the coming years;
- the Company's strategic directions;
- presentation of the Company's equal opportunity and salary equality policy and comparative status of overall employment and training conditions for women and men in the Company;
- distribution of the first interim dividend for the 2016 fiscal year and setting of the new share issue price for the option to receive the interim dividend in shares;
- information on the public offer launched on Saft Groupe;
- information on the powers subdelegated to the Treasurer.

#### October 6

- approval of the proposal to sell Atotech.

#### October 27 – meeting held in Scotland in the West of Shetland area at the Laggan project site

- summary of the Strategic Committee meeting of September 21, 2016;
- strategic perspectives of Marketing & Services activities, including the operational safety, technological risk and environmental aspects;
- the Group's 5-year plan;
- results for the third quarter of 2016 after the Audit Committee's report and work performed by the statutory auditors;
- setting of a third interim dividend;
- information on bond issues;
- information about the results of the option to receive the payment of the first interim dividend for fiscal year 2016 in shares;
- request for authorization to issue guarantees;
- information on the notifications received of the crossings of thresholds in the Company's capital.

#### December 15

- Board of Directors' response to the Central Works Council's opinion on the strategic directions presented to the Board;
- information on the end of the monitoring process and the compliance program;
- 2017 budget review;
- distribution of the second interim dividend for the 2016 fiscal year and setting of the new share issue price;

- information on agreements and commitments concluded and authorized in the preceding periods, the execution of which continued during the 2016 fiscal period;
- information on bond issues;
- purchase of treasury shares and correlative reduction of the Company's share capital.

### 1.2.4. Audit Committee

#### Composition

As of February 8, 2017		Age	Sex	Independence	Years' service on the Board	Expiry of director's term of office
Marie-Christine Coisne-Roquette	Chairperson of the Committee	60	F	•	6	2017
Patrick Artus	Member	65	M	•	8	2018
G�rard Lamarche	Member	55	M	•	5	2019

As of February 8, 2017, the Committee has three members, all of whom are independent. The careers of all of the Committee members attest to their possession of acknowledged expertise in the financial and accounting or economic fields (refer to point 1.1.1 above).

Ms. Coisne-Roquette was appointed "financial expert" of the Committee by the Board at its meeting of December 16, 2015.

#### Duties

The rules of procedure of the Audit Committee define the Committee's duties and working procedures. The rules of procedure were last modified on February 8, 2017, in order to adapt the missions of the Committee to the European audit reform. The text of the unabridged version of the rules of procedure approved by the Board of Directors on February 8, 2017 is available on the Company's website under "Our Group/Corporate Governance".

Notwithstanding the duties of the Board of Directors, the Audit Committee is tasked with the following missions in particular:

#### Regarding the statutory auditors:

- making a recommendation to the Board of Directors on the statutory auditors put before the Annual Shareholders' Meeting for designation or renewal, following their selection procedure organized by General Management and enforcing the applicable regulations;
- monitoring the statutory auditors in the performance of their missions and, in particular, examining the additional report drawn up by the statutory auditors for the Committee, while taking account of the observations and conclusions of the High Council of statutory auditors (*Haut Conseil du Commissariat aux comptes*) further to the inspection of the auditors in question in application of the legal provisions, where appropriate; and
- ensuring that the statutory auditors meet the conditions of independence as defined by the regulations, and to analyzing the risks to their independence and the measures taken to mitigate these risks; to this end, examining all the fees paid by the Group to the statutory auditors, including for services other than the certification of the financial statements, and making sure that the rules applying to the maximum length of the term of the statutory auditors and the obligation to alternate are obeyed;
- approving the delivery by the statutory auditors of services other than those relating to the certification of the financial statements, in accordance with the applicable regulations.

#### Regarding accounting and financial information:

- following the process to produce financial information and, where appropriate, formulating recommendations to guarantee its integrity, where appropriate;

- monitoring the implementation and the proper workings of a disclosures committee in the Company, and reviewing its conclusions;
- examining the assumptions used to prepare the financial statements, assessing the validity of the methods used to handle significant transactions and examining the parent company financial statements and annual, half-yearly, and quarterly Consolidated Financial Statements prior to their examination by the Board of Directors, after regularly monitoring the financial situation, cash position and off-balance sheet commitments;
- guaranteeing the appropriateness and the permanence of the accounting policies and principles chosen to prepare the statutory and Consolidated Financial Statements of the Company;
- examining the scope of the consolidated companies and, where appropriate, the reasons why companies are not included;
- examining the process to validate the proved reserves of the companies included in the scope of consolidation; and
- reviewing, if requested by the Board of Directors, major transactions contemplated by the Company.

#### Regarding internal control and risk management procedures:

- monitoring the efficiency of the internal control and risk management systems and of internal audits, in particular with regard to the procedures relating to the production and processing of accounting and financial information, without compromising its independence, and in this respect:
  - checking that these systems exist and are deployed, and that actions are taken to correct any identified weaknesses or anomalies,
  - examining the exposure to risk and significant off-balance sheet commitments,
  - annually examining the reports on the work of the Group Risk Management Committee (formerly named Group Risk Committee) and the major issues for the Group,
  - examining the annual work program of the internal auditors and being regularly informed of their work,
  - reviewing significant litigation at least once a year,
  - overseeing the implementation of the Group's Financial Code of Ethics,
  - proposing to the Board of Directors, for implementation, a procedure for complaints or concerns of employees, shareholders and others, related to accounting, internal control or auditing matters, and monitoring the implementation of this procedure, and
  - where appropriate, examining important operations in which a conflict of interests could have arisen.

## Organization of activities

The Committee meets at least seven times each year: each quarter to review in particular the statutory financial statements of the Company, and the annual and quarterly Consolidated Financial Statements, and at least on three other occasions to review matters not directly related to the review of the quarterly financial statements.

At each Committee meeting where the quarterly financial statements are reviewed, the Group's Chief Financial Officer presents the Consolidated Financial Statements and the statutory financial statements of the Company, as well as the Group's financial position and, in particular, its liquidity, cash flow and debt situation. A memo describing risk exposure and off-balance sheet commitments is communicated to the Committee. This review of the financial statements includes a presentation by the statutory auditors underscoring the key points observed.

As part of monitoring the efficiency of the internal control and risk management systems, the Committee is informed of the work program of the Audit & Internal Control Division and its organization, on which it may issue an opinion. The Committee also receives a summary of the internal audit reports, which is presented at each Committee meeting where the quarterly financial statements are reviewed. The risk management processes implemented within the Group and updates to them are presented regularly to the Committee.

The Committee may meet with the Chairman and Chief Executive Officer or, if the functions are separate, the Chairman of the Board of Directors, the Chief Executive Officer and, if applicable, any Deputy Chief Executive Officer of the Company. It may perform inspections and consult with managers of operational or functional entities, as may be useful in performing its duties. The Chairperson of the Committee gives prior notice of such meeting to the Chairman and Chief Executive Officer or, if the functions are separate, both the Chairman of the Board of Directors and the Chief Executive Officer. The Committee is authorized to consult with those involved in preparing or auditing the financial statements (Chief Financial Officer and principal Finance Department managers, Audit Department, Legal Department) by asking the Company's Chief Financial Officer to call them to a meeting.

The Committee consults with the statutory auditors regularly, including at least once a year without any Company representative present. If it is informed of a substantial irregularity, it recommends that the Board of Directors takes all appropriate action.

## Audit Committee activity

In 2016, the Audit Committee met seven times, with an attendance rate of 92.9%. Its work mainly focused on the following areas:

### February 8

- review of the accounts for the fourth quarter of 2015, the Group's consolidated results and the statutory financial statements of TOTAL S.A. as parent company for 2015. Presentation by the statutory auditors of a summary of their work performed in accordance with French and American professional audit standards, in particular on the Group's positions in terms of valuing assets;
- review of the Group's financial position;
- presentation of the preparation process and key validation stages of the Management Report forming chapter 3 of the Registration Document;

- presentation of certain sections of the Registration Document: risk factors and legal proceedings;
- update on internal audit and controls: presentation of the 2015 main accomplishments and key topics of the audit plan for 2016. Comments on the results of the assessment of internal control on financial reporting conducted for fiscal year 2015 as part of the implementation of the Sarbanes-Oxley Act (SOX), along with a summary of the statutory auditors' assessments of internal control related to financial reporting as part of the SOX 404 process;
- review of the draft of the Chairman's report on internal control and risk management procedures;
- update on unvalued guarantees given by TOTAL S.A.

### March 11

- update on compliance procedures: 2015 results and implementation of programs; presentation of the interim report of the independent monitor designated by the American authorities;
- presentation of the social, environmental and societal information in the Registration Document; presentation by the statutory auditors of their procedures and the conclusions of their review of these issues;
- review of the hydrocarbon reserves evaluation process at year-end 2015;
- presentation by the statutory auditors of the report on the payments made to governments;
- presentation of the Group's insurance policy: coverage for 2016 against property damage, business interruption and civil liability.

### April 22

- review of the statutory and consolidated financial statements of TOTAL S.A. as parent company for the first quarter of 2016, with a presentation by the statutory auditors of a summary of their work;
- presentation of the Group's financial position at the end of the quarter;
- update on the internal audits conducted in the first quarter of 2016;
- presentation of the Group's risk map.

### June 8

- presentation of the topics covered by the Group Risk Committee in 2015, including crisis communications, the management of intellectual property, supplier risks, the map of security risks and industrial information systems security;
- presentation of the main risks related to governance in the Group: human rights, international economic sanctions, intellectual property, application of the regulatory framework;
- presentation of the updated Treasury Department risk map.

### July 25

- review of the Consolidated Financial Statements for the second quarter and first half of 2016 and the statutory financial statements of TOTAL S.A. as parent company. Presentation by the statutory auditors of a summary of their work;
- presentation of the Group's financial position at the end of the quarter;
- update on the internal audits conducted during the second quarter of 2016;
- update on the new, recently adopted accounting standards: recognition of sales; leases.

### October 10

- presentation of the risk map of Exploration & Production's General Management;
- statutory auditors' analysis of the main transverse risks to be addressed as important points in their audit plan for the closing of the 2016 accounts;

- presentation of the European audit reform by the statutory auditors;
- presentation of the changes to the rules of procedure of the Audit Committee due to the European audit reform;
- statutory auditors: update on fees followed by review of the rules for pre-approval of audit and non-audit services and approval, as modified due to the introduction of the European audit reform;
- review of significant litigation and status update on the main pending proceedings involving the Group;
- update on the settlements with the American authorities concluded in 2013, bringing an end to the inquiry of the SEC and the DoJ into activities in Iran in the 1990s;
- presentation of changes to the Financial Code of Ethics.

The members of the Committee then met with the statutory auditors without any Group employees being present.

#### October 25

- review of the statutory and consolidated financial statements of TOTAL S.A. as parent company for the third quarter of 2016 and the first nine months of 2016. Presentation by the statutory auditors of a summary of their work;
- presentation of the Group's financial position at the end of the quarter;
- update on the internal audits conducted in the third quarter of 2016;

- information on compliance by relevant employees with the provisions of the Financial Code of Ethics;
- presentation of the Group's fiscal position.

At each meeting related to the quarterly financial statements, the Committee reviewed the Group's financial position in terms of liquidity, cash flow and debt, as well as its significant risks and off-balance sheet commitments. The Audit Committee was periodically informed of the risk management processes implemented within the Group and the work carried out by the Audit & Internal Control Division, which was presented at each Committee meeting where the quarterly financial statements were reviewed.

The Audit Committee reviewed the financial statements no later than two days before they were reviewed by the Board of Directors, a sufficient amount of time as precluded by the recommendations of the AFEP-MEDEF Code.

The statutory auditors attended all Audit Committee meetings held in 2016.

The Chief Financial Officer, the Vice President Accounting, the Senior Vice President Audit & Internal Control Division and the Treasurer attended all Audit Committee meetings, related to their area.

The Chairman of the Committee reported to the Board of Directors on the Committee's activities.

## 1.2.5. Governance and Ethics Committee

### Composition

As of February 8, 2017		Age	Sex	Independence	Years' service on the Board	Expiry of director's term of office
Patricia Barbizet	Chairperson of the Committee	61	F	•	9	2017
Anne-Marie Idrac	Member	65	F	•	5	2018
Barbara Kux	Member	62	F	•	6	2017

As of February 8, 2017, the Governance and Ethics Committee has three members, all of whom are independent.

### Duties

The rules of procedure of the Governance and Ethics Committee define the Committee's duties and working procedures. The text of the unabridged version of the rules of procedure approved by the Board of Directors on December 16, 2015 is available on the Company's website under "Our Group/Corporate Governance".

The Governance and Ethics Committee is focused on:

- recommending to the Board of Directors persons who are qualified to be appointed as directors, so as to ensure that the directors have a wide range of skills and diverse profiles;
- recommending to the Board of Directors the persons who are qualified to be appointed as executive directors;
- preparing the Company's corporate governance rules and supervising their implementation; and
- ensuring compliance with ethics rules and examining any questions related to ethics and conflicts of interest.

Its duties include:

- presenting recommendations to the Board regarding its composition and that of its Committees, and regarding the independence of each candidate for directors' positions on the Board of Directors;
- proposing annually to the Board of Directors the list of directors who may be considered as "independent directors";
- examining sections within its purview of reports to be sent by the Board of Directors or its Chairman to shareholders;
- assisting the Board of Directors in the selection and assessment of the executive directors and examining the preparation of their possible successors, including cases of unforeseeable absence;
- recommending to the Board of Directors persons who are qualified to be appointed as directors;
- recommending to the Board of Directors persons who are qualified to be appointed as members of a Committee of the Board of Directors;
- proposing methods for the Board of Directors to evaluate its performance, and in particular preparing means of regular self-assessment of the practices of the Board of Directors, and the possible assessment thereof by an external consultant;

## 5 Corporate governance

### Composition and practices of the Board of Directors

- proposing to the Board of Directors terms and conditions for allocating directors' fees and conditions under which expenses incurred by the directors are reimbursed;
- developing and recommending to the Board of Directors the corporate governance principles applicable to the Company;
- preparing recommendations requested at any time by the Board of Directors or the General Management of the Company regarding appointments or governance;
- examining the conformity of the Company's governance practices with the recommendations of the Corporate Governance Code adopted by the Company;
- supervising and monitoring implementation of the Company's ethics and compliance program and, in this respect, ensuring that the necessary procedures for updating the Group's Code of Conduct are put in place and that this Code is disseminated and applied;
- examining any questions related to ethics and conflicts of interest; and
- examining changes in the duties of the Board of Directors.

#### Governance and Ethics Committee activity

In 2016, the Governance and Ethics Committee held two meetings, with 100% attendance. Its work mainly focused on the following areas:

##### February 10

- results of the formal self-assessment of the Board's practices conducted in the form of a detailed questionnaire, prepared with

the assistance of an external consultant, to which the directors responded;

- proposals to the Board of Directors regarding the assessment of the independence of the directors based on the independence criteria specified in the AFEP-MEDEF Code and after reviewing the level of activity between certain directors and the Group's suppliers;
- proposal to the Board of Directors regarding the director representing employee shareholders appointed by the 2016 Annual Shareholders' Meeting;
- proposals to the Board of Directors regarding the new directors appointed by the 2016 Annual Shareholders' Meeting;
- review of the terms and conditions for allocating directors' fees to directors and Committee members;
- information update on transactions on the Company's securities by executive and non-executive directors;
- examining sections within its purview of reports to be sent by the Board of Directors or its Chairman to shareholders.

##### July 27

- presentation by the Chairman of the Ethics Committee of a review of the ethics program for 2015 (information and training campaigns, changes in the matters and cases reviewed, ethical assessments conducted within the Group's entities, actions related to human rights) and presentation of the priorities for 2016;
- discussion of changes to the composition of the Board of Directors.

### 1.2.6. Compensation Committee

#### Composition

As of February 8, 2017

		Age	Sex	Independence	Years' service on the Board	Expiry of director's term of office
G�rard Lamarche	Chairman of the Committee	55	M	•	5	2019
Patricia Barbizet	Member	61	F	•	9	2017
Marie-Christine Coisne-Roquette	Member	60	F	•	6	2017

As of February 8, 2017, the Compensation Committee has three members, all of whom are independent.

#### Duties

The rules of procedure of the Compensation Committee define the Committee's duties and working procedures. The text of the unabridged version of the rules of procedure approved by the Board of Directors on February 9, 2012 is available on the Company's website under "Our Group/Corporate Governance".

The Committee is focused on:

- examining the executive compensation policies implemented by the Group and the compensation of members of the Executive Committee;
- evaluating the performance and recommending the compensation of each executive director; and
- preparing reports which the Company must present in these areas.

Its duties include:

- reviewing the main objectives proposed by the General Management of the Company regarding compensation of the Group's executive directors, including stock option plans, free share plans and equity-based plans, and advising on this subject;
- making recommendations and proposals to the Board of Directors concerning:
  - compensation, pension and life insurance plans, in-kind benefits and other compensation (including severance benefits) for the executive directors of the Company; in particular, the Committee proposes compensation structures that take into account the Company's strategy, objectives and earnings as well as market practices,
  - grants of stock options and free shares, particularly grants of registered shares to the executive directors;



- reviewing the compensation of the members of the Executive Committee, including stock option plans, free share plans and equity-based plans, pension and insurance plans and in-kind benefits;
- preparing and presenting reports in accordance with its rules of procedure;
- examining, for the parts within its remit, reports to be sent by the Board of Directors or its Chairman to shareholders; and
- preparing recommendations requested at any time by the Chairman of the Board of Directors or the General Management of the Company regarding compensation.

### Work of the Compensation Committee

In 2016, the Compensation Committee held three meetings, with 100% attendance. The Chairman and the Chief Executive Officer is not allowed to attend the Committee's deliberations regarding his own situation.

Its work mainly focused on the following areas:

#### February 10

- determination of the variable portion of the compensation to be paid to the Chairman and Chief Executive Officer for his performance in 2015;
- proposed compensation for the Chairman and Chief Executive Officer (fixed and variable portion for fiscal year 2016);

- examining sections within its purview of reports to be sent by the Board of Directors or its Chairman to shareholders;
- review of compliance with the restrictions on share transfers by the Chairman and Chief Executive Officer.

#### March 14

- confirmation of the acquisition rate of performance shares under the 2013 plan;
- review of the performance share and stock option grant policy for 2016;
- review of the Executive Committee members' compensation.

#### July 27

- proposal related to the capital increase reserved for Group employees;
- proposal of acquisition of free shares as a contribution as part of the capital increase reserved for Group employees;
- proposals regarding the 2016 performance share plan: number of beneficiaries, length of the acquisition period (three years) and retention period (two years), performance conditions for final grant, proposal regarding the grant of performance shares to the Chairman and Chief Executive Officer.

## 1.2.7. Strategic Committee

### Composition

As of February 8, 2017		Age	Sex	Independence	Years' service on the Board	Expiry of director's term of office
Patrick Pouyanné	Chairman of the Committee	53	M		2	2018
Patrick Artus	Member	65	M	•	8	2018
Patricia Barbizet	Member	61	F	•	9	2017
Marc Blanc	Member	62	M		3	2017
Barbara Kux	Member	62	F	•	6	2017

As of February 8, 2017, the Strategic Committee has five members, three of whom are independent.

### Duties

The rules of procedure of the Strategic Committee define the Committee's duties and working procedures. The text of the unabridged version of the rules of procedure approved by the Board of Directors on April 25, 2013 is available on the Company's website under "Our Group/Corporate Governance".

To allow the Board of Directors of TOTAL S.A. to ensure the Group's development, the Strategic Committee's duties include:

- examining the Group's overall strategy proposed by the Company's Chief Executive Officer;
- examining operations that are of particular strategic importance; and
- reviewing competition and the resulting medium and long-term outlook for the Group.

### Work of the Strategic Committee

In 2016, the Strategic Committee held two meetings, with 90% attendance. Its work mainly focused on the following areas:

#### March 15

- analysis of the strategy of two of the Group's major competitors;
- analysis of TOTAL's ambitions over the next 20 years.

#### September 21

- analysis of the strategy of one of the Group's major competitors;
- analysis of long-term demand on the oil and gas markets.

## 1.2.8. Assessment of the Board's practices

Once a year, the Board of Directors discusses its practices. It also conducts a formal assessment of its own practices at regular intervals of up to three years. This evaluation is carried out under the supervision of the Lead Independent Director, if one has been appointed, or under the supervision of the Governance and Ethics Committee with the help of an outside consultant. When a Lead Independent Director is appointed, he or she oversees this evaluation process and reports on it to the Board of Directors.

At its meeting on February 8, 2017, the Board of Directors discussed its practices on the basis of a formal self-assessment carried out in the form of a detailed questionnaire. The evaluation was carried out under the supervision of Ms. Barbizet, Lead Independent Director, in January 2017. The responses given by the directors were then presented to the Governance and Ethics Committee to be reviewed and summarized. This summary was then discussed by the Board of Directors. This process made it possible to confirm the quality of each director's contribution to the work of the Board and its Committees.

This formal evaluation showed a positive opinion of the practices of the Board of Directors and the Committees. In particular, it was noted that the suggestions for improvement made by the directors in recent years had generally been taken into account. During the Board of Directors' meetings, some of which were held at certain of the Group's sites, special attention was paid at the start of each meeting to the review of the main points to be examined by the Board (financial statements, large-scale investment and divestment projects, etc.).

Furthermore, the main suggestions for improving the Board made by the directors during their January 2016 self-assessment have been put in place:

- monitoring risks at the Board's level: a presentation of the Group's risk map was made to the Board during its meeting of April 26, 2016, and such presentation is to take place annually;
- evolution of the Board's composition: proposals by the Governance and Ethics Committee to the Board of Directors of February 8, 2017 met the directors' expectations;
- independent directors' meeting: held on December 15, 2016 at the initiative of the Lead Independent Director; and
- secured platform to access the Board's documents: this platform was put in place in September 2016.

This self-assessment conducted in January 2017 highlighted the directors' satisfaction with the practices of the Board of Directors, both in terms of form and substance, and, in particular, concerning freedom of expression, an appropriate level of dialogue, the collegiality of decision-making and the relevance of subjects addressed.

The directors appreciated notably the pace and agenda of meetings, the possibility for informal exchanges during lunches and meetings held at Group sites, as well as the quality of relations with the Lead Independent Director. The Board of Directors made the following suggestions that could further improve its practices:

- understanding of the Group's organization and knowledge of its executive officers;
- analysis of extra-financial risks, in particular geopolitical risks, relating to significant investment projects submitted to the Board;
- *ex post* analysis of major investment decisions;
- new director induction program; and
- facilitation of access to the electronic document platform of the Board of Directors.

In addition, in compliance with Article 7.2.6. of the Board Rules of Procedures, the Lead Independent Director held on December 15, 2016, a meeting of the directors who do not hold executive or salaried positions on the Board of Directors. During this meeting, which was reported to the Board of Directors, directors also discussed the Board of Directors' practices.

### 1.2.9. Report of the Lead Independent Director on her mandate

During the Board meeting of February 8, 2017, Ms. Barbizet presented a report of her mandate as Lead Independent Director. The Lead Independent Director indicated that she exercised her duties since her appointment on December 15, 2016 as follows:

- contact with the Chairman and Chief Executive Officer: the Lead Independent Director is a privileged interlocutor of the Chairman and Chief Executive Officer with respect to significant matters concerning the Group's business and preparing meetings of the Board of Directors;
- assessment of the Board's practices: the Lead Independent Director conducted the assessment of the Board's practices (refer to point 1.2.8, above);
- avoidance of conflicts of interest: the Lead Independent Director put in place the diligence intended to identify and analyze potential situations of conflicts of interest. She brought to the attention of the Chairman and Chief Executive Officer potential situations of conflict of interest that had been identified. In September 2016, a director thus consulted the Lead Independent Director concerning a potential conflict of interest that could arise due to the director's potential participation on a committee in charge of strategically advising the board of directors of a company of the energy sector. Following this consultation, this director decided on September 22, 2016 to not accept the offer to participate in the committee. The Lead Independent Director also indicated to the Board that the Chairman and Chief Executive Officer has informed the Governance and Ethics Committee that he had been solicited so that his appointment as director of Cap Gemini S.A. would be proposed to the next shareholders meeting of that company. Considering this company's activities in advanced technologies that could have an important role in the evolution of the Group's businesses, the Committee recommended to the Board that it grants its authorization. The Board of Directors authorized the Chairman and Chief Executive Officer to accept this proposal;
- monitoring of the Board's practices: the Lead Independent Director held a meeting on December 15, 2016 of the non-executive and non-salaried directors. She presented a summary of this meeting to the Board of Directors. The specific issues discussed during this meeting were the following: understanding internal organization and knowledge of senior executives in order to, notably, make succession plans; analysis of extra-financial risks, in particular geopolitical risks; and *ex post* analysis of implemented projects;
- relations with shareholders: the Chairman and Chief Executive Officer and the Lead Independent Director are the privileged points of contacts for shareholders concerning accountability of the Board. When the Chairman and Chief Executive Officer is solicited in this area by a shareholder, he may consult with the Lead Independent Director before responding. When the Lead Independent Director is solicited in this area by a shareholder, she informs the Chairman and Chief Executive Officer and gives her opinion so that the Chairman and Chief Executive Officer can give appropriate response to the request. The Chairman and Chief Executive Officer informs the Lead Independent Director of the response. Thus, for example, the Lead Independent Director was informed in January 2016 of a question of a shareholder of the Company concerning the high number of mandates exercised by a director and the answer that was given by the Company;

– relations with other stakeholders: certain suppliers of the Group contacted the Lead Independent Director concerning various claims against the Company. Responses were transmitted by

various relevant services of the Company after the Lead Independent Director had been informed on the matters.

### 1.3. Statement regarding corporate governance

For many years, TOTAL has taken an active approach to corporate governance and at its meeting on November 4, 2008, the Board of Directors decided to refer to the AFEP-MEDEF Code of Corporate Governance for publicly traded companies.

The AFEP-MEDEF Code is available on the Internet websites of the AFEP and the MEDEF.

The AFEP-MEDEF Code was revised in June 2013 to introduce new changes regarding, in particular, a consultation procedure in which shareholders can express an opinion on the individual compensation of the executive directors (say on pay), as well as the

establishment of a High Committee for corporate governance, an independent structure in charge of monitoring implementation of the Code. It was also revised in November 2015 to introduce the principle of consultation of the Annual Shareholders' Meeting in case of the sale of at least one half of the Company's assets and to bring the Code in line with new laws regarding supplementary pensions of executive directors. The Code was also revised in November 2016 in order to clarify and complete certain recommendations, in particular on the independence of directors, CSR and the compensation of the executive directors.

Pursuant to Article L. 225-37 of the French Commercial Code, the following table sets forth the sole recommendation made in the AFEP-MEDEF Code that the Company has opted not to follow and the reasons for such decision.

#### Recommendations not followed

##### Supplementary pension plan (point 24.6.2 of the Code)

– Supplementary pension schemes with defined benefits must be subject to the condition that the beneficiary must be a director or employee of the Company when claiming his or her pension rights pursuant to the applicable rules.

#### Explanation – Practice followed by TOTAL

It appeared justified not to deprive the relevant beneficiaries of the benefit of the pension commitments made by the Company in the particular cases of the disability or departure of a beneficiary over 55 years of age at the initiative of the Group. In addition, it should be noted that the supplementary pension plan set up by the Company was declared to URSSAF in 2004, in accordance with Articles L. 137-11 and R. 137-16 of the French Social Security Code.

Compared to the prior fiscal year, the Company's practices have evolved in two areas concerning the recommendations made in the AFEP-MEDEF Code. First, a meeting not attended by the executive and non-executive directors took place on December 15, 2016. The recommendation made in the AFEP-MEDEF Code (point 10.3) stating that "It is recommended that a meeting not attended by the executive Officers be organized each year" was, therefore, followed. Second, concerning the recommendation made in the AFEP-MEDEF Code concerning the composition of the Compensation

Committee that one "director designated by employees should be a member", the Board of Directors approved on February 8, 2017, the proposal of the Governance and Ethics Committee to appoint Ms. Renata Perycz as a member of the Compensation Committee as from the end of the Shareholder Meeting of May 26, 2017. Ms. Perycz, thanks to the nature of her salaried duties in the Group, will in particular bring to the Compensation Committee her experience in Human Resources.

## 2. General Management

### 2.1. The Executive Committee

The Executive Committee, under the responsibility of the Chairman and Chief Executive Officer, is the decision-making body of the Group.

It implements the strategy formulated by the Board of Directors and authorizes related investments, subject to the approval of the Board of Directors for investments exceeding 3% of the Group's equity or notification of the Board for investments exceeding 1% of equity.

In 2016, the Executive Committee met at least twice a month, except in August when it met once.

As of December 31, 2016, the members of TOTAL's Executive Committee were as follows:

- Patrick Pouyanné, Chairman and Chief Executive Officer and President of the Executive Committee;
- Arnaud Breuillac, President, Exploration & Production;
- Patrick de La Chevardière, Chief Financial Officer;
- Momar Nguer, President, Marketing & Services;
- Bernard Pinatel, President, Refining & Chemicals;
- Philippe Sauquet, President, Gas, Renewables & Power, and President, Group Strategy-Innovation; and
- Namita Shah, President, People & Social Responsibility.

### 2.2. The Group Performance Management Committee

The mission of the Group Performance Management Committee is to examine, analyze and monitor the safety, financial and operational results of the Group. It is chaired by the Chairman and Chief Executive Officer and meets monthly.

In addition to the members of the Executive Committee, this Committee, chaired by the Chairman and Chief Executive Officer, is made up of the head of the Group's main business units, as well as a limited number of Senior Vice Presidents of functions at the Group and business segment levels.

## 3. Shares held by the administration and management bodies

As of December 31, 2016, based on statements by the directors and the share register listing registered shares, all of the members of the Board of Directors and the Group's executive officers<sup>(1)</sup> held less than 0.5% of the share capital:

- members of the Board of Directors<sup>(2)</sup>: 88,067 shares and 10,293.26 units of the collective investment fund ("FCPE") invested in TOTAL shares;
- Chairman and Chief Executive Officer: 72,470 shares and 8,177.02 units of the FCPE invested in TOTAL shares;
- members of the Executive Committee<sup>(3)</sup>: 290,233 shares and 15,133.81 units of the FCPE invested in TOTAL shares; and
- executive officers<sup>(3)</sup>: 359,483 shares and 22,079.74 units of the FCPE invested in TOTAL shares.

By decision of the Board of Directors:

- executive directors are required to hold a number of shares of the Company equal in value to two years of the fixed portion of their annual compensation; and
- members of the Executive Committee are required to hold a number of shares of the Company equal in value to two years of the fixed portion of their annual compensation. These shares must be acquired within three years of their appointment to the Executive Committee.

The number of TOTAL shares to be considered are comprised of TOTAL shares and units of the FCPE invested in TOTAL shares.

(1) The Group's executive officers include the members of the Executive Committee, the four Senior Vice Presidents of the central Group functions who are members of the Group Performance Management Committee (HSE, Strategy & Climate, Communications, Legal) and the Treasurer.

(2) Including the Chairman and Chief Executive Officer, the director representing employee shareholders and the director representing employees.

(3) Excluding the Chairman and Chief Executive Officer.

## Summary of transactions in the Company's securities (Article L. 621-18-2 of the French Monetary and Financial Code)

The following table presents transactions, of which the Company has been informed, in the Company's shares or related financial instruments carried out in 2016 by the individuals referred to in paragraphs a), b)<sup>(1)</sup> and c) of Article L. 621-18-2 of the French Monetary and Financial Code:

Year 2016		Acquisition	Subscription	Transfer	Exchange	Exercise of stock options
Patrick Pouyanné <sup>(a)</sup>	TOTAL shares	-	2,182.00	16,000.00	-	16,000.00
	Units in FCPE and other related financial instruments <sup>(b)</sup>	409.25	0.71	-	-	-
Maria van der Hoeven <sup>(a)</sup>	TOTAL shares	1,000.00	-	-	-	-
	Units in FCPE and other related financial instruments <sup>(b)</sup>	-	-	-	-	-
Gérard Lamarche <sup>(a)</sup>	TOTAL shares	-	30.00	-	-	-
	Units in FCPE and other related financial instruments <sup>(b)</sup>	-	-	-	-	-
Jean Lemierre <sup>(a)</sup>	TOTAL shares	1,000.00	-	-	-	-
	Units in FCPE and other related financial instruments <sup>(b)</sup>	-	-	-	-	-
Philippe Boisseau <sup>(a)</sup>	TOTAL shares	-	299.00	-	-	-
	Units in FCPE and other related financial instruments <sup>(b)</sup>	19.78	13.64	-	-	-
Arnaud Breuillac <sup>(a)</sup>	TOTAL shares	-	1,403.00	12,500.00	-	17,500.00
	Units in FCPE and other related financial instruments <sup>(b)</sup>	130.59	230.99	3,620.21	-	-
Patrick de La Chevardière <sup>(a)</sup>	TOTAL shares	-	4,738.00	20,000.00	-	20,000.00
	Units in FCPE and other related financial instruments <sup>(b)</sup>	117.89	418.83	941.94	-	-
Jean-Jacques Guilbaud <sup>(a)</sup>	TOTAL shares	-	1,854.00	-	-	-
	Units in FCPE and other related financial instruments <sup>(b)</sup>	143.38	585.02	-	-	-
Momar Nguer <sup>(a)</sup>	TOTAL shares	-	167.00	17,949.00	-	21,800.00
	Units in FCPE and other related financial instruments <sup>(b)</sup>	78.79	0.268	6,579.67	-	-
Bernard Pinatel <sup>(a)</sup>	TOTAL shares	-	333.00	20,500.00	-	20,500.00
	Units in FCPE and other related financial instruments <sup>(b)</sup>	9.21	-	-	-	-
Philippe Sauquet <sup>(a)</sup>	TOTAL shares	-	1,575.00	-	-	7,600.00
	Units in FCPE and other related financial instruments <sup>(b)</sup>	642.51	11.46	6,851.25	-	-
Namita Shah <sup>(a)</sup>	TOTAL shares	-	49.00	-	-	-
	Units in FCPE and other related financial instruments <sup>(b)</sup>	11.91	5.86	-	-	-

(a) Including related parties within the meaning of the provisions of Article R. 621-43-1 of the French Monetary and Financial Code.

(b) FCPE primarily invested in TOTAL shares.

(1) The individuals referred to in paragraph b) of Article L. 621-18-2 of the French Monetary and Financial Code include the members of the Executive Committee.

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# Compensation of the administration and management bodies

1.	Board members' compensation	116
2.	Chairman and Chief Executive Officer's compensation	118
2.1.	Compensation of the Chairman and Chief Executive Officer due or granted for fiscal year 2016	118
2.2.	Commitments made by the Company to the Chairman and Chief Executive Officer (Article L. 225-102-1, paragraph 3, of the French Commercial Code)	120
2.3.	Summary tables (AFEP-MEDEF Code/AMF position-recommendation No. 2009-16)	123
3.	Executive officers' compensation	125
4.	Stock option and free share grants	125
4.1.	General policy	125
4.2.	Follow-up of grants to the executive directors	126
4.3.	Follow-up of TOTAL stock option plans as of December 31, 2016	128
4.4.	Follow-up of TOTAL free share grants as of December 31, 2016	130
5.	Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)	132
6.	Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)	138
6.1.	General principles for determining the compensation of the executive directors	138
6.2.	Compensation policy for the Chairman and Chief Executive Officer for fiscal year 2017	139
6.3.	Draft resolution prepared by the Board of Directors in accordance with Article L. 225-37-2 of the French Commercial Code (paragraph 1) submitted to the Ordinary Shareholders' Meeting of May 26, 2017	142

## 1. Board members' compensation

The conditions applicable to Board members' compensation are defined by the Board of Directors on the proposal of the Governance and Ethics Committee, subject to the aggregate maximum amount of directors' fees authorized by the Annual Shareholders' Meeting of May 17, 2013 and set at €1.4 million per fiscal year.

In 2016, the aggregate amount of directors' fees due to the members of the Board of Directors was €1.1 million, noting that there were 12 directors as of December 31, 2016.

The directors' fees for fiscal year 2016 are allocated according to a formula comprised of fixed compensation and variable compensation based on fixed amounts per meeting, which makes it possible to take into account each director's actual attendance at the meetings of the Board of Directors and its committees, subject to the conditions below:

- a fixed annual portion of €20,000 per director<sup>(1)</sup>, except for the Chairman of the Audit Committee, for whom the fixed annual portion is €30,000, and the other Audit Committee members, for whom the fixed annual portion is €25,000;
- an additional fixed annual portion<sup>(1)</sup> of €15,000 for the Lead Independent Director;
- an additional fixed annual portion<sup>(1)</sup> of €5,000 for the Chairman of the Governance and Ethics Committee and for the Chairman of the Compensation Committee;
- an amount of €5,000 per director for each Board of Directors' meeting actually attended;
- an amount of €3,500 per director for each Governance and Ethics Committee, Compensation Committee or Strategic Committee meeting actually attended;
- an amount of €7,000 per director for each Audit Committee meeting actually attended; and
- a premium of €2,000 for travel from outside France to attend a Board of Directors' or Committee meeting.

The Chairman and Chief Executive Officer does not receive directors' fees for his work on the Board and Committees of TOTAL S.A.

The total amount paid to each director is determined after taking into consideration the director's actual presence at each Board of Directors' or Committee meeting and, if appropriate, after prorating the amount set for each director such that the overall amount paid remains within the maximum limit set by the Shareholders' Meeting. Directors' fees for each fiscal year are paid following a decision by the Board of Directors, on the proposal of the Governance and Ethics Committee, at the beginning of the following fiscal year.

The director representing employee shareholders and the director representing employees receive directors' fees according to the same terms and conditions as any other director.

The table below presents the total compensation (including in-kind benefits) due and paid to each executive and non-executive director (mandataires sociaux) during the previous two fiscal years (Article L. 225-102-1 of the French Commercial Code, 1<sup>st</sup> and 2<sup>nd</sup> paragraphs).

Mr. Marc Blanc, the director representing employees, participates in the internal defined contribution pension plan applicable to all TOTAL S.A. employees, known as RECOUP (*Régime collectif et obligatoire de retraite supplémentaire à cotisations définies*), governed by Article L. 242-1 of the French Social Security Code. The Company's commitment is limited to its share of the contributions paid to the insurance company that manages the plan. For fiscal year 2016, this pension plan represented a booked expense to TOTAL S.A. in favor of Mr. Blanc of €764.

Mr. Blanc, who joined the Elf Aquitaine Group in 1980, also participates in a supplementary defined benefit pension plan, known as CREA, set up and financed by the Company. This plan covers former employees of the Elf Aquitaine Group and was closed on December 31, 1994. It does not require a presence condition within the Group at the time of retirement. The commitments made by the Group in favor of Mr. Blanc under this plan represent, at December 31, 2016, a gross annual pension, payable to his spouse within a limit of 60% in case of death of the beneficiary, estimated at €4,877. Nearly the full amount of the Group's commitments under the CREA plan is outsourced to an insurance company and the non-outsourced balance is evaluated annually and adjusted through a provision in the accounts. The amount of these commitments at December 31, 2016 in favor of Mr. Blanc is €138.6 thousand. This amount represents the gross value of the Group's commitments to this beneficiary based on the gross annual pension estimated as of December 31, 2016, as well as a statistical life expectancy of the beneficiary and his spouse.

During the past two years, the directors currently in office have not received any compensation or in-kind benefits from TOTAL S.A. or from its controlled companies other than those mentioned in the table below.

Moreover, there is no service contract between a director and TOTAL S.A. or any of its controlled companies that provides for the grant of benefits under such a contract.

(1) Calculated on a prorata basis in case of a change during the year.



**Table of directors' fees and other compensation due and paid to the executive and non-executive directors (AMF Table No. 3)**

Gross amount (€)	For fiscal year 2016		For fiscal year 2015	
	Amounts due	Amounts paid	Amounts due	Amounts paid
<b>Patrick Pouyanné</b>				
Directors' fees	None	None	None	None
Other compensation	(a)	(a)	(a)	(a)
<b>Thierry Desmarest</b>				
Directors' fees <sup>(b)</sup>	39,924	82,500	82,500	101,500
Other compensation	None	None	None	None
<b>Patrick Artus</b>				
Directors' fees	121,000	88,000	88,000	101,500
Other compensation	None	None	None	None
<b>Patricia Barbizet</b>				
Directors' fees <sup>(c)</sup>	109,500	130,644	130,644	136,000
Other compensation	None	None	None	None
<b>Marc Blanc</b>				
Directors' fees <sup>(d)(e)</sup>	73,500	72,000	72,000	8,178
Other compensation	76,443	76,443	75,014	75,014
<b>Gunnar Brock</b>				
Directors' fees <sup>(f)</sup>	42,924	107,500	107,500	115,000
Other compensation	None	None	None	None
<b>Marie-Christine Coisne-Roquette</b>				
Directors' fees <sup>(g)</sup>	146,500	122,679	122,679	126,000
Other compensation	None	None	None	None
<b>Bertrand Collomb</b>				
Directors' fees <sup>(h)</sup>	n/a	28,109	28,109	81,000
Other compensation	n/a	None	None	None
<b>Paul Desmarais, Jr</b>				
Directors' fees	49,500	61,000	61,000	56,000
Other compensation	None	None	None	None
<b>Maria van der Hoeven</b>				
Directors' fees <sup>(i)</sup>	43,576	None	n/a	n/a
Other compensation	None	None	n/a	n/a
<b>Anne-Marie Idrac</b>				
Directors' fees	84,000	79,000	79,000	77,000
Other compensation	None	None	None	None
<b>Charles Keller</b>				
Directors' fees <sup>(e)(j)</sup>	59,405	126,000	126,000	93,083
Other compensation	90,326	90,326	91,947	91,947
<b>Barbara Kux</b>				
Directors' fees	100,000	102,500	102,500	104,000
Other compensation	None	None	None	None
<b>Gérard Lamarche</b>				
Directors' fees <sup>(k)</sup>	150,000	147,000	147,000	156,000
Other compensation	None	None	None	None
<b>Anne Lauvergeon</b>				
Directors' fees <sup>(l)</sup>	n/a	31,609	31,609	68,500
Other compensation	n/a	None	None	None
<b>Jean Lemierre</b>				
Directors' fees <sup>(i)</sup>	32,076	None	n/a	n/a
Other compensation	None	None	n/a	n/a
<b>Michel Pébereau</b>				
Directors' fees <sup>(h)</sup>	n/a	31,609	31,609	74,000
Other compensation	n/a	None	None	None
<b>Renata Perycz</b>				
Directors' fees <sup>(i)</sup>	48,576	None	n/a	n/a
Other compensation	53,158	53,158	n/a	n/a
<b>Total</b>	<b>1,320,408</b>	<b>1,430,077</b>	<b>1,377,111</b>	<b>1,507,673</b>

(a) For more information concerning compensation, refer to the summary tables presented in point 2.3 of this chapter.

(b) Mr. Desmarest did not receive any specific compensation as Chairman of the Board until December 18, 2015. In respect of the previous duties that he performed within the Group until May 21, 2010, he receives a retirement pension from the pension plans set up by the Company (internal defined contribution pension plan known as RECOSUP and supplementary defined benefit pension plan).

(c) Lead Independent Director and Chairwoman of the Governance and Ethics Committee since December 19, 2015. Chairwoman of the Audit Committee until December 18, 2015.

(d) Director representing employees since November 4, 2014.

(e) Messrs. Blanc and Keller chose to pay all their directors' fees to their trade union membership organizations for the entire term of their directorship.

(f) Director until May 24, 2016.

(g) Chairwoman of the Audit Committee since December 19, 2015.

(h) Director until May 29, 2015.

(i) Director since May 24, 2016.

(j) Director representing employee shareholders until May 24, 2016.

(k) Chairman of the Compensation Committee since December 19, 2015.

(l) Director representing employee shareholders since May 24, 2016.

## 2. Chairman and Chief Executive Officer's compensation

### 2.1. Compensation of the Chairman and Chief Executive Officer due or granted for fiscal year 2016

The compensation policy applicable to the Chairman and Chief Executive Officer is reviewed each year by the Board of Directors on the proposal of the Compensation Committee. The compensation policy for the Chairman and Chief Executive Officer for fiscal year 2016 was approved by the Board of Directors on December 16, 2015, on the proposal of the Compensation Committee.

Mr. Pouyanné's compensation consists of a fixed portion, an annual variable portion calculated on the basis of predefined criteria and a long-term component in the form of performance shares.

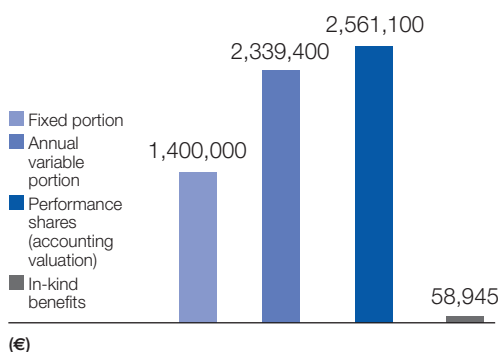
Performance shares are granted under plans that are not specific to the Chairman and Chief Executive Officer and are structured over a five-year period with a three-year vesting period followed by a mandatory two-year holding period. The definitive grant of shares is subject to a presence condition and performance conditions assessed at the end of the three-year vesting period.

Mr. Pouyanné does not receive any multi-year or deferred variable compensation or any extraordinary compensation. He does not receive directors' fees as director of TOTAL S.A.

In addition, the Company is committed to paying Mr. Pouyanné a retirement benefit and a severance benefit in the event of forced departure related to a change of control or strategy. The Chairman and Chief Executive Officer is also entitled to the pension plans in place within the Group. In line with the principles of the AFEP-MEDEF Code, the benefit accruing from participation in the pension plans has been taken into consideration when determining the compensation policy applicable to the Chairman and Chief Executive Officer for fiscal year 2016. These commitments, which are subject to performance conditions, are described in more detail in point 2.2 below.

In addition, Mr. Pouyanné has the use of a company car and benefits from the life insurance plans and the health care plan that are described in more detail in point 2.2 below.

The structure of the compensation due or granted to Mr. Pouyanné for fiscal year 2016 is as follows:



#### 2.1.1. Fixed and variable annual compensation due in 2016

In accordance with the compensation policy defined by the Board of Directors on December 16, 2015, at its meeting on February 8, 2017 and on a proposal from the Compensation Committee, the Board of Directors determined the compensation due to Mr. Pouyanné for his duties as Chairman and Chief Executive Officer for fiscal year 2016. This compensation consists of a base salary (fixed portion) of €1,400,000 (higher than in fiscal year 2015 following the Board of Directors' decision to appoint Patrick Pouyanné as Chairman and Chief Executive Officer of TOTAL S.A.) and a variable portion (paid in 2017) of €2,339,400 corresponding to 167.10% of his fixed compensation.

To determine the variable portion of the compensation due to the Chairman and Chief Executive Officer for fiscal year 2016, at its meeting on February 8, 2017, the Board of Directors reviewed the level of achievement of the economic parameters based on the targets set by the Board of Directors at its meeting on December 16, 2015. The Board of Directors also assessed the Chairman and Chief Executive Officer's personal contribution on the basis of the four objective and operational target criteria set during its meeting on December 16, 2015.

#### Annual variable compensation due for fiscal year 2016 (expressed as a percentage of the base salary)

	Maximum percentage	Percentage allocated
Economic parameters	140%	127.10%
– Safety - comparative	20%	20%
– Return on equity (ROE)	30%	17.10%
– Net debt-to-equity ratio	40%	40%
– Adjusted net income (ANI) - comparative	50%	50%
Personal contribution:	40%	40%
– successful managerial transition	10%	10%
– achievement of production and reserve targets	10%	10%
– successful strategic negotiations with producing countries	10%	10%
– Corporate Social Responsibility (CSR) performance	10%	10%
<b>Total</b>	<b>180%</b>	<b>167.10%</b>

The Board of Directors assessed achievement of the targets set for the economic parameters as follows:

- The safety criterion was assessed based on the achievement of an annual TRIR (Total Recordable Injury Rate) target and the number of accidental deaths per million hours worked, FIR (Fatality Incident Rate), compared with those of four large oil

companies<sup>(1)</sup>. The Board of Directors noted that the target of a TRIR lower than 1.15 was fully achieved in 2016. It also noted that the number of accidental deaths per million hours worked, FIR (Fatality Incident Rate), was the best among the panel of majors. It therefore set the portion for this criterion at 20% of the fixed compensation (of a maximum of 20%).

- For the return on equity (ROE) criterion<sup>(2)</sup>, the Board of Directors noted that, in 2016, the ROE was 8.7%, which led the portion for this criterion to be set at 17.10% of the fixed compensation for fiscal year 2016 (of a maximum of 30%).
- For the net debt-to-equity ratio criterion<sup>(3)</sup>, the Board of Directors noted that, in 2016, the Group's net debt-to-equity ratio is less than 30%, which led the portion for this criterion to be set at 40% of the fixed compensation for fiscal year 2016 (of a maximum of 40%).
- The criterion related to the change in the Group's adjusted net income (ANI) was assessed by comparison with those of the four large oil companies<sup>(4)</sup>. The Board of Directors noted that the increase in the Group's three-year average ANI was better than that of the panel<sup>(4)</sup>, which led the portion for this criterion to be set at 50% of the fixed compensation for fiscal year 2016 (of a maximum of 50%).

Regarding the Chairman and Chief Executive Officer's personal contribution, the Board of Directors determined that the targets set were largely achieved, particularly those related to the increase in oil and gas production (+4.5% in 2016 compared to 2015), the successful strategic negotiations with producing countries (acquisition of an interest in the giant Al-Shaheen oil field in Qatar for a period of 25 years, signing of a heads of agreement with the Iranian state-owned company to develop phase 11 of South Pars, strategic alliance with Petrobras in Brazil) and the successful managerial transition (implementation of the project "One Total, one ambition", acquisition of Saft Groupe which permitted the integration of electricity storage solutions in the Group's portfolio, acquisition of the gas distributor Lampiris, sale of Atotech, renewal of the Executive Committee as of September 1, 2016). CSR performance was also considered fully satisfactory based on the decrease of the Group's CO<sub>2</sub> emissions (-7% in 2016 compared to 2015) and on the improvement of the Group's position in the rankings published by non-financial rating agencies.

The Chairman and Chief Executive Officer's personal contribution was therefore set at 40% of the fixed compensation (of a maximum of 40%).

Mr. Pouyanné did not benefit from any other components of compensation due or granted for fiscal year 2016. No multi-year or deferred variable compensation or extraordinary compensation was paid to him for fiscal year 2016.

Mr. Pouyanné had the use in 2016 of a company car and benefited from the life insurance plans and the health care plan described in detail in point 2.2 below. These benefits were booked in the amount of €58,945 in the Consolidated Financial Statements at December 31, 2016.

### 2.1.2. Grant of performance shares in 2016

At its meeting on July 27, 2016, the Board of Directors, on the proposal of the Compensation Committee and pursuant to the authorization of the Company's Combined Shareholders' Meeting of May 24, 2016 (twenty-fourth resolution), decided to grant Mr. Pouyanné 60,000 existing shares of the Company (corresponding to 0.002% of the share capital) subject to the conditions set out below. These shares were granted under a broader share plan approved by the Board of Directors on July 27, 2016, relating to 0.8% of the share capital in favor of more than 10,000 non executive beneficiaries.

The definitive grant of all the shares is subject to the beneficiary's continued presence within the Group during the vesting period and to performance conditions as described below.

The definitive number of shares granted will be based on the comparative TSR (Total Shareholder Return) and the annual variation in net cash flow per share for fiscal years 2016 to 2018, applied as follows:

- the Company will be ranked each year against its peers<sup>(1)</sup> during the three vesting years (2016, 2017 and 2018) based on the TSR criterion using the average closing market price expressed in dollars over one quarter at the beginning and end of each three-year period (Q4 year N vs./Q4 year N-3). The dividend will be considered reinvested based on the last market price on the ex-dividend date.

$$TSR\ N = \frac{\text{average price Q4 N} - \text{average price Q4 N-3} + \text{reinvested dividends}}{\text{average price Q4 N-3}}$$

- the Company will be ranked each year against its peers<sup>(1)</sup> using the annual variation in net cash flow per share expressed in dollars criterion. Net cash flow is defined as cash flow from operating activities minus cash flow from investing activities including acquisitions and disposals. This data expressed in dollars will come from the consolidated statements of cash flow taken from the annual Consolidated Financial Statements of the Company and its peers for the fiscal years in question (based on the accounting standards applicable at the time of the closing of the accounts for such fiscal years).

The number of shares used to calculate net cash flow per share will be the weighted-average number of diluted shares for the Company and each of its peers.

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.

(2) The Group measures the ROE as the ratio of adjusted consolidated net income to average adjusted shareholders' equity between the beginning and the end of the period. Adjusted shareholders' equity for fiscal year 2016 is calculated after payment of a dividend of €2.45 per share, subject to approval by the Annual Shareholders' Meeting on May 26, 2017. In 2015, the ROE was 11.5%.

(3) For its internal management and external communication purposes, the Group calculates a net debt-to-equity ratio by dividing its net financial debt by its adjusted shareholders' equity. The 2016 adjusted shareholders' equity is calculated after payment of a dividend of €2.45 per share, subject to approval by the Annual Shareholders' Meeting on May 26, 2017. In 2016, the net debt-to-equity ratio was 27.1%. In 2015, it was 28.3%.

(4) Adjusted results are defined as income at replacement cost, excluding non-recurring items and excluding the impact of fair value changes. The annual ANI of each peer used for the calculation is determined by taking the average of the ANIs published by a panel of six financial analysts: UBS, Crédit Suisse, Barclays, Bank of America Merrill Lynch, JP Morgan and Deutsche Bank. If any of these analysts is unable to publish the results of one or more peers for a given year, it will be replaced, for the year and for the peer(s) in question, in the order listed, by an analyst included in the following additional list: Jefferies, HSBC, Société Générale, Goldman Sachs and Citi. The ANIs used will be set according to these analysts' last publications two business days after the publication of the press release announcing the "fourth quarter and annual results" of the last peer.

Based on the ranking, a grant rate will be determined for each year:

- 1<sup>st</sup>: 180% of the grant;
- 2<sup>nd</sup>: 130% of the grant;
- 3<sup>rd</sup>: 80% of the grant; and
- 4<sup>th</sup> and 5<sup>th</sup>: 0%.

For each of the criteria, the average of the three grant rates obtained (for each of the three fiscal years for which the performance conditions are assessed) will be rounded to the nearest 0.1 whole percent (0.05% being rounded to 0.1%) and capped at 100%. Each criterion will have a weight of 50% in the definitive grant rate. The definitive grant rate will be rounded to the nearest 0.1 whole percent (0.05% being rounded to 0.1%).

The number of shares definitively granted, after confirmation of the performance conditions, will be rounded to the nearest whole number of shares in case of a fractional lot.

In accordance with the provisions of the French Commercial Code, Mr. Pouyanné will, until the end of his term, be required to retain in the form of registered shares 50% of the gains on the acquired shares net of tax and national insurance contributions related to the shares granted. When Mr. Pouyanné holds a volume of shares<sup>(1)</sup>

representing five times the fixed portion of his gross annual compensation, this percentage will be equal to 10%. If this condition is no longer met, the above-mentioned 50% holding requirement will again apply.

In addition, the Board of Directors has noted that, pursuant to the Board's Rules of Procedure applicable to all directors, the Chairman and Chief Executive Officer is not allowed to hedge the shares of the Company or any related financial instruments and has taken note of Mr. Pouyanné's commitment to abstain from such hedging operations with regard to the performance shares granted.

The grant of performance shares to Mr. Pouyanné is subject to the same requirements applicable to the other beneficiaries of the performance share plan and were approved by the Board at its meeting on July 27, 2016. In particular, these provisions stipulate that the shares definitively granted at the end of the three-year vesting period will, after confirmation of fulfillment of the presence and performance conditions, be automatically recorded as pure registered shares on the start date of the two-year holding period and will remain non-transferable and unavailable until the end of the holding period.

## 2.2. Commitments made by the Company to the Chairman and Chief Executive Officer (Article L. 225-102-1, paragraph 3, of the French Commercial Code)

The commitments made to the Chairman and Chief Executive Officer regarding pension plans, retirement benefit and severance benefit to be paid in the event of forced departure related to a change of control or strategy, as well as the life insurance and health care benefits set out below, were approved by the Board of Directors on December 16, 2015. They were approved by the Annual Shareholders' Meeting of May 24, 2016, in accordance with the provisions of Article L. 225-42-1 of the French Commercial Code.

It should be noted that Mr. Pouyanné already benefited from all these provisions when he was an employee of the Company, except for the commitment to pay severance benefits in the event of forced departure related to a change of control or strategy. It should also be noted that Mr. Pouyanné, who joined the Group on January 1, 1997, ended the employment contract that he previously had with TOTAL S.A. through his resignation at the time of his appointment as Chief Executive Officer on October 22, 2014.

### Pension plans

Pursuant to applicable legislation, the Chairman and Chief Executive Officer is eligible for the basic French Social Security pension and for pension benefits under the ARRCO and AGIRC supplementary pension plans.

He also participates in the internal defined contribution pension plan applicable to all TOTAL S.A. employees, known as RECO SUP (Régime collectif et obligatoire de retraite supplémentaire à cotisations définies), covered by Article L. 242-1 of the French Social Security Code. The Company's commitment is limited to its share of the contribution paid to the insurance company that manages the plan. For fiscal year 2016, this pension plan represented a booked expense to TOTAL S.A. in favor of the Chairman and Chief Executive Officer of €2,317.

The Chairman and Chief Executive Officer also participates in a supplementary defined benefit pension plan, covered by Article L. 137-11 of the French Social Security Code, set up and financed by the Company and approved by the Board of Directors on March 13, 2001, for which management is outsourced to two insurance companies effective January 1, 2012. This plan applies to all TOTAL S.A. employees whose compensation exceeds eight times the annual ceiling for calculating French Social Security contributions (PASS), set at €38,616 for 2016 (*i.e.*, €308,928), and above which there is no conventional pension plan. To be eligible for this supplementary pension plan, participants must have served for at least five years, be at least 60 years old and exercised his or her rights to retirement from the French Social Security. The benefits under this plan are subject to a presence condition under which the beneficiary must still be employed at the time of retirement. However, the presence condition does not apply if a beneficiary aged 55 or older leaves the Company at the Company's initiative or in case of disability.

The length of service acquired by Mr. Pouyanné as a result of his previous salaried duties held at the Group since January 1, 1997 has been maintained for the benefit of this plan.

The compensation taken into account to calculate the supplementary pension is the average gross annual compensation (fixed and variable portion) over the last three years. The amount paid under this plan is equal to 1.8% of the portion of the compensation falling between 8 and 40 times the PASS and 1% for the portion of the compensation falling between 40 and 60 times the PASS, multiplied by the number of years of service up to a maximum of 20 years.

(1) In the form of shares or units of mutual funds invested in shares of the Company.

The sum of the annual supplementary pension plan benefits and other pension plan benefits (other than those set up individually and on a voluntary basis) may not exceed 45% of the average gross compensation (fixed and variable portion) over the last three years. In the event that this percentage is exceeded, the supplementary pension is reduced accordingly. The amount of the supplementary pension determined in this way is indexed to the ARRCO pension point.

The supplementary pension includes a clause whereby 60% of the amount will be paid to beneficiaries in the event of death after retirement.

To ensure that the acquisition of additional pension rights under this defined-benefit pension plan is subject to performance conditions to be defined pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code amended by law No. 2015-990 of August 6, 2015, on December 15, 2016, the Board of Directors noted the existence of the Chief Executive Officer's pension rights under the above-mentioned pension plan, immediately before his appointment as Chairman, for the period from January 1, 1997 to December 18, 2015.

The conditional rights granted for the period from January 1, 1997 to December 18, 2015 (inclusive), acquired without performance conditions, correspond to a replacement rate equal to 34.14% for the portion of the base compensation falling between 8 and 40 times the PASS and a replacement rate of 18.96% for the portion of the base compensation falling between 40 and 60 times the PASS.

The conditional rights granted for the period from December 19, 2015 to December 31, 2016 are subject to the performance condition described below and correspond to a maximum replacement rate equal to 1.86% for the portion of the base compensation falling between 8 and 40 times the PASS and a replacement rate equal to 1.04% for the portion of the base compensation falling between 40 and 60 times the PASS.

Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, the Board of Directors decided to make the acquisition of these conditional rights for the period from December 19, 2015 to December 31, 2016, subject to a condition related to the beneficiary's performance, which is considered fulfilled if the variable portion of the Chairman and Chief Executive Officer's compensation paid in 2017 for fiscal year 2016 reaches 100% of the base salary due for fiscal year 2016. In the event that the variable portion does not reach 100% of the base salary, the rights granted will be calculated on a prorata basis.

On February 8, 2017, the Board of Directors noted that the specified performance condition was fully met and therefore confirmed the acquisition by Mr. Pouyanné of additional pension rights mentioned above for the period from December 19, 2015 to December 31, 2016.

The Board also noted that Mr. Pouyanné would no longer be able to acquire additional pension rights under this plan given the rules for determining pension rights set out in the plan and the 20 years of service of Mr. Pouyanné as of December 31, 2016.

The commitments made by TOTAL S.A. to its Chairman and Chief Executive Officer regarding the supplementary defined benefit and similar pension plans therefore represent, at December 31, 2016, a

gross annual pension estimated at €599,320 based on the length of service acquired as of December 31, 2016 (*i.e.*, 20 years of service), corresponding to 16.03% of Mr. Pouyanné's gross annual compensation consisting of the annual fixed portion for 2016 (*i.e.*, €1,400,000) and the variable portion paid in 2017 for fiscal year 2016 (*i.e.*, €2,339,400).

Nearly the full amount of TOTAL S.A.'s commitments under these supplementary and similar retirement plans (including the retirement benefit) is outsourced to insurance companies and the non-outsourced balance is evaluated annually and adjusted through a provision in the accounts. The amount of these commitments as of December 31, 2016 is €16.1 million for the Chairman and Chief Executive Officer (€16.4 million for the Chairman and Chief Executive Officer and the executive and non-executive directors covered by these plans). These amounts represent the gross value of TOTAL S.A.'s commitments to these beneficiaries based on the estimated gross annual pensions as of December 31, 2016 and the statistical life expectancy of the beneficiaries.

The total amount of all the pension plans in which Mr. Pouyanné participates represents, at December 31, 2016, a gross annual pension estimated at €690,600 based on the length of service acquired as of December 31, 2016 (*i.e.*, 20 years of service), corresponding to 18.47% of Mr. Pouyanné's gross annual compensation defined above (annual fixed portion for 2016 and variable portion paid in 2017 for fiscal year 2016).

#### Retirement benefit

The Chairman and Chief Executive Officer is entitled to a retirement benefit equal to those available to eligible members of the Group under the French National Collective Bargaining Agreement for the Petroleum Industry. This benefit is equal to 25% of the fixed and variable annual compensation received during the 12 months preceding retirement.

Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, receipt of this retirement benefit is contingent upon a performance-related condition applicable to the beneficiary, which is deemed to be fulfilled if at least two of the following criteria are met:

- the average ROE (return on equity) for the three years preceding the year in which the Chairman and Chief Executive Officer retires is at least 10%;
- the average net debt-to-equity ratio for the three years preceding the year in which the Chairman and Chief Executive Officer retires is less than or equal to 30%; and
- growth in TOTAL's oil and gas production is greater than or equal to the average growth rate of four oil companies (ExxonMobil, Royal Dutch Shell, BP and Chevron) during the three years preceding the year in which the Chairman and Chief Executive Officer retires.

The retirement benefit cannot be combined with the severance benefit described below.

#### Severance benefit

The Chairman and Chief Executive Officer is entitled to a benefit equal to two years of his gross compensation in the event of a forced departure related to a change of control or strategy. The

## 6 Compensation of the administration and management bodies

### Chairman and Chief Executive Officer's compensation

calculation is based on the gross compensation (fixed and variable) of the 12 months preceding the date of termination or non-renewal of his term of office.

The severance benefit will only be paid in the event of a forced departure related to a change of control or strategy. It will not be due in case of gross negligence or willful misconduct or if the Chairman and Chief Executive Officer leaves the Company of his own volition, accepts new responsibilities within the Group or may claim full retirement benefits within a short time period.

Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, receipt of this severance benefit is contingent upon a performance-related condition applicable to the beneficiary, which is deemed to be fulfilled if at least two of the following criteria are met:

- the average ROE (return on equity) for the three years preceding the year in which the Chairman and Chief Executive Officer retires is at least 10%;
- the average net debt-to-equity ratio for the three years preceding the year in which the Chairman and Chief Executive Officer retires is less than or equal to 30%; and
- growth in TOTAL's oil and gas production is greater than or equal to the average growth rate of four oil companies (ExxonMobil, Royal Dutch Shell, BP and Chevron) during the three years preceding the year in which the Chairman and Chief Executive Officer retires.

#### Life insurance and health care plans

The Chairman and Chief Executive Officer is covered by the following life insurance plans provided by various life insurance companies:

- an “incapacity, disability, life insurance” plan applicable to all employees, partly paid for by the Company, that provides for two options in case of death of a married employee: either the payment of a lump sum equal to five times the annual compensation up to 16 times the PASS, corresponding to a maximum of €3,138,240 in 2017, plus an additional amount if there is a dependent child or children, or the payment of a lump sum equal to three times the annual compensation up to 16 times the PASS, plus a survivor's pension and education allowance;
- a second “disability and life insurance” plan, fully paid by the Company, applicable to executive directors and senior executives whose annual gross compensation is more than 16 times the PASS. This contract, signed on October 17, 2002, amended on January 28 and December 16, 2015, guarantees the beneficiary the payment of a lump sum, in case of death, equal to two years of compensation (defined as the gross annual fixed reference compensation (base France), which corresponds to 12 times the monthly gross fixed compensation paid during the month prior to death or sick leave, to which is added the highest amount in absolute value of the variable portion received during one of the five previous years of activity), which is increased to three years in case of accidental death and, in case of accidental permanent disability, a lump sum proportional to the degree of disability. The death benefit is increased by 15% for each dependent child.

Payments due under this contract are made after the deduction of any amount paid under the above-mentioned plan applicable to all employees.

The Chairman and Chief Executive Officer also benefits from the health care plan applicable to all employees.

## 2.3. Summary tables (AFEP-MEDEF Code/AMF position-recommendation No. 2009-16)

### Summary of the compensation of each executive director (AMF Table No. 2)

(€)	For fiscal year 2015		For fiscal year 2016	
	Amount due for the fiscal year	Amount paid during the fiscal year <sup>(a)</sup>	Amount due for the fiscal year	Amount paid during the fiscal year <sup>(a)</sup>
<b>Patrick Pouyanné,</b> Chairman and Chief Executive Officer				
Fixed compensation	1,200,000	1,200,000	1,400,000	1,400,000
Annual variable compensation <sup>(b)</sup>	1,814,400	295,469	2,339,400	1,814,400
Multi-year variable compensation	-	-	-	-
Extraordinary compensation	-	-	-	-
Directors' fees	-	-	-	-
In-kind benefits <sup>(c)</sup>	36,390	36,390	58,945	58,945
<b>Total</b>	<b>3,050,790</b>	<b>1,531,859</b>	<b>3,798,345</b>	<b>3,273,345</b>

(a) Variable portion paid for the prior fiscal year.

(b) For details regarding the parameters used to calculate the variable portion due for fiscal year 2016, refer to point 2.1 of this chapter.

(c) Mr. Pouyanné has the use of a company car and is covered by life insurance and health care plans paid by the Company (refer to point 2.2 of this chapter).

### Summary of the compensation, options and shares granted to each executive director (AMF Table No. 1)

(in €, except the number of shares)	For fiscal 2015	For fiscal 2016
<b>Patrick Pouyanné,</b> Chairman and Chief Executive Officer		
Compensation due in respect of the fiscal year (detailed in AMF Table No. 2 above)	3,050,790	3,798,345
Valuation of multi-year variable compensation paid during the fiscal year	-	-
Accounting valuation of the options granted during the fiscal year	-	-
Accounting valuation of the performance shares granted during the fiscal year <sup>(a)</sup>	1,722,960	2,561,100
<i>Number of performance shares granted during the fiscal year</i>	<i>48,000</i>	<i>60,000</i>
<b>Total</b>	<b>4,773,750</b>	<b>6,359,445</b>

Note: The valuations of the options and performance shares correspond to a valuation performed in accordance with IFRS 2 (see Note 9 to the Consolidated Financial Statements) and not to any compensation actually received during the fiscal year. Entitlement to performance shares is subject to the fulfillment of performance conditions assessed over a three-year period.

(a) For detailed information, refer to AMF Table No. 6 below. The valuation of the shares was calculated on the grant date (see Note 9 to the Consolidated Financial Statements).

### Stock options granted in 2016 to each executive director by the issuer and by any Group company (AMF Table No. 4)

Executive directors	Plan No. and date	Type of options (purchase or subscription)	Valuation of options (€) <sup>(a)</sup>	Number of options granted during the fiscal year	Strike price	Exercise period
<b>Patrick Pouyanné</b> Chairman and Chief Executive Officer	-	-	-	-	-	-

(a) According to the method used for the Consolidated Financial Statements.

**Free performance shares granted in 2016 to each executive director by the issuer or by any Group company (Extract from AMF Table No. 6)**

	Plan No. and date	Number of shares granted during the fiscal year	Valuation of the shares (€) <sup>(a)</sup>	Acquisition date	Date of transferability	Performance conditions
<b>Patrick Pouyanné</b> Chairman and Chief Executive Officer	2016 Plan 07/27/2016	60,000	2,561,100	07/28/2019	07/29/2021	The performance conditions are based: – for 50% of the performance shares granted, the Company will be ranked each year against its peers <sup>(b)</sup> during the three vesting years (2016, 2017 and 2018) based on the TSR criterion using the average closing market price expressed in dollars over one quarter at the beginning and end of each three-year period (Q4 year N vs./Q4 year N-3); – for 50% of the performance shares granted, the Company will be ranked each year against its peers <sup>(b)</sup> using the annual variation in net cash flow per share expressed in dollars criterion. For further details, refer to point 2.1.2 of this chapter.

(a) The valuation of the shares was calculated on the grant date according to the method used for the Consolidated Financial Statements.

(b) ExxonMobil, Royal Dutch Shell, BP and Chevron.

**AMF Table No. 11**

Executive directors	Employment contract	Supplementary pension plan	Payments or benefits due or likely to be due upon termination or change in duties	Benefits related to a non-compete agreement
<b>Patrick Pouyanné</b> Chairman and Chief Executive Officer Start of term of office: December 19, 2015 End of current term of office: Shareholders' Meeting held in 2018 to approve the financial statements for fiscal year 2017	NO	YES Internal supplementary defined benefit pension plan <sup>(a)</sup> and defined contribution pension plan known as RECOUP	YES <sup>(a)</sup> Severance benefit and retirement benefit	NO

(a) Payment subject to a performance condition under the terms approved by the Board of Directors on December 16, 2015. Details of these commitments are provided in point 2.2 above. The retirement benefit cannot be combined with the severance benefit.



## 3. Executive officers' compensation

In 2016, the aggregate amount paid directly or indirectly by the Group's companies as compensation to the Group's executive officers<sup>(1)</sup> in office as of December 31, 2016 (12 people) was €11.98 million (compared to €11.34 million in 2015), including €8.56 million paid to the members of the Executive Committee (seven people). The variable portion accounted for 44.78% of this aggregate amount of €11.98 million.

The following individuals were executive officers of the Group as of December 31, 2016 (12 people, number unchanged from December 31, 2015):

Patrick Pouyanné <sup>(2)</sup>	Namita Shah <sup>(3)</sup>
Arnaud Breuillac <sup>(3)</sup>	Bernadette Spinoy
Patrick de La Chevardière <sup>(3)</sup>	Ladislav Paszkiewicz
Momar Nguer <sup>(3)</sup>	Jacques-Emmanuel Saulnier
Bernard Pinate <sup>(3)</sup>	Maarten Scholten
Philippe Sauquet <sup>(3)</sup>	Jean-Pierre Sbraire

## 4. Stock option and free share grants

### 4.1. General policy

In addition to its employee shareholding development policy, TOTAL S.A. has implemented a policy to involve employees and senior executives in the Group's future performance which entails granting free performance shares each year. TOTAL S.A. may also grant stock options, although no plan has been put in place since September 14, 2011. These shares are granted under selective plans based on a review of individual performance at the time of each grant.

The stock option and free share plans offered by TOTAL S.A. concern only TOTAL shares and no free shares of the Group's listed subsidiaries or options on them are granted by TOTAL S.A.

All grants are approved by the Board of Directors, on the proposal of the Compensation Committee. For each plan, the Compensation Committee recommends a list of beneficiaries, the conditions and the number of options or shares granted to each beneficiary. The Board of Directors then gives final approval for this list and the grant conditions.

#### • Grant of performance shares

Grants of free performance shares under selective plans become definitive only at the end of a three-year vesting period, subject to fulfillment of the applicable presence and performance conditions. At the end of the vesting period, and provided that the conditions are met, the TOTAL shares are definitively granted to the beneficiaries, who must then hold them for at least two years (holding period). All shares granted are subject to the presence condition.

For beneficiaries employed by a non-French company on the grant date, the vesting period for free shares may be increased to four years, in which case there is no mandatory holding period. Since 2011, all shares granted to senior executives have been subject to performance conditions.

#### • Stock options

Stock options have a term of eight years, with a strike price set at the average of the closing TOTAL share prices on Euronext Paris during the 20 trading days preceding the grant date, without any discount. Exercise of the options is subject to a presence condition and performance conditions, related to the Group's return on equity (ROE), which vary depending on the plan and category of beneficiary.

All options granted in 2011 have been subject to performance conditions. For options granted pursuant to the authorization given by the Extraordinary Shareholders' Meeting of May 24, 2016 (twenty-fifth resolution), the performance conditions will be assessed over a minimum period of three consecutive fiscal years. For earlier option plans, and subject to the applicable presence and performance conditions being met, options may be exercised only at the end of an initial two-year period and the shares resulting from the exercise may only be disposed of at the end of a second two-year period.

Moreover, for the 2007 to 2011 option plans, the shares resulting from the exercise of options by beneficiaries employed by a non-French company on the grant date may be disposed of or converted to bearer form at the end of the first two-year vesting period.

(1) The Group's executive officers (non-executive directors with the exception of the Chairman and Chief Executive Officer) include the members of the Executive Committee, the four Senior Vice Presidents of the Group central functions who are members of the Group Performance Management Committee (HSE, Strategy & Climate, Communications, Legal) and the Treasurer.

(2) Chairman and Chief Executive Officer and Chairman of the Executive Committee.

(3) Member of the Executive Committee.

## 4.2. Follow-up of grants to the executive directors

### 4.2.1. Stock options

No stock options have been granted since September 14, 2011. Until that date, the Company's executive directors in office at the time of the decision were granted stock options as part of broader grant plans approved by the Board of Directors for certain Group employees and senior executives. The options granted to the executive directors were subject to the same requirements applicable to the other beneficiaries of the grant plans.

For the options granted between 2007 and 2011, the Board of Directors made the exercise of the options granted to the executive directors in office contingent upon a presence condition and performance conditions based on the Group's ROE and ROACE. The grant rate of the performance-related options under the 2009, 2010 and 2011 plans was 100%. It had been 60% for the 2008 plan.

All the options granted to Mr. Pouyanné outstanding at December 31, 2016 represented 0.0019% of the Company's share capital<sup>(1)</sup> on that date.

### Stock options exercised in fiscal year 2016 by each executive director (AMF Table No. 5)

	Plan No. and date	Number of options exercised during the fiscal year	Strike price
<b>Patrick Pouyanné</b> Chairman and Chief Executive Officer since December 19, 2015	2010 Plan 09/14/2010	16,000	38.20

### 4.2.2. Grant of performance shares

Mr. Pouyanné is granted performance shares as part of the broader grant plans approved by the Board of Directors for certain Group

employees. The performance shares granted to him are subject to the same requirements applicable to the other beneficiaries of the grant plans.

(1) Based on a capital of 2,430,365,862 shares.

Summary tables

**Free shares granted to each director<sup>(b)</sup> in fiscal year 2016 by the issuer and by any Group company (AMF Table No. 6)**

	Plan No. and date	Number of shares granted during the fiscal year	Valuation of the shares (€) <sup>(a)</sup>	Acquisition date	Date of transferability	Performance conditions
<b>Patrick Pouyanné</b> Chairman and Chief Executive Officer	2016 Plan 07/27/2016	60,000	2,561,100	07/28/2019	07/29/2021	The performance conditions are the following: <ul style="list-style-type: none"> <li>– for 50% of the performance shares granted, the Company will be ranked each year against its peers<sup>(c)</sup> during the three vesting years (2016, 2017 and 2018) based on the TSR criterion using the average closing market price expressed in dollars over one quarter at the beginning and end of each three-year period (Q4 year N vs./Q4 year N-3);</li> <li>– for 50% of the performance shares granted, the Company will be ranked each year against its peers<sup>(c)</sup> using the annual variation in net cash flow per share expressed in dollars criterion. For further details, refer to point 2.1.2 of this chapter.</li> </ul>
<b>Marc Blanc</b> Director representing employees since November 4, 2014	2016 Plan 07/27/2016	-	-	-	-	
<b>Charles Keller</b> Director representing employee shareholders until May 24, 2016	2016 Plan 07/27/2016	n/a	-	-	-	
<b>Renata Perycz</b> Director representing employee shareholders since May 24, 2016	2016 Plan 07/27/2016	160	6,829.6	07/28/2019	07/29/2021	
<b>Total</b>		<b>60,160</b>	<b>2,567,929.6</b>			

(a) The valuation of the shares was calculated on the grant date according to the method used for the Consolidated Financial Statements.

(b) List of executive and non-executive directors who had this status during fiscal year 2016.

(c) ExxonMobil, Royal Dutch Shell, BP and Chevron.

**Free shares that have become transferable for each director<sup>(a)</sup> (AMF Table No. 7)**

	Plan No. and date	Number of shares that become transferable during the fiscal year	Vesting conditions
<b>Patrick Pouyanné</b> Chairman and Chief Executive Officer	2013 Plan 07/25/2013	14,175	Shares are subject to a performance condition based on the Group's average ROE in fiscal years 2013, 2014 and 2015. For beneficiaries other than senior executives, the performance condition applies to shares in excess of the first 100. For the 2013 plan, pursuant to performance condition, the acquisition rate was 63%.
<b>Marc Blanc</b> Director representing employees since November 4, 2014	2013 Plan 07/25/2013	-	
<b>Charles Keller</b> Director representing employee shareholders until May 24, 2016	2013 Plan 07/25/2013	n/a	
<b>Renata Perycz</b> Director representing employee shareholders since May 24, 2016	2013 Plan 07/25/2013	119	

(a) List of executive and non-executive directors who had this status during fiscal year 2016.

## 4.3. Follow-up of TOTAL stock option plans as of December 31, 2016

### 4.3.1. Breakdown of TOTAL stock option grants by category of beneficiary

The breakdown of TOTAL stock options granted by category of beneficiary (executive officers, other senior executives and other employees) for each of the plans in effect during fiscal year 2016 is as follows:

		Number of beneficiaries	Number of notified options	Percentage	Average number of options per beneficiary
<b>2008 Plan<sup>(b)</sup>: Subscription options</b>					
Granted on October 9, 2008, pursuant to the decision of the Board of Directors of September 9, 2008 Strike price: €42.90; discount: 0.0%	Executive officers <sup>(a)</sup>	26	1,227,500	27.6%	47,212
	Other senior executives	298	1,988,420	44.7%	6,673
	Other employees	1,690	1,233,890	27.7%	730
	<b>Total</b>	<b>2,014</b>	<b>4,449,810</b>	<b>100%</b>	<b>2,209</b>
<b>2009 Plan<sup>(b)</sup>: Subscription options</b>					
Decision of the Board of Directors of September 15, 2009 Strike price: €39.90; discount: 0.0%	Executive officers <sup>(a)</sup>	26	1,201,500	27.4%	46,212
	Other senior executives	284	1,825,540	41.6%	6,428
	Other employees	1,742	1,360,460	31.0%	781
	<b>Total</b>	<b>2,052</b>	<b>4,387,500</b>	<b>100%</b>	<b>2,138</b>
<b>2010 Plan<sup>(b)</sup>: Subscription options</b>					
Decision of the Board of Directors of September 14, 2010 Strike price: €38.20; discount: 0.0%	Executive officers <sup>(a)</sup>	25	1,348,100	28.2%	53,924
	Other senior executives	282	2,047,600	42.8%	7,261
	Other employees	1,790	1,392,720	29.0%	778
	<b>Total</b>	<b>2,097</b>	<b>4,788,420</b>	<b>100%</b>	<b>2,283</b>
<b>2011 Plan<sup>(b)</sup>: Subscription options</b>					
Decision of the Board of Directors of September 14, 2011 Strike price: €33.00; discount: 0.0%	Executive officers <sup>(a)</sup>	29	846,600	55.7%	29,193
	Other senior executives	177	672,240	44.3%	3,798
	Other employees	-	-	-	-
	<b>Total</b>	<b>206</b>	<b>1,518,840</b>	<b>100%</b>	<b>7,373</b>

(a) Members of the Management Committee and the Treasurer, as defined on the date of the Board meeting granting the performance shares.

(b) The grant rate of performance-related options was 60% for the 2008 plan and 100% for the 2009, 2010 and 2011 plans.

For the 2008 and 2009 stock option plans, the Board of Directors decided that for each beneficiary of more than 25,000 options, one third of the options granted in excess of that number would be subject to a performance condition.

For the 2010 stock option plan, a portion of the options granted to beneficiaries of more than 3,000 options are subject to a performance condition. For the 2011 stock option plan, all the options are subject to a performance condition.

Since September 14, 2011, the Board of Directors has not granted any stock options.

### 4.3.2. Breakdown of TOTAL stock option plans

#### History of stock option grants – Information on stock options (AMF Table No. 8)

	2008 Plan	2009 Plan	2010 Plan	2011 Plan	Total
Type of options	Subscription options	Subscription options	Subscription options	Subscription options	
Date of the Shareholders' Meeting	05/11/2007	05/11/2007	05/21/2010	05/21/2010	
Date of the Board meeting/grant date <sup>(a)</sup>	10/09/2008	09/15/2009	09/14/2010	09/14/2011	
<b>Total number of options granted by the Board of Directors, including to:</b>	<b>4,449,810</b>	<b>4,387,620</b>	<b>4,788,420</b>	<b>1,518,840</b>	<b>15,144,690</b>
Executive and non-executive directors <sup>(b)</sup>	30,000	30,000	40,000	30,400	130,400
– P. Pouyanné	30,000	30,000	40,000	30,400	130,400
– M. Blanc	n/a	n/a	n/a	n/a	n/a
– C. Keller	n/a	n/a	n/a	n/a	n/a
– R. Perycz	n/a	n/a	n/a	n/a	n/a
Date as of which the options may be exercised:	10/10/2010	09/16/2011	09/15/2012	09/15/2013	
Expiration date	10/09/2016	09/15/2017	09/14/2018	09/14/2019	
Strike price (€) <sup>(c)</sup>	42.90	39.90	38.20	33.00	
<b>Cumulative number of options exercised as of December 31, 2016</b>	<b>2,537,634</b>	<b>2,576,047</b>	<b>1,816,986</b>	<b>888,112</b>	<b>7,818,779</b>
<b>Cumulative number of options canceled as of December 31, 2016</b>	<b>1,912,176</b>	<b>32,520</b>	<b>91,197</b>	<b>4,400</b>	<b>2,040,293</b>
Number of options:					
– Outstanding as of January 1, 2016	2,561,502	2,710,783	3,323,246	722,309	9,317,840
– Granted in 2016	-	-	-	-	-
– Canceled in 2016 <sup>(d)</sup>	1,794,304	-	-	-	1,794,304
– Exercised in 2016	767,198	931,730	443,009	95,981	2,237,918
<b>Outstanding as of December 31, 2016</b>	<b>-</b>	<b>1,779,053</b>	<b>2,880,237</b>	<b>626,328</b>	<b>5,285,618</b>

(a) The grant date is the date of the Board meeting granting the options, except for the grant of stock options on October 9, 2008 approved by the Board on September 9, 2008.

(b) List of executive and non-executive directors who had this status during fiscal year 2016. The directorships of Messrs. Keller and Desmarest ended on May 24, 2016.

(c) The strike price is the average closing price of TOTAL's share on Euronext Paris during the 20 trading days preceding the option grant date, without any discount.

(d) The 1,794,304 options canceled in 2016 were unexercised options that expired on October 9, 2016 due to the expiration of the 2008 stock option plan.

If all the stock options outstanding at December 31, 2016 were exercised, the corresponding shares would represent 0.22%<sup>(1)</sup> of the Company's share capital on that date.

### 4.3.3. Stock options granted to the 10 employees (other than executive or non-executive directors) receiving the largest number of options/Stock options exercised by the 10 employees (other than executive or non-executive directors) exercising the largest number of options (AMF Table No. 9)

	Total number of options granted/exercised	Average weighted strike price (€)	2008 Plan 10/09/2008 <sup>(a)</sup>	2009 Plan 09/15/2009	2010 Plan 09/14/2010	2011 Plan 09/14/2011
Options granted in fiscal year 2016 by TOTAL S.A. and its affiliates <sup>(b)</sup> to each of the 10 TOTAL S.A. employees (other than executive or non-executive directors) receiving the largest number of options (aggregate – not individual information)	-	-	-	-	-	-
Options held on TOTAL S.A. and its affiliates <sup>(b)</sup> and exercised in fiscal year 2016 by the 10 TOTAL S.A. employees (other than executive or non-executive directors) at the date of the exercises who purchased or subscribed for the largest number of shares (aggregate – not individual information)	315,183	39.67	38,700	207,900	54,900	13,683

(a) The grant date is the date of the Board meeting granting the options, except for the grant of stock options on October 9, 2008 approved by the Board on September 9, 2008.

(b) Pursuant to the conditions of Article L. 225-180 of the French Commercial Code.

(1) Based on a capital of 2,430,365,862 shares.

## 4.4. Follow-up of TOTAL free share grants as of December 31, 2016

### 4.4.1. Breakdown of TOTAL performance share grants by category of beneficiary

The following table gives a breakdown of TOTAL performance share grants by category of beneficiary (executive officers, other senior executives and other employees):

		Number of beneficiaries	Number of notified shares	Percentage	Average number of shares per beneficiary
<b>2012 Plan<sup>(a)</sup></b>					
Decision of the Board of Directors of July 26, 2012	Executive officers <sup>(b)</sup>	33	416,100	9.7%	12,609
	Other senior executives	274	873,000	20.3%	3,186
	Other employees	9,698	3,006,830	70.0%	310
	<b>Total</b>	<b>10,005</b>	<b>4,295,930</b>	<b>100%</b>	<b>429</b>
<b>2013 Plan</b>					
Decision of the Board of Directors of July 25, 2013	Executive officers <sup>(b)</sup>	32	422,600	9.5%	13,206
	Other senior executives	277	934,500	20.9%	3,374
	Other employees <sup>(c)</sup>	9,625	3,107,100	69.6%	323
	<b>Total</b>	<b>9,934</b>	<b>4,464,200</b>	<b>100%</b>	<b>449</b>
<b>2014 Plan</b>					
Decision of the Board of Directors of July 29, 2014	Executive officers <sup>(b)</sup>	32	421,200	9.4%	13,163
	Other senior executives	281	975,300	21.7%	3,471
	Other employees <sup>(c)</sup>	9,624	3,089,800	68.9%	321
	<b>Total</b>	<b>9,937</b>	<b>4,486,300</b>	<b>100%</b>	<b>451</b>
<b>2015 Plan</b>					
Decision of the Board of Directors of July 28, 2015	Executive officers <sup>(d)</sup>	13	264,600	5.6%	20,354
	Other senior executives	290	1,132,750	23.8%	3,906
	Other employees <sup>(c)</sup>	10,012	3,364,585	70.6%	336
	<b>Total</b>	<b>10,315</b>	<b>4,761,935</b>	<b>100%</b>	<b>462</b>
<b>2016 Plan</b>					
Decision of the Board of Directors of July 27, 2016	Executive officers <sup>(d)</sup>	12	269,900	4.8%	22,492
	Other senior executives	279	1,322,300	23.4%	4,739
	Other employees <sup>(c)</sup>	10,028	4,047,200	71.8%	404
	<b>Total</b>	<b>10,319</b>	<b>5,639,400</b>	<b>100%</b>	<b>547</b>

(a) For the 2012 and 2013 plans, the share acquisition rate related to the ROE performance condition was 100% and 63%, respectively.

(b) Members of the Management Committee and the Treasurer, as defined on the date of the Board meeting granting the performance shares.

(c) Mr. Keller, a TOTAL S.A. employee and a TOTAL S.A. director representing employee shareholders from May 17, 2013 to May 24, 2016, was granted 400 performance shares under the 2013 plan and 400 performance shares under the 2014 plan. He was not granted any shares under the 2015 or 2016 plans. Mr. Blanc, a TOTAL S.A. employee and a TOTAL S.A. director representing employees since November 4, 2014, was not granted any shares under the 2014, 2015 and 2016 plans. Ms. Perycz, an employee of the Group and a TOTAL S.A. director representing employees shareholders since May 24, 2016, was granted 160 shares under the 2016 plan.

(d) Group's executive officers as defined on the date of the Board meeting granting the performance shares. On that date, the Group's executive officers included the members of the Executive Committee, the five Senior Vice Presidents of the Group central functions who are members of the Group Performance Management Committee (Corporate Communications, Human Resources, Legal, Industrial Safety, Strategy and Business Intelligence) and the Treasurer.

The performance shares, which were previously bought back by the Company on the market, are definitively granted to their beneficiaries at the end of a three-year vesting period from the grant date. For the shares granted under the 2012 plan, the vesting period was two years.

The definitive grant of performance shares is subject to a presence condition and performance conditions.

For the 2016 plan, the applicable performance conditions are the following:

- for 50% of the performance shares granted, the Company will be ranked each year against its peers<sup>(1)</sup> during the three vesting

years (2016, 2017 and 2018) based on the TSR criterion using the average closing market price expressed in dollars over one quarter at the beginning and end of each three-year period (Q4 year N vs./Q4 year N-3). The dividend will be considered reinvested based on the last market price on the ex-dividend date; and

- for 50% of the performance shares granted, the Company will be ranked each year against its peers<sup>(1)</sup> using the annual variation in net cash flow per share expressed in dollars criterion.

In addition, shares that have been definitively granted cannot be disposed of before the end of a mandatory two-year holding period.

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.

#### 4.4.2. Breakdown of TOTAL performance share plans

##### History of TOTAL performance share grants – Information on performance shares granted (AMF Table No. 10)

	2012 Plan	2013 Plan	2014 Plan	2015 Plan	2016 Plan
Date of the Shareholders' Meeting	05/13/2011	05/13/2011	05/16/2014	05/16/2014	05/24/2016
Date of Board meeting/grant date	07/26/2012	07/25/2013	07/29/2014	07/28/2015	07/27/2016
Closing price on grant date	€36.120	€40.005	€52.220	€43.215	€42.685
Average purchase price per share paid by the Company	€38.810	€40.560	€48.320	€45.150	€42.22
Total number of performance shares granted, including to:	4,295,930	4,464,200	4,486,300	4,761,935	5,639,400
Executive and non-executive directors <sup>(a)</sup>	22,500	22,900	25,400	48,000	60,160
– P. Pouyanné	22,500 <sup>(b)</sup>	22,500 <sup>(b)</sup>	25,000 <sup>(b)</sup>	48,000	60,000
– M. Blanc	n/a	n/a	-	-	-
– C. Keller	n/a	400	400	-	n/a
– R. Perycz	n/a	n/a	n/a	n/a	160
Start of the vesting period	07/26/2012	07/25/2013	07/29/2014	07/28/2015	07/27/2016
Definitive grant date, subject to the conditions set (end of the vesting period)	07/27/2014	07/26/2016	07/30/2017	07/29/2018	07/28/2019
Disposal possible from (end of the mandatory holding period)	07/27/2016	07/26/2018	07/30/2019	07/29/2020	07/29/2021
<b>Number of free shares:</b>					
– Outstanding as of January 1, 2016	-	4,350,830	4,402,460	4,760,505	-
– Notified in 2016	-	-	-	-	5,639,400
– Canceled in 2016	-	(1,303,732)	(37,100)	(29,170)	(1,730)
– Definitively granted in 2016 <sup>(c)</sup>	-	(3,047,098)	(860)	(600)	(110)
<b>Outstanding as of December 31, 2016</b>	<b>-</b>	<b>-</b>	<b>4,364,500</b>	<b>4,730,735</b>	<b>5,637,560</b>

(a) List of executive and non-executive directors who had this status during fiscal year 2016.

(b) Shares granted in respect of his previous salaried duties.

(c) Definitive grants completed early following the death of the beneficiaries of shares for the respective plan.

If all the performance shares outstanding at December 31, 2016 were definitively granted, they would represent 0.61%<sup>(1)</sup> of the Company's share capital on that date.

#### 4.4.3. Performance shares granted to the 10 employees (other than executive and non-executive directors) receiving the largest number of performance shares

	Number of performance shares notified/definitively granted	Grant date	Definitive grant date (end of the vesting period)	Date of transferability (end of the holding period)
Performance share grants approved by the Board of Directors at its meeting on July 27, 2016 to the 10 TOTAL S.A. employees (other than executive and non-executive directors on the date of the decision) receiving the largest number of performance shares <sup>(a)</sup>	221,000	07/27/2016	07/28/2019	07/29/2021
Performance shares definitively granted in fiscal year 2016 to the 10 TOTAL S.A. employees (other than executive and non-executive directors on the date of the decision) receiving the largest number of performance shares	85,932	07/25/2013	07/26/2016	07/26/2018

(a) These shares will be definitively granted to their beneficiaries at the end of a three-year vesting period, i.e., on July 28, 2019, subject to two performance conditions being met (refer to point 4.4.1 of this chapter). The free shares that have been definitively granted cannot be disposed of before the end of a two-year holding period, i.e., from July 29, 2021.

(1) Based on a capital of 2,430,365,862 shares.

## 6 Compensation of the administration and management bodies

Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

# 5. Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

The table below summarizes the components of compensation due or granted to the Chairman and Chief Executive Officer for fiscal year 2016 by the Board of Directors, on the proposal of the Compensation Committee, and submitted to the Annual Shareholders' Meeting of May 26, 2017 for vote, in compliance with the recommendation of the AFEP-MEDEF Code (point 26).

### Summary table of the components of compensation for Mr. Patrick Pouyanné, Chairman and Chief Executive Officer

Components of compensation	Amount or accounting valuation submitted for vote	Presentation
<b>Components of compensation due or granted for fiscal year 2016</b>		
<b>Fixed compensation</b>	€1,400,000 (amount paid in 2016)	The compensation due to Mr. Pouyanné for his duties as Chairman and Chief Executive Officer for fiscal year 2016 is €1,400,000 (higher than in fiscal year 2015 following the Board of Directors' decision to appoint Patrick Pouyanné as Chairman and Chief Executive Officer of TOTAL S.A.).
<b>Annual variable compensation</b>	€2,339,400 (amount paid in 2017)	<p>The variable portion of Mr. Pouyanné's compensation for his duties as Chairman and Chief Executive Officer for fiscal year 2016 has been set at €2,339,400, corresponding to 167.10% (of a maximum of 180%) of his fixed annual compensation based on his performance.</p> <p>At its meeting on February 8, 2017, the Board of Directors reviewed the level of achievement of the economic parameters based on the targets set by the Board of Directors at its meeting on December 16, 2015. The Board of Directors also assessed the Chairman and Chief Executive Officer's personal contribution on the basis of the four objective and operational target criteria set during its meeting on December 16, 2015.</p> <p>The Board of Directors assessed achievement of the targets set for the economic parameters as follows:</p> <ul style="list-style-type: none"><li>– the safety criterion was assessed based on the achievement of an annual TRIR (Total Recordable Injury Rate) target and the number of accidental deaths per million hours worked, FIR (Fatality Incident Rate), compared with those of four large oil companies<sup>(1)</sup>. The Board of Directors noted that the target of a TRIR lower than 1.15 was fully achieved in 2016. It also noted that the number of accidental deaths per million hours worked, FIR (Fatality Incident Rate), the best among the panel of majors. It therefore set the portion for this criterion at 20% of the fixed compensation (of a maximum of 20%);</li><li>– for the return on equity (ROE) criterion<sup>(2)</sup>, the Board of Directors noted that, in 2016, the ROE was 8.7%, which led the portion for this criterion to be set at 17.10% of the fixed compensation for fiscal year 2016 (of a maximum of 30%);</li><li>– for the net debt-to-equity ratio criterion<sup>(3)</sup>, the Board of Directors noted that, in 2016, the Group's net debt-to-equity ratio is less than 30%, which led the portion for this criterion to be set at 40% of the fixed compensation for fiscal year 2016 (of a maximum of 40%);</li></ul>

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.

(2) The Group measures the return on equity as the ratio of adjusted consolidated net income to average adjusted shareholders' equity between the beginning and the end of the period. Adjusted shareholders' equity for fiscal year 2016 is calculated after payment of a dividend of €2.45 per share, subject to approval by the Annual Shareholders' Meeting on May 26, 2017. In 2015, the ROE was 11.5%.

(3) For its internal management and external communication purposes, the Group calculates a net debt-to-equity ratio by dividing its net financial debt by its adjusted shareholders' equity. The 2016 adjusted shareholders' equity is calculated after payment of a dividend of €2.45 per share, subject to approval by the Annual Shareholders' Meeting on May 26, 2017. In 2016, the net debt-to-equity ratio was 27.1%. In 2015, it was 28.3%.



Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

Components of compensation	Amount or accounting valuation submitted for vote	Presentation
<b>Components of compensation due or granted for fiscal year 2016</b>		
<b>Annual variable compensation (continued)</b>		<p>– the criterion related to the change in the Group's adjusted net income (ANI) was assessed by comparison with those of the four large oil companies<sup>(1)</sup>. The Board of Directors noted that the increase in the Group's three-year average ANI was better than that of the panel<sup>(2)</sup>, which led the portion for this criterion to be set at 50% of the fixed compensation for fiscal year 2016 (of a maximum of 50%).</p> <p>Regarding the Chairman and Chief Executive Officer's personal contribution, the Board of Directors determined that the targets set were largely achieved, particularly those related to the increase in oil and gas production (+4.5% in 2016 compared to 2015), the successful strategic negotiations with producing countries (acquisition of an interest in the giant Al-Shaheen oil field in Qatar for a period of 25 years, signing of a heads of agreement with the Iranian state-owned company to develop phase 11 of South Pars, strategic alliance with Petrobras in Brazil) and the successful managerial transition (implementation of the project "One Total, one ambition", acquisition of Saft Groupe which permitted the integration of electricity storage solutions in the Group's portfolio, acquisition of the gas distributor Lampiris, sale of Atotech, renewal of the Executive Committee as of September 1, 2016). CSR performance was also considered fully satisfactory based on the decrease of the Group's CO<sub>2</sub> emissions (-7% in 2016 compared to 2015) and on the improvement of the Group's position in the rankings published by non-financial rating agencies. The Chairman and Chief Executive Officer's personal contribution was therefore set at 40% of the fixed compensation (of a maximum of 40%).</p>
<b>Multi-year or deferred variable compensation</b>	n/a	The Board of Directors has not granted any multi-year or deferred variable compensation.
<b>Extraordinary compensation</b>	n/a	The Board of Directors has not granted any extraordinary compensation.
<b>Directors' fees</b>	n/a	Mr. Pouyanné does not receive directors' fees for his duties at TOTAL S.A or at the companies it controls.
<b>Stock options, performance shares (and all other forms of long-term compensation)</b>	€2,561,100 (accounting valuation)	<p>On July 27, 2016, Mr. Pouyanné was granted 60,000 existing shares of the Company (corresponding to 0.002% of the share capital) pursuant to the authorization of the Company's Combined Shareholders' Meeting of May 24, 2016 (twenty-fourth resolution) subject to the conditions set out below. These shares were granted under a broader share plan approved by the Board of Directors on July 27, 2016, relating to 0.8% of the share capital in favor of more than 10,000 beneficiaries. The definitive grant of all the shares is subject to the beneficiary's continued presence within the Group during the vesting period and to performance conditions as described below. The definitive number of shares granted will be based on the comparative TSR (Total Shareholder Return) and the annual variation in net cash flow per share for fiscal years 2016 to 2018, applied as follows:</p> <p>– the Company will be ranked each year against its peers<sup>(1)</sup> during the three vesting years (2016, 2017 and 2018) based on the TSR criterion using the average closing market price expressed in dollars over one quarter at the beginning and end of each three-year period (Q4 year N vs./Q4 year N-3). The dividend will be considered reinvested based on the last market price on the ex-dividend date.</p> $TSR N = (\text{average price Q4 N} - \text{average price Q4 N-3} + \text{reinvested dividends}) / (\text{average price Q4 N-3});$

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.

(2) The annual ANI of each peer used for the calculation is determined by taking the average of the ANIs published by a panel of six financial analysts: UBS, Crédit Suisse, Barclays, Bank of America Merrill Lynch, JP Morgan and Deutsche Bank. If any of these analysts is unable to publish the results of one or more peers for a given year, it will be replaced, for the year and for the peer(s) in question, in the order listed, by an analyst included in the following additional list: Jefferies, HSBC, Société Générale, Goldman Sachs and Citi. The ANIs used will be set according to these analysts' last publications two business days after the publication of the press release announcing the "fourth quarter and annual results" of the last peer.

## 6 Compensation of the administration and management bodies

Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

Components of compensation	Amount or accounting valuation submitted for vote	Presentation
<b>Components of compensation due or granted for fiscal year 2016</b>		
<b>Stock options, performance shares (and all other forms of long-term compensation) (continued)</b>		<p>– the Company will be ranked each year against its peers<sup>(1)</sup> using the annual variation in net cash flow per share expressed in dollars criterion. Net cash flow is defined as cash flow from operating activities minus cash flow from investing activities including acquisitions and disposals. This data expressed in dollars will come from the consolidated statements of cash flow taken from the annual Consolidated Financial Statements of the Company and its peers for the fiscal years in question (based on the accounting standards applicable at the time of the closing of the accounts for such fiscal years).</p> <p>The number of shares used to calculate net cash flow per share will be the weighted-average number of diluted shares for the Company and each of its peers. Based on the ranking, a grant rate will be determined for each year: 1<sup>st</sup> 180% of the grant; 2<sup>nd</sup>: 130% of the grant; 3<sup>rd</sup>: 80% of the grant; 4<sup>th</sup> and 5<sup>th</sup>: 0%.</p> <p>For each of the criteria, the average of the three grant rates obtained (for each of the three fiscal years for which the performance conditions are assessed) will be rounded to the nearest 0.1 whole percent (0.05% being rounded to 0.1%) and capped at 100%. Each criterion will have a weight of 50% in the definitive grant rate. The definitive grant rate will be rounded to the nearest 0.1 whole percent (0.05% being rounded to 0.1%).</p> <p>The number of shares definitively granted, after confirmation of the performance conditions, will be rounded to the nearest whole number of shares in case of a fractional lot.</p> <p>In accordance with the provisions of the French Commercial Code, Mr. Pouyanné will, until the end of his term, be required to retain in the form of registered shares 50% of the gains on the acquired shares net of tax and national insurance contributions related to the shares granted. When Mr. Pouyanné holds<sup>(2)</sup> a volume of shares representing five times the fixed portion of his gross annual compensation, this percentage will be equal to 10%. If this condition is no longer met, the above-mentioned 50% holding requirement will again apply. Given this holding requirement, the availability of the performance shares is not dependent on the purchase of further shares in the Company.</p> <p>In addition, the Board of Directors has noted that, pursuant to the Board's Rules of Procedure applicable to all directors, the Chairman and Chief Executive Officer is not allowed to hedge the shares of the Company or any related financial instruments and has taken note of Mr. Pouyanné's commitment to abstain from such hedging operations with regard to the performance shares granted.</p> <p>The grant of performance shares to Mr. Pouyanné is subject to the same requirements applicable to the other beneficiaries of the performance share plan and were approved by the Board at its meeting on July 27, 2016. In particular, these provisions stipulate that the shares definitively granted at the end of the three-year vesting period will, after confirmation of fulfillment of the presence and performance conditions, be automatically recorded as pure registered shares on the start date of the two-year holding period and will remain non-transferable and unavailable until the end of the holding period.</p>
<b>Payment for assuming a position</b>	n/a	Mr. Pouyanné was not granted any payment for assuming his position.

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.

(2) In the form of shares or units of mutual funds invested in shares of the Company.

Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

Components of compensation	Amount or accounting valuation submitted for vote	Presentation
<b>Components of compensation due or granted for fiscal year 2016 that have been submitted to a vote at the Shareholders' Meeting by virtue of the regulated agreements and commitments procedure</b>		
<b>Valuation of in-kind benefits</b>	€58,945 (accounting valuation)	The Chairman and Chief Executive Officer has the use of a company car and is covered by the life insurance and health care plans paid for by the Company.
<b>Severance benefit</b>	None	<p>The Chairman and Chief Executive Officer is entitled to a benefit equal to two years of his gross compensation in the event of a forced departure related to a change of control or strategy. The calculation is based on the gross compensation (fixed and variable) of the 12 months preceding the date of termination or non-renewal of his term of office.</p> <p>The severance benefit will only be paid in the event of a forced departure related to a change of control or strategy. It will not be due in case of gross negligence or willful misconduct or if the Chairman and Chief Executive Officer leaves the Company of his own volition, accepts new responsibilities within the Group or may claim full retirement benefits within a short time period. Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, receipt of this severance benefit is contingent upon a performance-related condition applicable to the beneficiary, which is deemed to be fulfilled if at least two of the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the average ROE (return on equity) for the three years preceding the year in which the Chairman and Chief Executive Officer retires is at least 10%;</li> <li>- the average net debt-to-equity ratio for the three years preceding the year in which the Chairman and Chief Executive Officer retires is less than or equal to 30%;</li> <li>- growth in TOTAL's oil and gas production is greater than or equal to the average growth rate of four oil companies (ExxonMobil, Royal Dutch Shell, BP and Chevron) during the three years preceding the year in which the Chairman and Chief Executive Officer retires.</li> </ul>
<b>Retirement benefit</b>	None	<p>The Chairman and Chief Executive Officer is entitled to a retirement benefit equal to those available to eligible members of the Group under the French National Collective Bargaining Agreement for the Petroleum Industry. This benefit is equal to 25% of the fixed and variable annual compensation received during the 12 months preceding retirement.</p> <p>Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, receipt of this retirement benefit is contingent upon a performance-related condition applicable to the beneficiary, which is deemed to be fulfilled if at least two of the following criteria are met:</p> <ul style="list-style-type: none"> <li>- the average ROE (return on equity) for the three years preceding the year in which the Chairman and Chief Executive Officer retires is at least 10%;</li> <li>- the average net debt-to-equity ratio for the three years preceding the year in which the Chairman and Chief Executive Officer retires is less than or equal to 30%;</li> <li>- growth in TOTAL's oil and gas production is greater than or equal to the average growth rate of four oil companies (ExxonMobil, Royal Dutch Shell, BP and Chevron) during the three years preceding the year in which the Chairman and Chief Executive Officer retires. The retirement benefit cannot be combined with the severance benefit described above.</li> </ul>
<b>Non-compete compensation</b>	n/a	Mr. Pouyanné has not received any non-compete compensation.

## 6 Compensation of the administration and management bodies

Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

Components of compensation	Amount or accounting valuation submitted for vote	Presentation
Supplementary pension plan	None	<p>Pursuant to applicable legislation, the Chairman and Chief Executive Officer is eligible for the basic French Social Security pension and for pension benefits under the ARRCO and AGIRC supplementary pension plans.</p> <p>He also participates in the internal defined contribution pension plan applicable to all TOTAL S.A. employees, known as RECO SUP (Régime collectif et obligatoire de retraite supplémentaire à cotisations définies), covered by Article L. 242-1 of the French Social Security Code. The Company's commitment is limited to its share of the contributions paid to the insurance company that manages the plan. For fiscal year 2016, this pension plan represented a booked expense to TOTAL S.A. in favor of the Chairman and Chief Executive Officer of €2,317.</p> <p>The Chairman and Chief Executive Officer also participates in a supplementary defined benefit pension plan, covered by Article L. 137-11 of the French Social Security Code, set up and financed by the Company and approved by the Board of Directors on March 13, 2001, for which management is outsourced to two insurance companies effective January 1, 2012. This plan applies to all TOTAL S.A. employees whose compensation exceeds eight times the annual ceiling for calculating French Social Security contributions (PASS), set at €38,616 for 2016 (<i>i.e.</i>, €308,928), and above which there is no conventional pension plan.</p> <p>To be eligible for this supplementary pension plan, participants must have served for at least five years, be at least 60 years old and exercised his or her rights to retirement from the French Social Security. The benefits under this plan are subject to a presence condition under which the beneficiary must still be employed at the time of retirement. However, the presence condition does not apply if a beneficiary aged 55 or older leaves the Company at the Company's initiative or in case of disability. The length of service acquired by Mr. Pouyanné as a result of his previous salaried duties held at the Group since January 1, 1997 has been maintained for the benefit of this plan. The compensation taken into account to calculate the supplementary pension is the average gross annual compensation (fixed and variable portion) over the last three years. The amount paid under this plan is equal to 1.8% of the compensation falling between 8 and 40 times the PASS and 1% for the portion of the compensation falling between 40 and 60 times this ceiling, multiplied by the number of years of service up to a maximum of 20 years, subject to the performance condition set out below applicable to the Chairman and Chief Executive Officer. The sum of the annual supplementary pension plan benefits and other pension plan benefits (other than those set up individually and on a voluntary basis) may not exceed 45% of the average gross compensation (fixed and variable portion) over the last three years. In the event that this percentage is exceeded, the supplementary pension is reduced accordingly. The amount of the supplementary pension determined in this way is indexed to the ARRCO pension point.</p> <p>The supplementary pension includes a clause whereby 60% of the amount will be paid to beneficiaries in the event of death after retirement.</p> <p>To ensure that the acquisition of additional pension rights under this defined-benefit pension plan is subject to performance conditions to be defined pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code amended by law No. 2015-990 of August 6, 2015, the Board of Directors noted the existence of the Chief Executive Officer's pension rights under the above-mentioned pension plan, immediately before his appointment as Chairman, for the period from January 1, 1997 to December 18, 2015.</p> <p>The conditional rights granted for the period from January 1, 1997 to December 18, 2015 (inclusive), acquired without performance conditions, correspond to a replacement rate equal to 34.14% for the portion of the base compensation falling between 8 and 40 times the PASS and a replacement rate of 18.96% for the portion of the base compensation falling between 40 and 60 times the PASS.</p>

Summary table of compensation components due or granted to the Chairman and Chief Executive Officer for fiscal year 2016, as submitted to the Ordinary Shareholders' Meeting for vote (AFEP-MEDEF Code, point 26)

Components of compensation	Amount or accounting valuation submitted for vote	Presentation
<p><b>Supplementary pension plan (continued)</b></p>		<p>The conditional rights granted for the period from December 19, 2015 to December 31, 2016 are subject to the performance condition described below and correspond to a maximum replacement rate equal to 1.86% for the portion of the base compensation falling between 8 and 40 times the PASS and a replacement rate equal to 1.04% for the portion of the base compensation falling between 40 and 60 times the PASS.</p> <p>Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, on December 16, 2015 the Board of Directors decided to make the acquisition of these conditional rights for the period from December 19, 2015 to December 31, 2016, subject to a condition related to the beneficiary's performance, which is considered fulfilled if the variable portion of the Chairman and Chief Executive Officer's compensation paid in 2017 for fiscal year 2016 reaches 100% of the base salary due for fiscal year 2016. In the event that the variable portion does not reach 100% of the base salary, the rights granted will be calculated on a prorata basis.</p> <p>On February 8, 2017, the Board of Directors noted that the specified performance condition was fully met and therefore confirmed the acquisition by Mr. Pouyanné of additional pension rights for the period from December 19, 2015 to December 31, 2016 under this defined-benefit pension plan.</p> <p>The Board also noted that Mr. Pouyanné would no longer be able to acquire additional pension rights under this plan given the rules for determining pension rights set out in the plan and the 20 years of service of Mr. Pouyanné as of December 31, 2016.</p> <p>The commitments made by TOTAL S.A. to its Chairman and Chief Executive Officer regarding the supplementary defined benefit and similar pension plans therefore represent, at December 31, 2016, a gross annual pension estimated at €599,320 based on the length of service acquired as of December 31, 2016 (<i>i.e.</i>, 20 years of service), corresponding to 16.03% of Mr. Pouyanné's gross annual compensation consisting of the annual fixed portion for 2016 (<i>i.e.</i>, €1,400,000) and the variable portion paid in 2017 for fiscal year 2016 (<i>i.e.</i>, €2,339,400). Nearly the full amount of TOTAL S.A.'s commitments under these supplementary and similar retirement plans (including the retirement benefit) is outsourced to insurance companies and the non-outsourced balance is evaluated annually and adjusted through a provision in the accounts. The amount of these commitments as of December 31, 2016 is €16.1 million for the Chairman and Chief Executive Officer (€16.4 million for the Chairman and Chief Executive Officer and the executive and non-executive directors covered by these plans). These amounts represent the gross value of TOTAL S.A.'s commitments to these beneficiaries based on the estimated gross annual pensions as of December 31, 2016 and the statistical life expectancy of the beneficiaries.</p> <p>The total amount of all the pension plans in which Mr. Pouyanné participates represents, at December 31, 2016, a gross annual pension estimated at €690,600 based on the length of service acquired as of December 31, 2016 (<i>i.e.</i>, 20 years of service), corresponding to 18.47% of Mr. Pouyanné's gross annual compensation defined above (annual fixed portion for 2016 and variable portion paid in 2017 for fiscal year 2016).</p> <p>In line with the principles for determining the compensation of executive directors as set out in the AFEP-MEDEF Code which the Company uses as a reference, the Board of Directors took into account the benefit accruing from participation in the pension plans when determining the Chairman and Chief Executive Officer's compensation.</p>
<p><b>Approval by the Annual Shareholders' Meeting</b></p>	<p>-</p>	<p>The commitments made to the Chairman and Chief Executive Officer regarding the pension and insurance plans, the retirement benefit and the severance benefit (in the event of forced departure related to a change of control or strategy) were authorized by the Board of Directors on December 16, 2015 and approved by the Annual Shareholders' Meeting on May 24, 2016.</p>

## 6 Compensation of the administration and management bodies

Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)

# 6. Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)

In accordance with the provisions of Article L. 225-37-2 of the French Commercial Code, this report attached to the report referred to in Articles L. 225-100 and L. 225-102 describes the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer as a result of his duties. These components will be submitted to the Annual Shareholders' Meeting of May 26, 2017 for approval.

This report reviewed by the Compensation Committee was approved by the Board of Directors.

The compensation policy for the Chairman and Chief Executive Officer is approved by the Board of Directors on the proposal of the Compensation Committee. It is based on the general principles for

determining the compensation of the executive directors approved by the Board of Directors at its meeting on February 9, 2012, which have not been changed since then and are set out below.

At its meeting on March 15, 2017, the Board of Directors, on the proposal of the Compensation Committee, approved the compensation policy for the Chairman and Chief Executive Officer applicable for fiscal year 2017 and presented in point 6.2.

In line with the principles for determining the compensation of executive directors as set out in the AFEF-MEDEF Code which the Company uses as a reference, the Board of Directors took into account the benefit accruing from participation in the pension plans when determining the compensation policy for the Chairman and Chief Executive Officer for fiscal year 2017.

## 6.1. General principles for determining the compensation of the executive directors

The general principles for determining the compensation and other benefits granted to the executive directors of TOTAL S.A. are as follows:

- compensation and benefits for the executive directors are set by the Board of Directors on the proposal of the Compensation Committee. Such compensation must be reasonable and fair, in a context that values both teamwork and motivation within the Company. Compensation for the executive directors is based on the market, the work performed, the results obtained and the responsibilities assumed;
- compensation for the executive directors includes a fixed portion and a variable portion. The fixed portion is reviewed at least every two years;
- the amount of the variable portion is reviewed each year and may not exceed a stated percentage of the fixed portion. Variable compensation is determined based on pre-defined quantitative and qualitative criteria that are periodically reviewed by the Board of Directors. Quantitative criteria are limited in number, objective, measurable and adapted to the Company's strategy;
- the variable portion rewards short-term performance and the progress made toward paving the way for medium-term development. It is determined in a manner consistent with the annual performance review of the executive directors and the Company's medium-term strategy.

The Board of Directors monitors the change in the fixed and variable portions of the executive directors' compensation over several years in light of the Company's performance;

- there is no specific pension plan for the executive directors. They are eligible for retirement benefits and pension plans available to certain employee categories in the Group under conditions determined by the Board;
- stock options and performance shares are designed to align the interests of the executive directors with those of the shareholders over the long term.

The grant of options and performance shares to the executive directors is reviewed in light of all the components of compensation of the person in question. No discount is applied when stock options are granted.

Stock options and performance shares are granted at regular intervals to prevent any opportunistic behavior. The exercise of options and the definitive grant of performance shares to which the executive directors are entitled are subject to performance conditions that must be met over several years. The Board of Directors determines the rules related to holding a portion of the shares resulting from the exercise of options and the performance shares definitively granted, which apply to the executive directors until the end of their term of office.

Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)

The executive directors cannot be granted stock options or performance shares when they leave office;

- after three years in office, the executive directors are required to hold at least the number of Company shares set by the Board;
- the components of compensation of the executive directors are made public after the Board of Directors' meeting at which they are approved.

The executive directors do not take part in any discussions or deliberations of the corporate bodies regarding items on the agenda of Board of Directors' meetings related to the assessment of their performance or the determination of the components of their compensation.

## 6.2. Compensation policy for the Chairman and Chief Executive Officer for fiscal year 2017

The compensation policy for the Chairman and Chief Executive Officer for fiscal year 2017, as approved by the Board of Directors on March 15, 2017, is presented below.

### Base salary of the Chairman and Chief Executive Officer (fixed compensation)

The Board of Directors decided to set Mr. Pouyanné's annual base salary (fixed compensation) for his duties as Chairman and Chief Executive Officer for fiscal year 2017 at €1,400,000 (same as the fixed portion due for fiscal year 2016).

The level of the Chairman and Chief Executive Officer's fixed compensation was set based on the responsibilities assumed and the compensation levels applied for executive directors of comparable companies (particularly CAC 40 companies).

### Annual variable portion of the Chairman and Chief Executive Officer's compensation

The Board of Directors also decided to set the maximum amount of the variable portion that could be paid to the Chairman and Chief Executive Officer for fiscal year 2017 at 180% of his base salary (same percentage as in fiscal year 2016). This ceiling was set based on the level applied by a benchmark sample of companies operating in the energy sectors.

As in 2016, the formula for calculating the variable portion of the Chairman and Chief Executive Officer's compensation for fiscal year 2017 uses economic parameters that refer to quantitative targets reflecting the Group's performance as well as the Chairman and Chief Executive Officer's personal contribution allowing a qualitative assessment of his management.

### Annual variable compensation due for fiscal year 2017 (expressed as a percentage of the base salary)

	Maximum percentage
Economic parameters	140%
– Safety – comparative	20%
– Return on equity (ROE)	30%
– Net debt-to-equity ratio	40%
– Adjusted net income (ANI) – comparative	50%
Personal contribution:	40%
– steering of the strategy and successful strategic negotiations with producing countries	10%
– achievement of production and reserve targets	10%
– performance and outlook with respect to Downstream activities	10%
– Corporate Social Responsibility (CSR) performance	10%
<b>Total</b>	<b>180%</b>

The parameters used include:

- change in safety, for up to 20% of the base salary, assessed through the achievement of an annual TRIR (Total Recordable Injury Rate) target and the number of accidental deaths per million hours worked, FIR (Fatality Incident Rate) compared to those of four large competitor oil companies<sup>(1)</sup>, as well as through changes in the Tier 1 + Tier 2 indicator<sup>(2)</sup>;
- return on equity (ROE) as published by the Group on the basis of its balance sheet and consolidated statement of income, for up to 30% of the base salary;
- net debt-to-equity ratio as published by the Group on the basis of its balance sheet and consolidated statement of income, for up to 40% of the base salary; and
- change in adjusted net income (ANI), for up to 50% of the base salary, determined on the basis of the financial statements published by the Group (in accordance with the accounting standards applicable at the time of the closing of the accounts for the fiscal years in question) and compared with the ANI values of four major oil companies<sup>(1)</sup> determined on the basis of estimates calculated by a group of leading financial analysts.

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.

(2) Tier 1 and Tier 2: indicator of the number of loss of primary containment events, with more or less significant consequences, as defined by the API 754 (for downstream) and IOGP 456 (for upstream) standards. Excluding acts of sabotage and theft.

## 6 Compensation of the administration and management bodies

Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)

The expected levels of achievement of the quantitative targets for determining the variable portion of the Chairman and Chief Executive Officer's compensation have been clearly defined but are not made public for reasons of confidentiality.

The Chairman and Chief Executive Officer's personal contribution, which may represent up to 40% of the base salary, is evaluated based on the following criteria:

- steering of the strategy and successful strategic negotiations with producing countries, for up to 10%;
- achievement of production and reserve targets, for up to 10%;
- performance and outlook with respect to Downstream activities, for up to 10%; and
- CSR performance, for up to 10%, notably taking into account climate issues in the Group's strategy as well as the Group's reputation in the domain of corporate social responsibility.

### Performance shares

Each year, the Chairman and Chief Executive Officer can be granted performance shares as part of the broader grant plans approved by the Board of Directors for certain Group employees. The performance shares granted to him are subject to the same requirements applicable to the other beneficiaries of the grant plans.

As in previous years, in 2017 the Board of Directors will consider offering a performance share plan to various beneficiaries, including the Chairman and Chief Executive Officer. The performance conditions would be based on the Company's ranking established each year against its peers<sup>(1)</sup> during the three vesting years (2017, 2018, 2019) using the TSR (Total Shareholder Return) criterion; and on the Company's ranking established each year against its peers<sup>(1)</sup> during the three vesting years (2017, 2018, 2019) using the annual variation in net cash flow per share expressed in dollars criterion. At the end of the three-year vesting period, the shares granted would need to be held for two years following their definitive grant.

### Commitments made by the Company to the Chairman and Chief Executive Officer (Article L. 225-102-1, paragraph 3, of the French Commercial Code)

The commitments made to the Chairman and Chief Executive Officer regarding the pension plans, the retirement benefit and the severance benefit to be paid in the event of forced departure related to a change of control or strategy, as well as the life insurance and health care benefits, approved by the Board of Directors on December 16, 2015 and by the Annual Shareholders' Meeting on May 24, 2016, in accordance with the provisions of Article L. 225-42-1 of the French Commercial Code, will not be likely to be changed before the expiration of the Chairman and Chief Executive Officer's term of office. They are presented below. It should be noted that Mr. Pouyanné already benefited from all these provisions when he was an employee of the Company, except for the commitment to pay severance benefits in the event of forced departure related to a change of control or strategy. It should also be noted that Mr. Pouyanné, who joined the Group on January 1, 1997, ended the employment contract that he previously had with TOTAL S.A. through his resignation at the time of his appointment as Chief Executive Officer on October 22, 2014.

### Pension plans

Pursuant to applicable legislation, the Chairman and Chief Executive Officer is eligible for the basic French Social Security pension and for pension benefits under the ARRCO and AGIRC supplementary pension plans.

He also participates in the internal defined contribution pension plan applicable to all TOTAL S.A. employees, known as RECOSUP (Régime collectif et obligatoire de retraite supplémentaire à cotisations définies), covered by Article L. 242-1 of the French Social Security Code. The Company's commitment is limited to its share of the contributions paid to the insurance company that manages the plan. For fiscal year 2016, this pension plan represented a booked expense to TOTAL S.A. in favor of the Chairman and Chief Executive Officer of €2,317.

The Chairman and Chief Executive Officer also participates in a supplementary defined benefit pension plan, covered by Article L. 137-11 of the French Social Security Code, set up and financed by the Company and approved by the Board of Directors on March 13, 2001, for which management is outsourced to two insurance companies effective January 1, 2012. This plan applies to all TOTAL S.A. employees whose compensation exceeds eight times the annual ceiling for calculating French Social Security contributions (PASS), set at €38,616 for 2016 (i.e., €308,928), and above which there is no conventional pension plan.

To be eligible for this supplementary pension plan, participants must have served for at least five years, be at least 60 years old and exercised his or her rights to retirement from the French Social Security. The benefits under this plan are subject to a presence condition under which the beneficiary must still be employed at the time of retirement. However, the presence condition does not apply to a beneficiary aged 55 or older leaves the Company at the Company's initiative or in case of disability.

The length of service acquired by Mr. Pouyanné as a result of his previous salaried duties held at the Group since January 1, 1997 has been maintained for the benefit of this plan. The compensation taken into account to calculate the supplementary pension is the average gross annual compensation (fixed and variable portion) over the last three years. The amount paid under this plan is equal to 1.8% of the compensation falling between 8 and 40 times the PASS and 1% for the portion of the compensation falling between 40 and 60 times this ceiling, multiplied by the number of years of service up to a maximum of 20 years, subject to the performance condition set out below applicable to the Chairman and Chief Executive Officer.

The sum of the annual supplementary pension plan benefits and other pension plan benefits (other than those set up individually and on a voluntary basis) may not exceed 45% of the average gross compensation (fixed and variable portion) over the last three years. In the event that this percentage is exceeded, the supplementary pension is reduced accordingly. The amount of the supplementary pension determined in this way is indexed to the ARRCO pension point.

The supplementary pension includes a clause whereby 60% of the amount will be paid to beneficiaries in the event of death after retirement.

(1) ExxonMobil, Royal Dutch Shell, BP and Chevron.



Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)

To ensure that the acquisition of additional pension rights under this defined-benefit pension plan is subject to performance conditions to be defined pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code amended by law No. 2015-990 of August 6, 2015, the Board of Directors noted the existence of the Chief Executive Officer's pension rights under the above-mentioned pension plan, immediately before his appointment as Chairman, for the period from January 1, 1997 to December 18, 2015.

The conditional rights granted for the period from January 1, 1997 to December 18, 2015 (inclusive), acquired without performance conditions, correspond to a replacement rate equal to 34.14% for the portion of the base compensation falling between 8 and 40 times the PASS and a replacement rate of 18.96% for the portion of the base compensation falling between 40 and 60 times the PASS.

The conditional rights granted for the period from December 19, 2015 to December 31, 2016 are subject to the performance condition described below and correspond to a maximum replacement rate equal to 1.86% for the portion of the base compensation falling between 8 and 40 times the PASS and a replacement rate equal to 1.04% for the portion of the base compensation falling between 40 and 60 times the PASS.

Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, the Board of Directors decided to make the acquisition of these conditional rights for the period from December 19, 2015 to December 31, 2016, subject to a condition related to the beneficiary's performance, which is considered fulfilled if the variable portion of the Chairman and Chief Executive Officer's compensation paid in 2017 for fiscal year 2016 reaches 100% of the base salary due for fiscal year 2016. In the event that the variable portion does not reach 100% of the base salary, the rights granted will be calculated on a prorata basis.

On February 8, 2017, the Board of Directors noted that the specified performance condition was fully met and therefore confirmed the acquisition by Mr. Pouyanné of additional pension rights for the period from December 19, 2015 to December 31, 2016.

The Board also noted that Mr. Pouyanné would no longer be able to acquire additional pension rights under this plan given the rules for determining pension rights set out in the plan and the 20 years of service of Mr. Pouyanné as of December 31, 2016.

The commitments made by TOTAL S.A. to its Chairman and Chief Executive Officer regarding the supplementary defined benefit and similar pension plans therefore represent, at December 31, 2016, a gross annual pension estimated at €599,320 based on the length of service acquired as of December 31, 2016 (*i.e.*, 20 years of service), corresponding to 16.03% of Mr. Pouyanné's gross annual compensation consisting of the annual fixed portion for 2016 (*i.e.*, €1,400,000) and the variable portion paid in 2017 for fiscal year 2016 (*i.e.*, €2,339,400).

Nearly the full amount of TOTAL S.A.'s commitments under these supplementary and similar retirement plans (including the retirement benefit) is outsourced to insurance companies and the non-outsourced balance is evaluated annually and adjusted through a provision in the accounts. The amount of these commitments as of December 31, 2016 is €16.1 million for the Chairman and Chief Executive Officer (€16.4 million for the Chairman and Chief Executive Officer and the executive and non-executive directors covered by these plans). These amounts represent the gross value of TOTAL S.A.'s commitments to these beneficiaries based on the estimated gross annual pensions as of December 31, 2016 and the statistical life expectancy of the beneficiaries.

The total amount of all the pension plans in which Mr. Pouyanné participates represents, at December 31, 2016, a gross annual pension estimated at €690,600 based on the length of service acquired as of December 31, 2016 (*i.e.*, 20 years of service), corresponding to 18.47% of Mr. Pouyanné's gross annual compensation defined above (annual fixed portion for 2016 and variable portion paid in 2017 for fiscal year 2016).

### Retirement benefit

The Chairman and Chief Executive Officer is entitled to a retirement benefit equal to those available to eligible members of the Group under the French National Collective Bargaining Agreement for the Petroleum Industry. This benefit is equal to 25% of the fixed and variable annual compensation received during the 12 months preceding retirement.

Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, receipt of this retirement benefit is contingent upon a performance-related condition applicable to the beneficiary, which is deemed to be fulfilled if at least two of the following criteria are met:

- the average ROE (return on equity) for the three years preceding the year in which the Chairman and Chief Executive Officer retires is at least 10%;
- the average net debt-to-equity ratio for the three years preceding the year in which the Chairman and Chief Executive Officer retires is less than or equal to 30%; and
- growth in TOTAL's oil and gas production is greater than or equal to the average growth rate of four oil companies (ExxonMobil, Royal Dutch Shell, BP and Chevron) during the three years preceding the year in which the Chairman and Chief Executive Officer retires.

The retirement benefit cannot be combined with the severance benefit described below.

### Severance benefit

The Chairman and Chief Executive Officer is entitled to a benefit equal to two years of his gross compensation in the event of a forced departure related to a change of control or strategy. The calculation is based on the gross compensation (fixed and variable) of the 12 months preceding the date of termination or non-renewal of his term of office.

The severance benefit will only be paid in the event of a forced departure related to a change of control or strategy. It will not be due in case of gross negligence or willful misconduct or if the Chairman and Chief Executive Officer leaves the Company of his own volition, accepts new responsibilities within the Group or may claim full retirement benefits within a short time period.

Pursuant to the provisions of Article L. 225-42-1 of the French Commercial Code, receipt of this severance benefit is contingent upon a performance-related condition applicable to the beneficiary, which is deemed to be fulfilled if at least two of the following criteria are met:

- the average ROE (return on equity) for the three years preceding the year in which the Chairman and Chief Executive Officer retires is at least 10%;
- the average net debt-to-equity ratio for the three years preceding the year in which the Chairman and Chief Executive Officer retires is less than or equal to 30%; and
- growth in TOTAL's oil and gas production is greater than or equal to the average growth rate of four oil companies (ExxonMobil,

## 6 Compensation of the administration and management bodies

Report on the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer (Article L. 225-37-2 of the French Commercial Code)

Royal Dutch Shell, BP and Chevron) during the three years preceding the year in which the Chairman and Chief Executive Officer retires.

### Life insurance and health care plans

The Chairman and Chief Executive Officer is covered by the following life insurance plans provided by various life insurance companies:

- an “incapacity, disability, life insurance” plan applicable to all employees, partly paid for by the Company, that provides for two options in case of death of a married employee: either the payment of a lump sum equal to five times the annual compensation up to 16 times the PASS, corresponding to a maximum of €3,138,240 in 2017, plus an additional amount if there is a dependent child or children, or the payment of a lump sum equal to three times the annual compensation up to 16 times the PASS, plus a survivor's pension and education allowance;
- a second “disability and life insurance” plan, fully paid by the Company, applicable to executive officers and senior executives

whose annual gross compensation is more than 16 times the PASS. This contract, signed on October 17, 2002, amended on January 28 and December 16, 2015, guarantees the beneficiary the payment of a lump sum, in case of death, equal to two years of compensation (defined as the gross annual fixed reference compensation (base France), which corresponds to 12 times the monthly gross fixed compensation paid during the month prior to death or sick leave, to which is added the highest amount in absolute value of the variable portion received during one of the five previous years of activity), which is increased to three years in case of accidental death and, in case of accidental permanent disability, a lump sum proportional to the degree of disability. The death benefit is increased by 15% for each dependent child.

Payments due under this contract are made after the deduction of any amount paid under the above-mentioned plan applicable to all employees.

The Chairman and Chief Executive Officer also has the use of a company car and is covered by the health care plan available to all employees.

### 6.3. Draft resolution prepared by the Board of Directors in accordance with Article L. 225-37-2 of the French Commercial Code (paragraph 1) submitted to the Ordinary Shareholders' Meeting of May 26, 2017

#### Approval of the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer

Voting under the conditions of quorum and majority required for Ordinary Shareholders' Meetings and in accordance with

Article L. 225-37-2 of the French Commercial Code, the shareholders approve the principles and criteria for the determination, breakdown and allocation of the fixed, variable and extraordinary components of the total compensation (including in-kind benefits) attributable to the Chairman and Chief Executive Officer, as detailed in the report attached to the report referred to in Articles L. 225-100 and L. 225-102 of the French Commercial Code, presented in the 2016 Registration Document (chapter 6, point 6).

# Social, environmental and societal information

1.	Social information	145
1.1.	Employment	145
1.2.	Organization of work	147
1.3.	Dialogue with employees	148
1.4.	Training	148
1.5.	Equal opportunity	149
2.	Safety, health and environment information	151
2.1.	Occupational health and safety	151
2.2.	Environmental protection	153
2.3.	Climate change	157
3.	Societal information	161
3.1.	A structured societal approach	161
3.2.	Dialogue and involvement with stakeholders	161
3.3.	Controlling the impact of the Group's activities	162
3.4.	Creating local value	163
3.5.	Partnerships and philanthropy	166
3.6.	Contractors and suppliers	167
3.7.	Fair operating practices	169
4.	Reporting scopes and method	172
4.1.	Reporting guidance	172
4.2.	Scopes	172
4.3.	Principles	173
4.4.	Details of certain indicators	173

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

TOTAL puts Corporate Social Responsibility (CSR) at the heart of its activities and conducts its operations according to the following principles of:

- protecting the safety and security of people and its facilities;
- limiting its environmental footprint;
- ensuring that its Code of Conduct is applied in its sphere of operations;
- incorporating the challenges of sustainable development in the exercise of its activities;
- increasing its local integration by placing dialogue with its stakeholders at the heart of its policy and contributing to the economic and social development of the regions where the Group has operations with the objective of creating shared value; and
- promoting equal opportunities and fostering diversity and cultural mix among its personnel.

The Group's CSR performance is measured by non-financial rating agencies. TOTAL has been included continuously in the FTSE4Good index (London Stock Exchange) since 2001 and in the Dow Jones Sustainability World Index (DJSI World – New York Stock Exchange) since 2004. TOTAL was listed in the DJSI Europe in 2016.

In terms of reporting, TOTAL refers to the IPIECA (global oil and gas industry association for environmental and social issues) guidance and to the Global Reporting Initiative (GRI). Detailed information on these reporting guidelines is available on the Group's website ([sustainable-performance.total.com](http://sustainable-performance.total.com)).

The reporting scopes and method concerning the information in this chapter are presented in point 4 below. The data presented in this section are provided on a current-scope basis.

TOTAL's ambition is to become the responsible energy major by supplying affordable energy to a growing population, taking the issue of climate into consideration and meeting its customers' new expectations. In 2016, this 20-year ambition was reflected in the One Total company project, which saw the introduction of a new organization, fully effective on January 1, 2017 (also refer to point 1.3 in chapter 2). This new organization is reflected in particular by the implementation of:

- a new Gas, Renewables & Power business segment, whose President is a member of the Executive Committee, which spearheads the Group's ambitions in low-carbon and energy efficiency businesses. This segment is also tasked with managing the Total Energy Ventures investment fund and activities to develop access to energy (*Awango by Total*);
- a Strategy-Innovation corporate division, which includes a Strategy & Climate division tasked with incorporating climate issues into the Group's strategy; and

- a People & Social Responsibility corporate division, whose President is a member of the Executive Committee, which includes a Human Resources division focused on its strategic missions, an HSE (Health Safety Environment) division bringing together all the central HSE divisions of the business segments, whose mission is to implement a strengthened HSE model, a Security division and a new Civil Society Engagement division that manages all the Group's initiatives in this field.

### TOTAL and the United Nations' Sustainable Development Goals

In 2015, the United Nations adopted the 17 Sustainable Development Goals (SDGs). These goals acknowledge the decisive role corporations can play in economic development and growth and ask of them to show creativity and innovation in finding solutions to global sustainable development challenges.

TOTAL is proactively committed to incorporating the SDGs into its activities, especially in those areas where its activities have the greatest impact or enable the Group to make a positive and differentiating contribution. This is particularly true for the following topics:

- **climate change** (SDG 13): in May 2016, TOTAL published a detailed report specifying how climate-related challenges are integrated in its strategy, and setting a 20-year ambition that takes into account the IEA's 2°C scenario (refer to point 2.3 below). An update of this report will be published in May 2017;
- **decent work and human rights** (SDGs 8 and 16): in July 2016, TOTAL became the first oil and gas company to publish a detailed report specifying how the Group incorporates respect for human rights in its activities. TOTAL strives to communicate transparently and indicate which actions have been taken to rise to the challenges the Group is facing (refer to point 3.7.2 below);
- **access to energy** (SDG 7): TOTAL's ambition is to supply affordable energy to growing populations (refer to point 3.4.5 below); and
- **biodiversity** (SDGs 14 and 15): TOTAL pursues an active policy to reduce the environmental footprint of its activities by paying particularly close attention to protected and sensitive zones (refer to point 2.2.5 below).

In 2016, TOTAL has committed to developing an action plan as promoted by the United Nations for implementing SDGs. Information on the Group's current contributions per SDG can be found on the [total.com](http://total.com) site (Sustainable Performance page).

TOTAL is also working with the IPIECA to define a common framework describing the contributions that the oil industry can make to the SDGs.

The SDG pictograms are included in this chapter to illustrate TOTAL's contributions.

# 1. Social information

The quantitative information set out below regarding the Group's employees worldwide covers all the entities that are fully consolidated<sup>(1)</sup> in the Group's financial statements. However, some of the data comes from the Group's Worldwide Human Resources Survey (WHRS), which gathers approximately 100 indicators measuring important aspects of TOTAL's human resources policy. The WHRS is performed on a sample of employees from representative consolidated companies at the business segment and regional levels; when WHRS is mentioned in this document, reference is made to data related to this sample, which represents 87.5% of the Group's employees at 135 subsidiaries in 2016, a slight decrease compared to 2015 (91%) and 2014 (91%), due to the variation in the number of employees in the consolidated companies, principally due to the acquisitions of Saft Groupe and Lampiris.

## 1.1. Employment



### 1.1.1. Group employees

As of December 31, 2016, the Group had 102,168 employees belonging to 340 employing companies and subsidiaries located in 104 countries. The tables below present the breakdown of employees by the following categories: gender, nationality, business segment, region and age bracket.

#### Group registered headcount as of December 31,

	2016	2015	2014
<b>Total number of employees</b>	<b>102,168</b>	<b>96,019</b>	<b>100,307</b>
Women	32.4%	32.0%	31.1%
Men	67.6%	68.0%	68.9%
French	31.0%	31.2%	32.2%
Other nationalities	69.0%	68.8%	67.8%

#### Breakdown by business segment

	2016	2015	2014
<b>Upstream</b>			
Exploration & Production	14.6%	17.1%	17.2%
Gas	1.2%	0.8%	1.1%
<b>Refining &amp; Chemicals</b>			
Refining & Chemicals	49.8%	49.6%	50.9%
Trading & Shipping	0.6%	0.6%	0.6%
<b>Marketing &amp; Services</b>			
Marketing & Services	20.4%	21.3%	21.2%
New Energies	11.5%	8.9%	7.4%
Corporate	1.9%	1.7%	1.6%

#### Group employees as of December 31,

#### Breakdown by region

	2016	2015	2014
France	31.1%	31.5%	32.5%
French overseas departments and territories	0.4%	0.4%	0.3%
Rest of Europe	25.2%	24.5%	23.9%
Africa	9.9%	10.5%	10.2%
North America	7.1%	6.4%	6.6%
Latin America	11.8%	10.5%	9.7%
Asia	13.4%	14.8%	15.0%
Middle East	1.0%	1.3%	1.3%
Oceania	0.1%	0.1%	0.5%

#### Group employees as of December 31,

#### Breakdown by age bracket

	2016	2015	2014
< 25 years	7.0%	6.6%	6.3%
25 to 34 years	27.8%	28.8%	29.0%
35 to 44 years	29.3%	29.1%	29.1%
45 to 54 years	22.7%	22.6%	22.7%
> 55 years	13.2%	12.9%	12.9%

At year-end 2016, the countries with the most employees were France, the United States, Mexico, Poland and China. The increase in the number of employees between 2015 and 2016 was principally due to the acquisitions of Saft Groupe and Lampiris. The decrease in the number of employees between 2014 and 2015 was due, on the one hand, to the policy of limiting recruitment in the Group's oil-related sector to face the decrease in the price of hydrocarbons and, on the other hand, to divestments made during the year.

The breakdown by gender and nationality of managers or equivalent positions ( $\geq 300$  Hay points<sup>(2)</sup>) is as follows:

#### Breakdown of managers or equivalent as of December 31,

	2016	2015	2014
<b>Total number of managers</b>	<b>29,243</b>	<b>27,624</b>	<b>29,271</b>
Women	25.5%	25.1%	24.5%
Men	74.5%	74.9%	75.5%
French	41.2%	39.1%	38.8%
Other nationalities	58.8%	60.9%	61.2%

The table below presents the breakdown by business segment of the Group employees present<sup>(3)</sup>.

#### Breakdown by business segment of the Group employees present as of December 31,

	2016	2015	2014
<b>Upstream</b>			
Exploration & Production	13,975	15,366	16,157
Gas	1,216	915	1,111
<b>Refining &amp; Chemicals</b>			
Refining & Chemicals	49,829	46,661	49,967
Trading & Shipping	604	563	567
<b>Marketing &amp; Services</b>			
Marketing & Services	20,402	19,923	20,682
New Energies	11,634	8,475	7,425
Corporate	1,951	1,568	1,551

(1) Refer to point 4.3.2 of this chapter.

(2) The Hay method is a unique reference framework used to classify and assess jobs.

(3) Employees present as defined in point 4.3.2 of this chapter.

### 1.1.2. Employees joining and leaving TOTAL

As of December 31,	2016	2015	2014
<b>Total number hired on open-ended contracts<sup>(a)</sup></b>	<b>10,940</b>	<b>9,022</b>	<b>10,771</b>
Women	36.9%	34.9%	33.2%
Men	63.1%	65.1%	66.8%
French	6.6%	6.5%	9.5%
Other nationalities	93.4%	93.5%	90.5%

(a) Recruitments in China, which represent 11.3% of 2016 recruitments, are long-term contracts as defined by local law.

Amid an economic downturn related to oil prices, the policy of limiting the hiring of employees under open-ended contracts that began in 2015 continued in 2016. The increase in the consolidated scope was mainly due to the 41% increase in Hutchinson's hiring. The regions in which the largest number of employees were hired were Latin America (42.9%), Europe (excluding France) (19.5%) and Asia (16.5%). In 2016, the fully consolidated Group companies also hired 4,433 employees on fixed-term contracts. Close to 464,000 job applications were received by the companies covered by the WHRS.

As of December 31,	2016	2015	2014
<b>Total number of departures<sup>(a)</sup></b>	<b>11,058</b>	<b>7,724</b>	<b>7,195</b>
Deaths	90	128	108
Resignations	5,868	4,719	4,545
Dismissals/negotiated departures	4,958	2,754	2,413
<i>Ruptures conventionnelles</i> (specific negotiated departure in France)	142	123	129
<b>Total departures/total employees</b>	<b>10.8%</b>	<b>8%</b>	<b>7.2%</b>

(a) Excluding retirements, transfers, early retirements, voluntary departures and expiration of short-term contracts.

The increase in the number of departures from 2015 to 2016 was mainly due to a high turnover in SunPower and Hutchinson.

### 1.1.3. Compensation

The Group's Human Resources policy applies to all companies in which TOTAL S.A. holds the majority of voting rights. In terms of compensation, the aim of this policy is to ensure external competitiveness and internal fairness, reinforce the link to individual performance, increase employee share ownership and fulfill the Group's CSR commitments.

A large majority of employees benefit from laws that guarantee a minimum wage, and, whenever this is not the case, the Group's policy ensures that compensation is above the minimum wage observed locally. Regular benchmarking is used to assess compensation based on the external market and the entity's competitive environment. Each entity's positioning relative to its reference market is assessed by the Human Resources department of each business segment, which monitors evolutions in payroll, turnover and consistency with the market.

Fair treatment is ensured within the Group through the widespread implementation of a job level evaluation using a common method

(the Hay method), which associates a salary range to each job level. Performance of the Group's employees (attainment of set targets, skills assessment, overall evaluation of job performance) is evaluated during an annual individual review and formalized in accordance with principles common to the entire Group.

The compensation structure of the Group's employees is based on the following components, depending on the country:

- **a base salary**, which each year, in addition to a general salary-raise campaign, is subject to a merit-based salary-raise campaign intended to compensate employees' individual performance according to the targets set during the annual individual review, including at least one HSE (Health, Safety, Environment) target; and
- **individual variable compensation** starting at a certain level of responsibility, which is intended to compensate individual performance (quantitative and qualitative attainment of previously set targets) and the employee's contribution to collective performance evaluated among others according to HSE targets set for each business segment, which represent up to 10% of the variable portion. In 2016, 82.2% % of the Group's entities (WHRs scope) included HSE criteria in the variable compensation.

#### Complementary collective variable compensation programs

are implemented in some countries, such as France, via incentives and profit-sharing that also incorporates HSE criteria. According to the agreement signed for 2015-2017 applicable to the oil and petrochemicals<sup>(1)</sup> (scope of more than 18,000 employees in 2016) sector in France, the amount available for employee incentive is determined based on financial parameters (the Group's return on equity and the evolution of the net adjusted income compared to the other major oil companies<sup>(2)</sup>) and the attainment of safety targets (injury rate and accidental deaths).

The Group also offers **employee benefit and pension programs** (health, death and pension) based on a single standard of coverage at the Group level. These programs, which supplement those that may be provided for by local regulations, allow each employee to:

- benefit, in case of illness, from coverage that is at least equal to the median amount for the national industrial market;
- save or accumulate income substitution benefits for retirement; and
- arrange for the protection of family members in case of the employee's death via insurance that provides for the payment of a benefit recommended to equal two years' gross salary. This program was made available to 91% of the workforce in 2016 (WHRs scope).

These programs are reviewed on a regular basis and adjusted when necessary.

**Employee shareholding**, one of the pillars of the Group's human resources policy, is extended via three main mechanisms: the grant of performance shares, share capital increases reserved for employees, and employee savings. In this way, TOTAL wishes to encourage employee shareholding, strengthen their sense of belonging to the Group and give them a stake in the Group's performance by allowing them to benefit from their involvement.

(1) In 2016, it includes the following Upstream, Refining & Chemicals and Marketing & Services companies in France: TOTAL S.A., Elf Exploration Production, Total Exploration Production France, CDF Énergie, Total Marketing Services, Total Marketing France, Total Additifs et Carburants Spéciaux, Total Lubrifiants, Total Fluides, Total Raffinage-Chimie, Total Petrochemicals France, Total Raffinage France and Total Global Information Technology Services. As of January 1, 2017, this scope also includes the following companies: Total Global Financial Services, Total Global Procurement, Total Global Human Resources Services, Total Learning Solutions, Total Facilities Management Services, and Total Consulting.

(2) ExxonMobil, Royal Dutch Shell, BP and Chevron.

Each year since 2005, TOTAL has granted performance shares to many of its employees (approximately 10,000 each year since 2009). The definitive granting of these shares depends on the fulfillment of performance conditions assessed at the end of a vesting period extended to three years in 2013 (refer to point 4 of chapter 6). The last plan approved by the Board of Directors of TOTAL S.A. in July 2016 granted nearly a 20% higher volume of performance shares and ensured a significant replenishment rate: 40% of plan beneficiaries had not received performance shares the previous year. More than 10,000 non-senior executive employees were concerned by this plan, namely 97% of the beneficiaries.

The Group also regularly invites its employees to subscribe to capital increases reserved for employees through a Shareholder Group Savings Plan (PEG-A) created in 1999 for this purpose. Depending on the offerings chosen and the employees' location, these operations are completed either through Company Savings Plans<sup>(1)</sup> (FCPE) or by subscribing directly for shares or for American Depositary Receipts (ADR) in the United States.

Pursuant to the authorization given by the Annual Shareholders' Meeting of May 24, 2016, at its meeting on July 27, 2016 the Board of Directors of TOTAL S.A. approved the principle of a share capital increase reserved for employees to be completed in 2017. This operation concerns approximately 110 countries. As in 2015, two offerings are proposed: a traditional scheme with a 20% discount and a leveraged scheme in all countries where permitted by law. Employees will receive a matching contribution of five free shares for the first five shares subscribed. The shares subscribed

will give holders current dividend rights. The subscription period will close at the end of March 2017.

The previous operation took place in 2015. Approximately 42,000 employees in 102 countries participated in this share capital increase, which resulted in the subscription of 10,108,918 shares at a price of €37.50 per share.

In addition, at its meeting on July 27, 2016 the Board of Directors of TOTAL S.A. approved an ambitious employee shareholding policy and, in particular, the principle of a share capital increase reserved for employees each year rather than every two to three years, as was previously the case.

**Employee savings** are also developed via the TOTAL Group Savings Plan (PEGT) and the Complementary Company Savings Plan (PEC), both open to employees of the Group's French companies that have subscribed to the plans under the agreements signed in 2002 and 2004 and their amendments. These plans allow investments in a wide range of mutual funds, including the TOTAL ACTIONNARIAT FRANCE fund that is invested in TOTAL shares. A Collective Retirement Savings Plan (PERCO) is open to employees of the Group's French companies covered by the 2004 Group agreement on provisions for retirement savings. Other saving plans and PERCO are open in some French companies covered by specific agreements. Employees can make discretionary contributions in the framework of this various plans, which the Group's companies may supplement under certain conditions through a matching contribution. The Group's companies made gross matching contributions that totaled €70 million in 2016.

## 1.2. Organization of work



The average work week is determined in accordance with applicable local law and limits set by International Labour Organization (ILO) conventions. It is less than 40 hours in most subsidiaries located in Europe, Japan and Qatar. It is 40 hours in most subsidiaries located in Asian, African and North American countries. It is above 40 hours, without exceeding 48 hours, in subsidiaries located in Latin America (mainly Argentina, Mexico, Brazil), a few countries in Asia (India, Cambodia, Philippines) and Africa (mainly South Africa, Equatorial Guinea and Morocco).

In addition, there are two specific employment regimes within the Group, the "shift"<sup>(2)</sup> regime and the "rotational"<sup>(3)</sup> regime. Most shift workers are employed in the Refining & Chemicals and Marketing & Services business segments, while the rotational regime concerns the Upstream segment.

Depending on local law, there are several programs that aim to create a better balance between work and private life and/or encourage equal career opportunities. In France, teleworking was introduced in 2012. As of December 31, 2016, the number of teleworkers in France (WHRS scope) was 746, 33% of whom were men, compared to 454 in 2015 and 346 in 2014.

	WHRS 2016	WHRS 2015	WHRS 2014
% of companies offering the option of teleworking	18.5%	17.2%	16%
% of employees involved in teleworking of those given the option	3.4%	2.5%	2.1%

The sickness absenteeism rate is one of the indicators monitored in the WHRS:

	WHRS 2016	WHRS 2015	WHRS 2014
Sickness absenteeism rate	2.4%	2.1%	2.3%

(1) TOTAL ACTIONNARIAT FRANCE, TOTAL FRANCE CAPITAL+, TOTAL ACTIONNARIAT INTERNATIONAL CAPITALISATION, TOTAL INTERNATIONAL CAPITAL.

(2) For employees providing a continual activity with relays between alternating teams to maintain production (two or three 8-hour shifts), for example in plants or refineries.

(3) For employees working at a location (town or worksite) far from their place of residence with alternating periods of work and rest.

### 1.3. Dialogue with employees



Among the numerous stakeholders with which TOTAL maintains regular dialogue (refer also to point 3.2 of this chapter), the Group’s employees and their representatives have a privileged position and role, particularly in constructive discussions with management. In countries where employee representation is not required by law (for example in Myanmar and Brunei), TOTAL strives to set up such representation. There are therefore employee representatives in the majority of Group companies, most of whom are elected. The subjects covered by dialogue with employees vary from company to company, but some are shared throughout, such as health and safety, work time, compensation, training and equal opportunity.

Within the Group, organizational changes are made in consultation with the employee representatives. For example, implementation of the One Total company project was preceded by a participatory process (via workshops involving over 2,500 employees). This was also true of the Group’s new organization (refer to point 1.3 of chapter 2), which resulted in the transfer of numerous activities and positions (approximately 1 200 employees affected) and was based on a constructive social dialogue. This dialogue led to agreements aimed at supporting organizational change and equipping the new companies created within this framework with social programs.

In addition, 330 agreements were signed in 2016 with employee representatives around the world, including 245 in France,<sup>(1)</sup> covering in particular retirement, employee savings, teleworking and compensation systems.

	WHRS 2016	WHRS 2015	WHRS 2014
Percentage of companies with employee representation	78.5%	76.9%	75.5%
Percentage of employees covered by collective agreements	68.9%	65.5%	67.8%

In 2015, TOTAL signed a global agreement with the worldwide trade union federation, IndustriALL Global Union, which represents 50 million employees in 140 countries. Under this agreement, the Group made a commitment to maintain minimum Corporate Social Responsibility (CSR) standards and guarantees worldwide for subsidiaries in which it has more than a 50% stake, in the areas of occupational health and safety, human rights in the workplace, enhancement of the dialogue with employees, life insurance, professional equality, social responsibility and assistance with organizational changes. The Group also ensures that the principles of the agreement on health, safety and human rights are disclosed to and promoted among its service providers and suppliers. The implementation of this agreement is monitored annually with representatives who are members of trade unions affiliated with the IndustriALL Global Union and appointed by this federation. An initial follow-up meeting was therefore held in April 2016 to assess the implementation of the agreement and identify certain areas of improvement and actions to be taken.

A European Committee (single representative body for the employees at the Group level) has been set up in order to inform employees and hold discussions on the Group’s strategy, its social, economic and financial situation, as well as questions of sustainable development, environmental and societal responsibility, and safety on a European scale. It also examines any significant proposed organizational change concerning at least two companies in two European countries, to express its opinion, in addition to the procedures initiated before the national representative bodies.

In addition, every other year, TOTAL carries out an internal survey (Total Survey) among its employees to gather their views and expectations with regard to their work situation and perception of the Company, locally and as a Group. The results of the survey conducted in 2015 among 65,000 employees at 508 entities in 115 countries demonstrated that employees have a commitment rate of 75% and that 87% of them are proud to work for TOTAL.

### 1.4. Training



The Group has four priorities in the field of training:

- sharing TOTAL’s corporate values, particularly with respect to HSE and ethics;
- increasing key skills in all business areas to maintain a high level of operating performance;
- promoting employees’ integration and career development through Group induction and training on management and personal development; and
- supporting the policy of diversity and mobility within the Group through language and intercultural training.

The Group’s training efforts were still significant in 2016, with 79% of employees having taken at least one training course during the

year. Within the WHRS scope, 274,858 days of training were offered on-site, compared to 289,000 days in 2015, for a total training budget of approximately €164 million, compared to €170 million in 2015 and €235 million in 2014. This decrease between 2015 and 2016 was due to the increase in online training courses, which are gradually being combined with or replacing on-site courses as part of the Group’s e-learning program, and to the combined effect of optimizing the length of training courses and improving training selection in order to be in line with priorities.

The digitalization within the Group, which began in 2015, aims to improve the effectiveness of the courses and impact the largest number of people as quickly as possible. It was accompanied by the launch in 2016 of a digital passport program to support the Group’s goals in this area, and nearly 12,000 people have already obtained this passport. Approximately 42,000 people received online training in 2016 and in 2015, compared to 30,000 in 2014.

(1) Some agreements cover several companies at once (for example, agreements in the Social and Economic Units or group of companies).



In addition, Total University offers Group integration programs as well as courses aimed specifically at developing leadership among executive officers and managers. Total University also offers specific

theme-based conferences, some of which are open to external audiences. These conferences cover strategic topics in the field of energy ranging from technology to geopolitics and societal matters.

**Average number of training days/year per employee (excluding “Companion” apprenticeships and e-learning)<sup>(a)</sup>**

**WHRS 2016 WHRS 2015 WHRS 2014**

Group average	3.2	3.3	4.2
<b>By segment</b>			
Upstream	5.9	7.0	9.2
Exploration & Production	6.2	7.2	9.5
Gas	2.0	4.2	2.7
Refining & Chemicals	2.7	2.3	3.5
Refining & Chemicals	2.7	2.3	3.6
Trading & Shipping	1.7	1.4	2.0
Marketing & Services	2.4	2.8	2.2
Marketing & Services	2.5	2.4	2.9
New Energies	1.9	3.8	0.3
Corporate	2.6	2.6	3.0
<b>By region</b>			
Africa	5.2	5.5	7.6
North America	3.0	1.1	3.1
Latin America	2.8	3.7	5.3
Asia-Pacific	3.6	4.9	4.6
Europe	2.8	2.7	3.5
Middle East	4.8	2.9	6.9
Oceania	0.4	0.7	0.1
French overseas departments and territories	1.7	3.2	1.6
<b>Breakdown by type of training given</b>			
Technical	38%	37%	35%
Health, Safety, Environment, Quality (HSEQ)	23%	22%	21%
Language	8%	11%	14%
Other (management, personal development, intercultural, etc.)	31%	30%	30%

(a) This number is calculated using the number of training hours, where 7.6 hours equal one day.

## 1.5. Equal opportunity



TOTAL is an international Group in terms of both its operations and its team members. The diversity of its employees and management is crucial to the Group’s competitiveness, innovative capacity and attractiveness.

For this reason, TOTAL develops its employees’ skills and careers while prohibiting any discrimination related to origin, gender, sexual orientation or identity, disability, age or affiliation with a political, labor or religious organization. This policy is upheld by the Diversity Council, which is chaired by a member of the Group’s Executive Committee.

Each entity is responsible for defining its own areas of focus based on the legal context and its challenges and for creating a suitable work environment to fully benefit from skills and diverse approaches. This on-the-ground commitment combined with leadership at the highest level ensures that all employees, regardless of their gender or nationality, are offered the same career opportunities. The Group’s target for 2020 is:

- women represent 25% of senior executives (having represented approximately 5% in 2004 and 19.9% in 2016);
- non-French nationals represent 40% of senior executives (having represented approximately 19% in 2004 and 28.2% in 2016);
- women represent more than 20% of Management Committee members (head office and subsidiaries) (having represented approximately 20% in 2016); and
- local managers represent 50% to 75% of the subsidiaries’ Management Committee members (having represented 54% in 2015 and 2016).

### 1.5.1. Equal treatment for men and women

In 2010, TOTAL signed the “Women’s Empowerment Principles – Equality Means Business” set out in the United Nations Global Compact, and its commitment to equal treatment of men and women is regularly embodied in agreements, such as the global agreement signed in 2015 with IndustriALL (refer to point 1.3 of this chapter). Specific measures are taken to correct discrepancies, such as salary equality (review and adjustment of compensation in 2013 and again in 2015) and teleworking to improve employees’ work-life balance.

In 2016, TOTAL, along with 20 other oil and gas companies, made a commitment at the World Economic Forum by signing “Closing the Gender Gap – a Call to Action”. This joint declaration is based on seven action principles: involvement of management; expectation and goal setting; program dedicated to the fields of Science, Technology, Engineering and Mathematics (STEM); clear responsibilities; recruitment, retention and promotion policy; inclusive corporate culture; and work environment and work-life balance.

The Group also promotes gender diversity in its professions. In France, TOTAL has partnered with “Elles bougent” since 2011 and served as honorary Chairman in 2015. Some 130 female engineers regularly inform high-school girls about careers in science. An event entitled “Elles bougent pour l’énergie” was attended by more than 2,000 participants throughout France.

In line with the goal of increasing the number of women in positions of responsibility, the TWICE network (Total Women’s Initiative for Communication and Exchange) aims to promote career development for women and train and educate men and women about gender diversity. Created in 2006, it is currently in place in France and abroad (19 local networks) and has over 3,000 members. As part of this network, a mentoring program is deployed internationally, and has benefited nearly 500 women since 2010.

TOTAL also participates in the “BoardWomen Partners” program, which aims to increase the proportion of women on boards of directors in large European companies. At the end of 2016, women<sup>(1)</sup> accounted for 54.5% of TOTAL S.A.’s Board members (above the 40% required by Article L. 225-18-1 of the French Commercial Code) compared to 36.4% at the end of 2015 and 38.5% at the end of 2014.

% of women	2016	2015	2014
Open-ended contract recruitment	36.9%	34.9%	33.2%
Managers (JL ≥10 <sup>(a)</sup> ) recruitment	29.7%	30.6%	27.6%
Employees	32.4%	32.0%	31.1%
Managers (JL ≥10 <sup>(a)</sup> )	25.5%	25.1%	24.5%
Senior executives	19.9%	18.6%	17.6%

(a) Job Level of the position according to the Hay method. JL10 corresponds to junior manager (*cadre débutant*).

### 1.5.2. Internationalization of management

With employees representing over 150 nationalities, TOTAL enjoys broad cultural diversity and believes that it is important to reflect this at all levels of its activities. In 2016, 93.4% of employees hired by the Group and 75.3% of managers hired were non-French nationals.

Several measures have been put in place to internationalize management, including training courses to internationalize careers, increasing the number of foreign postings for employees of all nationalities (nearly 4,300 employees of 108 nationalities are posted in 114 countries as of June 30, 2016), and integration and personal development training organized by large regional hubs (such as Houston, Johannesburg and Singapore).

% of employees of non-French nationality	2016	2015	2014
Open-ended contract recruitment	93.4%	93.5%	90.5%
Managers (JL ≥10) recruitment <sup>(a)</sup>	75.3%	76.3%	75.8%
Employees	69.0%	68.8%	67.8%
Managers (JL ≥10 <sup>(a)</sup> )	58.8%	60.9%	61.2%
Senior executives	28.2%	27.9%	27.2%

(a) Job Level of the position according to the Hay method. JL10 corresponds to junior manager (*cadre débutant*).

### 1.5.3. Measures promoting the employment and integration of people with disabilities

For over 20 years, TOTAL has expressly set out its disability policy in France through successive agreements signed with employee representatives to promote the employment of workers with disabilities. Three framework agreements signed for three years (2016-2018) with the French representative unions set out TOTAL’s policy with regard to integrating people with disabilities into the work world. The average Group employment rate of people with disabilities in France (direct and indirect employment) was 4.99% in 2015<sup>(2)</sup> (compared to 4.74% in 2014 and 4.27% in 2013).

TOTAL promotes the direct recruitment of disabled people and cooperation with the sector for disabled workers, while at the same time taking various types of action:

- internally: integration, professional training, support and job retention, communication, awareness sessions organized for managers and teams, Human Resources managers, etc.; and
- externally: information and advertising aimed at students, cooperation with recruitment agencies, attendance at specialized forums, etc.

### 1.5.4. Measures promoting non-discrimination

Large-scale initiatives aimed at raising employees’ awareness of diversity are organized on a regular basis. After Berlin in 2015 and Singapore in 2014, in 2016 the Group’s Diversity Council, led by Momar Nguer, President of Marketing & Services and member of the Executive Committee, met with some 60 senior executives from 16 countries in South Africa to secure their commitment to pursue their actions in the areas of diversity and inclusion. The most recent World Diversity Day, which takes place every two years, was celebrated in 2015 at more than 180 Group sites around the theme “Diversity makes us better”.

TOTAL is involved in a number of initiatives to promote diversity, including the professional integration of young people in France, for example via the “La France s’engage” partnership with the French government (refer to point 3.5.2 of this chapter).

In 2014, the Group also signed the LGBT (lesbian, gay, bisexual and transgender) Charter. This document, prepared by the L’Autre Cercle association, establishes a framework for combating discrimination related to sexual orientation or identity in the workplace in France.

(1) Excluding the director representing employees, in accordance with Article L. 225-27-1 of the French Commercial Code.  
(2) The rate for 2016 was not available at the time of the publication of this Registration Document.

## 2. Safety, health and environment information

In line with its Code of Conduct, TOTAL has adopted a Safety Health Environment Quality Charter on which the Group relies for the conduct of its operations (available on [total.com](http://total.com)). This Charter represents the common framework of the Group's management systems. Group directives define the minimum requirements expected in the areas of safety, security, health, the environment, quality and societal, and are implemented in the business segments, which subsequently factor in the specific characteristics of their operations. Recommendations, guides and manuals, which are the primary documents used for implementing and managing the Group's policies, are regularly distributed within the different business segments. The HSE division supports the Group business segments and oversees the implementation of the policies that reflect the HSE principles of this charter concretely and effectively.

### 2.1. Occupational health and safety



For many years, the Group has been developing a normative framework related to occupational health and safety, security, societal commitment and the environment. TOTAL implements management systems in these areas (MAESTRO). In this respect, directives have been drawn up for occupational health and safety. These directives set out TOTAL's requirements in these areas for personnel working on its sites. Since 2013, the Group's business segments have increased their efforts regarding the frameworks of the HSE management systems in order to provide greater overall consistency, while at the same time respecting the businesses' specific characteristics.

The Group's safety efforts are focused on preventing occupational and transport accidents, and on preventing major accidents and accidental spills (refer to point 2.2.2 of this chapter and to point 4 of chapter 4). They cover both TOTAL employees and employees of external contractors, whose safety indicators are monitored with the same vigilance as those concerning TOTAL's personnel.

Indicators are used to measure the main results in these areas. Monthly reporting of occupational accidents is used to monitor performance at both the global and site levels.

Safety indicators	2016	2015	2014
TRIR <sup>(a)</sup> : number of recorded injuries per million hours worked	0.91	1.17	1.30
Employees of TOTAL	0.83	0.92	1.06
Employees of external contractors <sup>(b)</sup>	0.99	1.38	1.51
LTIR <sup>(c)</sup> : number of lost time injuries per million hours worked	0.51	0.66	0.74
SIR <sup>(d)</sup> : average number of days lost per lost time injury	30.23	30.11	29.74
Number of occupational fatalities	1	9	9

(a) TRIR: Total Recordable Injury Rate.  
(b) As defined in point 4.4.1 of this chapter.  
(c) LTIR: Lost Time Injury Rate.  
(d) SIR: Severity Injury Rate.

For more than 10 years, the TRIR and the LTIR have declined continuously. In 2016, the Group regrettably recorded one accident that led to a fatality. The measures adopted in 2015 have helped to improve the safety of employees working for external contractors. These measures continue to be deployed, with a view to strengthening and sharing safety values throughout and outside the Group.

Safety is the subject of regular training activities, in particular at management level (refer to point 2.2.1 below), as well as of a policy that recognizes HSE performance, in particular by taking account safety-related criteria in the calculation of compensation (refer to point 1.1.3 above).

Since 2010, the basic rules to be scrupulously followed by all personnel, employees and contractors alike, in all of the Group's businesses worldwide, have been set out in a safety document entitled "*Safety at Work: TOTAL's Twelve Golden Rules*".

According to the Group's internal statistics, in 2016, in more than 90% of severe incidents or near misses with high severity potential in the workplace, at least one of the golden rules had not been followed. The proper application of these golden rules, and more generally of all occupational safety procedures, is verified through site visits and internal audits. An e-learning tool has been developed to train the personnel in the 12 golden rules and was rolled out in 2016. An update of these rules, prepared in 2016, will be deployed in April 2017, on the occasion of the World Safety Day. For simplicity's sake, the decision was taken to reformulate the golden rules as do's and don'ts. This more operational approach should improve the adoption of the rules and make it easier to control their application.

One of the priority programs launched in 2016 to improve long-term safety performance was focused on strengthening the control of the activity of employees working for external contractors, who are statistically the main victims of accidents. In 2016, the Group launched a program of regular meetings with the management of external contractors. These safety meetings are organized both on the sites and in the subsidiaries for local contractors, and at Group level for some international contractors.

Moreover, the reporting of anomalies (895,000 in 2016) and near misses is strongly encouraged and monitored. The ability of each employee to identify anomalies or dangerous situations is one of the measures of the personnel's involvement and vigilance in accident prevention and reflects the safety culture within the Group.

An investigation is generally launched in response to any type of accident whatsoever. The method and scope of investigation depend on the actual or potential severity of the event. For example, a near miss with a high severity potential level is treated in the same way as a severe incident: its analysis is considered to be a key driving force for progress and, depending on its relevance to the Group's other entities, triggers a safety alert and even the dissemination of a feedback report.

With respect to transport safety, the Group constantly strives to improve its performance in terms of road accidents. The actions taken in recent years have helped decrease the severe accident rate by 40% between 2013 and 2016, with a focus on measures in Africa and the Middle East zone of Marketing & Services. These actions rely, in particular, on inspections of transporters. The program was also rolled out in three Asian pilot countries where Marketing & Services is present (Cambodia, India and Pakistan), and it will gradually be extended to other subsidiaries in Asia-Pacific in 2017.

Along with 21 other major French companies, the Group also responded to the national call in favor of occupational road safety. TOTAL has been investing in this issue for a long time, and even goes beyond some of the commitments stated in the call by taking actions for its employees all over the world, in addition to the requirements of local regulations. By way of example, the Group expressly forbids the use of mobile phones while driving.

In 2016, the Group-wide coordination for safety in marine and inland waterway terminals was reinforced. The training in the *Ship Shore Safety Check List* of the International Safety Guide for Oil Tankers and Terminals, which covers the movement of products during loading and unloading operations of ships or barges, a particularly sensitive phase, was promoted at the last safety seminar for the European operators of marine and inland waterway terminals in Vlissingen (the Netherlands) in September 2016. More than 300 terminal operators have been trained.

With regards to health, the Group has drawn up a policy to define TOTAL's minimum requirements in terms of the prevention of industrial risks to health and the protection of workers.

In particular, based on the Directive on industrial hygiene and occupational health, the Group's companies are expected to prepare and carry out a formal risk assessment (chemical, physical, biological, ergonomic or psychosocial), create a risk management action plan and provide medical monitoring of staff in line with the risks to which they are exposed.

The Group monitors the following indicators in this area:

<b>Health indicators (WHRS scope)</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Percentage of companies offering employees regular medical monitoring	99.3%	99.3%	97.3%
Number of occupational illnesses recorded in the year (in accordance with local regulations) <sup>(a)</sup>	108	145	200

(a) In 2016, the number of occupational illnesses was collected for companies replying to the WHRS in order to improve consistency between social and health data. In addition, this indicator, which was reported as a ratio of hours worked, is now expressed as an absolute figure.

Reporting on occupational illnesses covers only the Group's personnel (WHRS scope) and illnesses reported according to the regulations applicable in the country of operation of each entity.

Musculoskeletal disorders, the main cause of occupational illnesses, represented 64% of all recorded illnesses in 2016, stable compared to 2015.

A Medical Advisory Committee meets regularly to discuss key health issues that may affect the Group's employees. It consists of external scientific experts and brings together TOTAL's management team and the relevant members of the Group. This Committee provides scientific monitoring of health problems that could impact the Group, thus enabling the best health protection strategies to be put in place when necessary.

In support of the Group's health policy and to complement the periodic medical surveillance program currently in place and organized by the Group's medical staff, an employee health observatory has also been set up. This observatory aims at establishing health indicators for keeping track over the long term of any medical conditions that could affect employees using a population-based approach. This program can be used to quickly identify the emergence of certain illnesses and, if applicable, suggest and oversee appropriate preventive measures. Approximately 13% of the Group's employees worldwide, whatever their position, age or horizon, took part anonymously in this program, thereby providing a representative sample of the Group's different business segments and professions, including administrative as much as operational staff.

The study entitled *Sleep, shift work and cardio-metabolic illnesses* was initiated on the basis of the findings of the TOTAL health observatory. The study covered the employees on four Refining & Chemicals industrial sites in France (Carling, Donges, La Mède and Normandy) and was conducted in collaboration with the occupational health departments on each site. The results are expected to be published in 2017.

On a broader level, TOTAL is associated with promoting individual and collective health in the countries where it operates, including flu vaccination campaigns and prevention and screening programs for certain diseases (AIDS, cancer, malaria, Ebola, etc.) for employees, their families and local communities. For several years, awareness campaigns have also been in place concerning, for example, musculoskeletal disorder prevention and lifestyle risks (anti-smoking and anti-drinking campaigns).

## 2.2. Environmental protection

### 2.2.1. General policy and environmental targets



The HSE division and the HSE departments within the Group's entities seek to ensure that both applicable local regulations and internal minimum requirements are being met. The Group steering bodies, led by the HSE division, have a threefold task:

- monitoring TOTAL's environmental performance, which is reviewed annually by the Executive Committee, for which multi-annual improvement targets are set;
- handling, in conjunction with the business segments, the various environment-related subjects under their responsibility; and
- promoting the internal standards to be applied by the Group's operational entities as set out in the Safety Health Environment Quality Charter.

The Group defined in early 2016 a new set of coherent environmental targets aligned with the 2010-2020 period:

- continue its efforts to reduce greenhouse gas (GHG) emissions, particularly through:
  1. an 80% reduction of routine flaring<sup>(1)</sup> with the aim to eliminate it by 2030, and
  2. an average 1% improvement per year in the energy efficiency of the Group's operated facilities;
- decrease SO<sub>2</sub> air emissions by 50%; and
- maintain hydrocarbon content of water discharges below 30 mg/l for offshore sites and below 15 mg/l for onshore and coastal sites.

TOTAL's performance in relation to these targets is detailed in the following sections.

In addition, the Group:

- develops biodiversity action plans for production sites located in protected areas<sup>(2)</sup>;
- does not conduct oil and gas exploration or production operations at natural sites included on the UNESCO World Heritage List<sup>(3)</sup> or in oil fields under sea ice in polar areas; and
- reclaims more than half of its waste and intends to continue its efforts in this area.

TOTAL has a goal of progressively lowering the carbon intensity of its energy mix.

The environment management systems on TOTAL's major sites are ISO 14001 certified: 100% of the 69 production sites emitting more than 10 kt of GHG per year (excluding start-ups or newly acquired sites, which have two years to be certified) are ISO 14001 certified. Overall, at year-end 2016, 279 sites had ISO 14001 certification. The CLOV site in Angola, which started up in 2015, was ISO 14001 certified in 2016. Group rules require certification to be obtained within two years of start-up of operations; accordingly, the Laggan-Tormore (United Kingdom) and Incahuasi (Bolivia) sites, where

operations started in 2016, are expected to be certified in 2017. The environmental risks and impacts of any planned investment, disposal or acquisition subject to Executive Committee approval are assessed and reviewed before the final decision is made (also refer to point 4.3.1 of chapter 4).

TOTAL seeks to ensure that all employees share its environmental protection requirements. Employees receive training in the required skills. TOTAL also raises employee awareness through internal communication campaigns (e.g., in-house magazines, intranet, posters) and provides annual information about the Group's environmental performance.

Training courses are organized for managers and senior executives. In 2016, 48 training sessions were attended by more than 800 participants in 1899 training days across 11 countries. Three HSE training courses are made available to the operational entities: "HSE for Managers", "HSE Implementation" and "HSE Leadership for Group Senior Executives". The training session "HSE for Managers" is aimed at senior managers and operational or functional managers who are currently or will in the future be responsible for one of the Group's operational entities (five sessions were held in 2016 with 253 participants). "HSE Implementation" sessions are aimed at employees whose job is specifically to handle one or more HSE or operational areas within an operational entity (one session was held in 2016 with 10 participants). This offer completes an existing course for the same target population provided by the Group's business segments. In addition, the "HSE Leadership for Group Senior Executives" course focusing on management styles has been organized since 2012. Since 2012, close to 260 senior executives have taken part in this program.

### 2.2.2. Incident risk



The Group has management structures and systems that present similar requirements and expectations across all the entities. TOTAL strives to minimize the potential impacts of its operations on people, the environment and property through a major risk management policy. This policy draws on a shared approach that includes, on the one hand, risk identification and analysis, and on the other hand, the management of these risks.

This structured approach applies to all of the Group's operated businesses exposed to major risks. In addition to its drilling and pipeline transport operations, the Group has 222 sites and operating zones corresponding to:

- the Seveso classified industrial sites (upper and lower threshold) and their equivalents (excluding Exploration & Production) outside the EU; and
- all the offshore and onshore operating activities in Exploration & Production.

(1) Routine flaring, as defined by the working group of the Global Gas Flaring Reduction program within the framework of the World Bank's Zero Routine Flaring initiative.

(2) Sites located in a IUCN I to IV or Ramsar convention protected area.

(3) Natural sites included on the UNESCO World Heritage List of June 4, 2013.

This approach first sets out an analysis of the risks related to these industrial operations based on incident scenarios for which the probability of occurrence and the severity of the consequences are assessed.

Second, based on these parameters, a prioritization matrix is used to determine whether further measures are needed in addition to compliance with the Group's standards and local regulations. These mainly include preventive measures but can also include mitigation measures.

The management of major risks also hinges on:

- staff training and raising awareness (refer to point 2.2.1 of this chapter);
- a coherent event reporting and indicators system;
- systematic, structured event analysis, particularly to learn lessons in terms of design and operation; and
- regularly tested contingency plans and measures.

In terms of monitoring indicators, the Group reports the number of Tier 1 and Tier 2 events as defined by the API and the IOGP. A significant reduction in the number of losses of primary containment was observed in comparison to 2015. In addition to the 38 Tier 1 operational events indicated in the table below, the Group recorded one other Tier 1 event due to sabotage or theft in 2016.

Loss of primary containment	2016	2015	2014
Loss of primary containment (Tier 1) <sup>(a)</sup>	38	51	39
Loss of primary containment (Tier 2) <sup>(a)</sup>	101	111	129

(a) Excluding acts of sabotage and theft.

In accordance with industry best practices, TOTAL also monitors accidental liquid hydrocarbon spills of more than one barrel. Spills that exceed a predetermined severity threshold (in terms of volume spilled, toxicity of the product in question or sensitivity of the natural environment affected) are reviewed on a monthly basis and annual statistics are sent to the Group Performance Management Committee. All accidental spills are followed by corrective actions aimed at returning the environment to its original state as quickly as possible.

Accidental hydrocarbon spills <sup>(a)</sup>	2016	2015	2014
Number of hydrocarbon spills	73	128	129
Total volume of hydrocarbon spills (thousands of m <sup>3</sup> )	0.9	1.4	1.3

(a) Accidental spills with an environmental impact and of more than one barrel.

In addition, the Group has set up a crisis management process with a dedicated organization (also refer to point 4.3.1 of chapter 4) and a crisis management center at the head office to enable the management of two simultaneous crises. As part of this process, TOTAL regularly trains in crisis management on the basis of risk scenarios identified through analyses. In particular, the Group has response plans and procedures in place in the event of a hydrocarbon leak or spill. For accidental spills that reach the surface, oil spill contingency plans are regularly reviewed and tested during exercises. These plans are specific to each company or site and are adapted to their structure, activities and environment while complying with Group recommendations.

Oil spill preparedness	2016	2015	2014
Number of sites whose risk analysis identified at least one scenario of major accidental pollution to surface water	141	167	155
Proportion of those sites with an operational oil spill contingency plan	99%	98%	90%
Proportion of those sites that have performed at least one oil spill response exercise during the year	89% <sup>(a)</sup>	98%	82%

(a) Decrease in 2016 compared to 2015 corresponds mainly to three affiliates which postponed their exercises to 2017.

A Plan to Mobilize Resources Against Pollution (Parapol) is available to the Group's companies, which also have assistance agreements with the main third-party bodies specializing in hydrocarbons spill management (refer to point 4.3.1 of chapter 4).

Subsea capping and subsea containment equipment has been installed at different points of the world (South Africa, Brazil, Singapore and Norway) since 2014 in order to provide solutions that can be deployed rapidly in the event of oil or gas eruptions in deep offshore drilling operations. This equipment was developed by a group of nine oil companies, including TOTAL, and is managed by Oil Spill Response Ltd (OSRL), a cooperative dedicated to the response to marine pollution by hydrocarbons.

TOTAL has also designed and developed its own "Subsea Emergency Response System" to stop potential eruptions in drilling or production operations as quickly as possible. Equipment has been in place in Angola since 2015, and the in the Republic of Congo since 2016, potentially covering the entire Gulf of Guinea region.

With regard to shipping, the Group has an internal policy setting out the rules for selecting vessels. These rules are based on the recommendations of the Oil Company International Marine Forum (OCIMF), an industry association consisting of the main global oil companies that promotes best practices in oil shipping, and on its Ship Inspection Report (SIRE) Program. TOTAL does not charter any single-hulled vessels for shipping hydrocarbons and the average age of the fleet chartered on time by TOTAL's Shipping division is approximately six years

### 2.2.3. Environmental footprint



TOTAL implements an active policy of avoiding, reducing, managing and monitoring the environmental footprint of its operations. As part of this policy, emissions are identified and quantified by environment (water, air and soil) so that appropriate measures can be taken to better control them.

#### Water, air

The Group's operations generate emissions into the atmosphere from combustion plants and the various conversion processes and discharges into wastewater. In addition to complying with

applicable legislation, the Group's companies actively pursue a policy aimed at reducing emissions. Sites use various reduction systems that include organizational measures (such as using predictive models to control peaks in SO<sub>2</sub> emissions based on weather forecast data and the improvement of combustion processes management, etc.) and technical measures (wastewater treatment plants, using low NO<sub>x</sub> burners and electrostatic dedusters, etc.).

Between 2013 and 2016, the Refining & Chemicals business segment partnered with Ondeo Industrial Solutions (Suez group) in the ambitious E4Water European project. Seven pilot research projects were conducted at TOTAL's petrochemicals plant at the Normandy platform. A €1.2 million budget was allocated to test three water treatment processes (wastewater from the site's water treatment plant, cooling water and cooling blowdown). Pertinent technologies were identified to reduce pollutants and water consumption. These technologies could be installed, where necessary, to reduce the water footprint of facilities.

Chronic emissions into the atmosphere (excluding GHG)	2016	2015	2014
SO <sub>2</sub> emissions (kt)	49	59	65
NO <sub>x</sub> emissions (kt)	75	82	93

In 2010, SO<sub>2</sub> emissions totaled 99 kt, and the target for 2020 is to remain below 49.5 kt, a level reached in 2016.

Discharged water quality <sup>(a)</sup>	2016	2015	2014
Hydrocarbon content of offshore water discharges in mg/l	17.2	19.4	19.3
% of sites that meet the target for the quality of offshore discharges (30 mg/l)	100% <sup>(b)</sup>	100% <sup>(b)</sup>	100% <sup>(b)</sup>
Hydrocarbon content of onshore water discharges in mg/l	3.2	3.7	3.3
% of sites that meet the target for the quality of onshore discharges (15 mg/l)	100%	97%	98%

(a) In the scope of Exploration & Production and Refining & Chemicals. The "hydrocarbons in water discharges" in tons indicator, which was used until 2015, has been replaced by the above indicators, in line with the Group's objectives.

(b) Alwynn site (United Kingdom) excluded, as its produced water discharges are discontinuous, only occur during the maintenance periods of the water reinjection system and are subject to a specific regulatory authorization.

The improvement in the quality of onshore water discharges in 2016 is linked to significant investments on the produced water treatment plant at Djeno Terminal in the Republic of the Congo.

## Soil

The risks of soil pollution related to TOTAL's operations come mainly from accidental spills (refer to point 2.2.2 of this chapter) and waste storage (see below).

The Group's approach to preventing and controlling these types of pollution is based on four cornerstones:

- preventing leaks, by implementing industry best practices in engineering, operations and transport;

- carrying out maintenance at appropriate intervals to minimize the risk of leaks;
- overall monitoring of the environment to identify any soil and groundwater pollution; and
- controlling pollution from previous activities by means of containment or reduction operations.

In addition, a Group directive defines the following minimum requirements:

- systematic identification of each site's environmental and health impacts related to possible soil and groundwater contamination;
- assessment of soil and groundwater contamination based on various factors (extent of pollution inside or outside the site's boundaries, nature and concentrations of pollutants, presence of a vector that could allow the pollution to migrate, use of the land and groundwater in and around the site); and
- management of health or environmental impacts identified based on the use of the site (current or future, if any) and the risk acceptability criteria recommended by the World Health Organization (WHO) and the Group.

Lastly, decommissioned Group facilities (*i.e.*, chemical plants, service stations, mud pits or lagoons resulting from hydrocarbon extraction operations, wasteland on the site of decommissioned refinery units, etc.) impact the landscape and may, despite all the precautions taken, be sources of chronic or accidental pollution. TOTAL has a site remediation policy with the aim to, in agreement with the authorities; allow new operations to be set up once the future use of the land has been determined. These remediation operations are conducted by the Group's specialized entities. The Group's provisions for the protection of the environment and site remediation are detailed in Note 12 to the Consolidated Financial Statements (point 7 of chapter 10).

## Nuisances

The nuisances resulting from TOTAL's operations, including sound or odor nuisances or the result of vibrations or road, sea or river traffic, are monitored at the Group's main industrial sites.

Monitoring systems that can be put in place include sound level measurements at the site perimeter or networks of "noses" to determine the origin and intensity of odors. In addition, most sites have a system for receiving and handling residents' complaints, with the aim of gaining a clearer insight into the different types of nuisances and minimizing them (refer to point 3.3.2 of this chapter).

## 2.2.4. Circular economy



TOTAL announced in February 2017 a circular economy action plan covering the 2017-2020 period which comprises five commitments (purchasing, waste, new ranges of polymers, solarization of service stations and improvement of energy efficiency).

**Waste prevention and management**

The Group’s companies are focused on controlling the waste produced at every stage in their operations. This commitment is based on the following four principles, listed in decreasing order of priority:

1. reducing waste at source by designing products and processes that generate as little waste as possible, as well as minimizing the quantity of waste produced by the Group’s operations;
2. reusing products for a similar purpose in order to prevent them from becoming waste;
3. recycling residual waste; and
4. recovering energy, wherever possible, from non-recycled products.

A Group directive sets out the minimum requirements related to waste management. It is carried out in four basic stages: waste identification (technical and regulatory); waste storage (soil protection and discharge management); waste traceability, from production through to disposal (e.g., notes, logs, statements); and waste treatment, with technical and regulatory knowledge of the relevant processes, under the site’s responsibility.

On its sites, TOTAL deploys programs to valorize (recycling and valorization) more than half of the Group’s waste by 2020. Moreover, TOTAL is especially committed to managing and treating waste classified as hazardous. Due to its nature, hazardous waste is mainly treated outside the Group by specialized companies 187 kt in 2016, compared to 202 kt in 2015 and 223 kt in 2014). This decrease can be explained by a continuous waste production reduction policy started in Refining & Chemicals in 2015.

Waste treatment processes	2016	2015	2014
Recycling and/or valorization	58%	55%	56%
Landfill	18%	14%	20%
Others (incineration, biotreatment, etc.)	24%	31%	24%

**Sustainable use of resources**

**Fresh water**

The nature of the Group’s activities, and mainly those of Refining & Chemicals (about 80% of fresh water withdrawals in 2016), and to a lesser extent those of Exploration & Production, as well as other activities (such as gas and solar), is such that they have an impact on, and are dependent on, water resources. This is especially true when the activity is located in an environment that is sensitive in terms of water resources.

TOTAL is aware of these challenges and takes water resources into account in its guidelines and operations:

- in the Safety Health Environment Quality Charter, which states that “TOTAL controls its use of natural resources...”, in particular water, which is an important natural resource; and
- in its approach to water, set within the Group’s environmental framework, which incorporates the following core principles for action:
  1. identification of priority sites that are sensitive in terms of water resources,
  2. global management of risks to and impacts on water resources in the environmental management system, and
  3. monitoring and integration of changes in this area, especially those associated with climate change, through its stakeholders, partnerships and R&D.

To determine which facilities are most affected by the availability of fresh water, TOTAL monitors its water withdrawals and discharges across all of its sites.

TOTAL identifies the levels of risk of its sites that withdraw more than 500,000 m³ per year and are located in areas potentially exposed to water resource risks, using the Local Water Tool (LWT) from the Global Environmental Management Initiative (GEMI). This tool also helps to guide the actions taken to mitigate these risks in order to make optimal use of water resources on these sites.

Since 2016, the level of water risk was assessed on 11 Group sites: 8 Refining & Chemicals sites and 3 Exploration & Production sites. This assessment will gradually be extended to 13 more priority sites that have already been identified. A plan to optimize the use of water resources on these sites may be drawn up, depending on the nature of the risks and impacts.

For example, in Exploration & Production operations, reinjecting water extracted along with hydrocarbons (known as produced water) back into the original reservoir is one of the methods used to maintain reservoir pressure. The technical specifications in force in the Group stipulate that this option be prioritized over other methods. The Group’s R&D programs make it possible to examine the best techniques for treating this produced water so as to facilitate its reinjection or consider its recovery and otherwise discharge it into the natural environment while respecting natural and regulatory constraints.

Approximately 80% of the fresh water withdrawals were taken from the Refining & Chemicals segment in 2016. At refineries and petrochemicals sites, water is mainly used to produce steam and for cooling units. Increasing recycling and replacing water cooling with air cooling, such as at the Normandy (France) and Antwerp (Belgium) refineries, are TOTAL’s preferred approaches for reducing fresh water withdrawals. The reuse of water was also investigated at Gonfreville as part of the E4Water program.

Efforts to optimize water risk management tools are being made both internally, with the LWT (used as a multi-site dash board), and externally, via the IPIECA, which is developing an e-learning module to extend and facilitate access to these tools.

On the whole, the Group’s indicators relating to water follow the IPIECA framework. The main indicator is aggregate withdrawals.

Water-related indicator	2016	2015	2014
Fresh water withdrawals excluding cooling water (million m³)	120	118	112

The increase in water withdrawals between 2014 and 2015 was mainly due to the increase in activity of certain refineries in maintenance shutdown in 2014. The value remained relatively stable between 2015 and 2016.

**Soil**

TOTAL uses the ground surface that it needs to safely conduct its industrial operations and, to date, does not make extensive use of ground surfaces that could substantially conflict with various natural ecosystems or agriculture.

For open-pit oil sands mining projects, TOTAL strives to ensure that environmental issues are managed by the operator, in particular with regard to the reclamation of affected soils.

TOTAL has set up a working group to look into the conditions and the impacts of supplies of vegetable oil to the La Mède bio-refinery, which is due to start up at the end of 2017.



### Raw materials

Hydrocarbons, the Group's main raw material, are a form of energy. Losses of this raw material are divided mainly into 4 categories: safety or operational gas flaring (point 2.3.4 of this chapter); cold venting (point 2.3.4 of this chapter); hydrocarbons discharged in very low quantities through aqueous effluents, which amounted to 758 t in 2016; and accidental oil spills (point 2.2.2 of this chapter). These raw material losses remain negligible with respect to the Group's production in 2016.

### 2.2.5. Protecting biodiversity and ecosystems



Due to their nature, the Group's activities, and particularly its Exploration & Production activities, may be located in sensitive natural environments. TOTAL's operations can therefore have an impact on ecosystems and their biodiversity.

TOTAL is aware of these challenges and takes biodiversity and ecosystems into account in its guidelines and operations:

- in the Safety Health Environment Quality Charter, which specifies that TOTAL "is committed to managing (...) its use of natural resources and its impact on biodiversity" and ecosystems; and
- in the biodiversity approach, set within the Group's environmental framework, which incorporates the following core principles for action:

1. **deploy the mitigation hierarchy "avoid – mitigate – compensate"**: TOTAL applies this approach for the duration of its projects' lifecycle to minimize the impact of its activities on biodiversity,
2. **take into consideration the sensitivity of ecosystems**: In the course of its business, TOTAL identifies and takes into account the diversity and sensitivity of various environments in terms of biodiversity,
3. **manage biodiversity**: TOTAL incorporates the biodiversity impact and risk management into its environmental management systems and refers to good practices within the industry,

4. **report**: TOTAL reports to its stakeholders on its biodiversity performance, and
5. **improve knowledge of biodiversity**: TOTAL participates in the improvement of knowledge of biodiversity and ecosystems as well as managing the stakes involved, through R&D initiatives taken with local and international partners, professional associations and the Total Foundation.

The Group made a commitment not to engage in oil and gas exploration or extraction operations at natural sites included on the UNESCO World Heritage List of June 4, 2013. In the Democratic Republic of the Congo, TOTAL made the commitment to not carry out any exploration activity in the Virunga National Park, partly located in Block III of the Graben Albertine. Since 2017, the Group publishes the list of its licenses in the Arctic zone on its web site, and TOTAL does not conduct any exploration activities of oil fields under sea ice in polar areas.

To develop its projects located in sensitive habitats, TOTAL developed, based on the sensitivity and impact analysis, a Biodiversity Action Plan for Group operated sites located in the most sensitive protected areas corresponding to IUCN I to IV or Ramsar categories. The two biodiversity action plans developed in 2015 in Gabon (Aтора) and the Democratic Republic of the Congo (Djeno) are currently being deployed. Other plans will be launched in the short term, in particular in Italy (the Tempa Rossa project), or in the medium term in Uganda and Papua New Guinea.

The Group actively contributes to the development of best practices related to biodiversity and ecosystem management in the extractive industry through its partnerships with IPIECA, the Cross-Sector Biodiversity Initiative (which brings together the Equator Principles signatory banks and the mining and oil industries), the United Nation Environment Program's World Conservation Monitoring (UNEP-WCMC) and other work groups on biodiversity bringing together stakeholders from beyond the private sector, such as the Business and Biodiversity Offset Program (BBOP), which includes international NGOs, governments, universities, the World Bank, etc. In France, TOTAL continues its partnership with the Fondation pour la Recherche sur la Biodiversité (Foundation for biodiversity research) and the Centre Vétérinaire de la Faune Sauvage et des Ecosystèmes des Pays de la Loire (France).

## 2.3. Climate change



The Group's strategy incorporates the challenges of climate change, using as a point of reference the 2°C scenario of the International Energy Agency (IEA) and its impact on energy markets. TOTAL's challenge is to increase access to affordable energy to satisfy the needs of a growing population, while providing concrete solutions to help limit the effects of climate change and supplying its clients with an energy mix featuring a progressively decreasing carbon intensity.

TOTAL focuses its action around the following priority areas:

- developing natural gas as the primary fossil energy source due to its lower carbon intensity;

- selecting and developing hydrocarbon projects based on their economic merit order, which incorporates their resistance to low price scenarios;
- developing the solar energy offer as the renewable energy of choice in the evolution of the energy mix, as well as the production of biofuels from biomass;
- improving the energy efficiency of the Group's facilities, products and services, and maintaining efforts to reduce direct emissions of greenhouse gases (GHG);
- increasing access to more sustainable energy, for as many people as possible, particularly by means of an innovative solar energy solution; and
- stimulating initiatives in the oil and gas sector and supporting the implementation of an international framework on climate.

In 2016, the Group acquired the Belgian company Lampiris in line with the goal to expand over the entire gas value chain until the end customer. Within a few years, Lampiris became the third-largest supplier<sup>(1)</sup> of natural gas, green power and energy services (e.g., insulation, boiler maintenance, wood and pellets for heating, smart thermostats) in the Belgian market and is starting to extend its business in France. In 2016, the Group also entered the complementary energy storage segment with the acquisition of the company Saft Groupe specializing in high-technology batteries (refer to point 2.3.2.3 of chapter 2). Energy storage is an essential complement to the development of intermittent renewable energies.

### 2.3.1. The role of gas

The percentage of natural gas in the Group's production rose from approximately 35% in 2005 to nearly 48% in 2016, and, taking account of market developments, this percentage is expected to increase over the coming years.

The Group believes in the essential role of natural gas as one of the solutions to climate change issues. Replacing coal with natural gas at power plants could help reduce worldwide CO<sub>2</sub> emissions by 5 Bt/y, i.e., approximately 10% of world emissions<sup>(2)</sup>. Strengthening the position of gas in the energy mix must however be accompanied by a greater focus on control of methane emissions. To preserve the advantage that gas offers in terms of GHG emissions compared to coal for electricity generation, it is necessary to reduce methane emissions associated with the production and transportation of gas.

TOTAL's methane emissions specifically associated with gas production are less than 0.5% of the Group's marketed operated gas production. Improving measurement of these emissions and their reduction is a priority for TOTAL in terms of environmental impact.

On this basis, since 2014 the Group has been a member of the partnership between governments and industrial companies for the improvement of tools to measure and control methane emissions set up by the Climate and Clean Air Coalition and promoted by the UN Environment Programme and the non-profit organization Environmental Defense Fund. The Group has also committed, via the Oil & Gas Climate Initiative (refer to point 2.3.6 of this chapter), to strengthening its action in this area.

### 2.3.2. Project selection

In its strategy for growth, TOTAL prioritizes its projects by focusing on assets with moderate production and processing costs, while respecting the highest safety and environment standards.

Furthermore, the Group ensures sustainability of its projects and long-term strategy relative to climate change issues by incorporating into financial evaluations of its investments submitted to the Executive Committee a long-term CO<sub>2</sub> price of \$30 to \$40 per ton (depending on the crude price), or the current CO<sub>2</sub> price if this is higher in a given country. This price is consistent with promoting gas over coal in power generation and encouraging investment in research on low-carbon technologies.

Moreover, with respect to coal, the Group ceased all production activity in 2015 and all marketing activity in 2016. In 2016, the Group withdrew from a project involving construction of a coal-based facility, coal-to-olefins, in China.

### 2.3.3. Developing renewable energies

For some 15 years, TOTAL has been committed to developing renewable energies. The Group's activities in this area are set out in point 2.3.2 of chapter 2.

The Group's priority strategic development is solar energy, in particular through its interest in SunPower (56.73% owned by the Group as of December 31, 2016). SunPower is involved in the design and manufacture of photovoltaic cells, the construction of large turnkey solar power plants and the marketing of integrated energy solutions facilitating decentralized electricity generation.

In November 2016, TOTAL launched a 5-year program to equip 5,000 service stations across the world with photovoltaic panels, including 800 in France. The project corresponds to an installed capacity of around 200 MW, equivalent to the electricity used by a city with a population of 200,000.

In addition to solar energy, biomass is TOTAL's second strategic development area in the field of renewable energies. In general, biomass represents approximately 10% of worldwide energy consumption and is mostly used for heating or cooking purposes. Biomass is the only directly substitutable renewable alternative to fossil resources for the provision of liquid fuel for transport (biodiesel, bioethanol, biokerosene), lubricants and base molecules for chemicals (solvents or polymers).

TOTAL also invests in startups working on ways to reduce direct GHG emissions into the atmosphere by other means. For example, through its venture capital fund Total Energy Ventures (TEV), the Group supports the development of companies offering innovative technologies or business models in such areas as renewable energies, energy efficiency, energy storage and sustainable mobility. For instance, in 2016, TEV acquired a stake in Off-Grid Electric and PowerHive, suppliers of electricity produced by solar energy in African rural areas that have no or poor grid connection.

### 2.3.4. Energy efficiency and eco-performance

In its scope of activities, TOTAL has made reducing GHG emissions one of its priorities. The Group exceeded its objective of reducing GHG emissions from its operated activities by 15% from 2008 to 2015. The reduction of GHG emissions entails reducing flaring and improving energy efficiency.

GHG emissions, in Mt CO <sub>2</sub> eq <sup>(a)</sup>	2016	2015	2014
Scope 1: Operated direct GHG emissions (100% of emissions from sites operated by the Group)	39	42	44
Scope 1: Group share of direct GHG emissions	51	50	54
Scope 2: Indirect emissions attributable to energy consumption by sites	4	4	4
Scope 3: Other indirect emissions			
Use by customers of products sold for end use	420	410	430

(a) For further information on the methods involved for these indicators, refer to point 4.4.2 of this chapter.

(1) Company data.  
(2) Source: IEA.

## Reducing flaring

Reducing routine flaring has been a long-standing goal of the Group, with a commitment made in 2000 to have no continuous flaring of associated gas incorporated into the design of its new projects. Furthermore, the Group has supported the World Bank in developing and launching the Zero Routine Flaring initiative involving oil & gas companies, producing countries and international institutions. The initiative aims to support elimination of routine flaring by 2030. To ensure progression, an objective to decrease by 80% has been defined for 2020 compared to 2010, in other words to achieve an average of 1.5 Mm<sup>3</sup>/d. TOTAL has already reduced routine flaring on its operated facilities by about 77% between 2010 and 2016.

Furthermore, as part of the Global Gas Flaring Reduction program, TOTAL has worked alongside the World Bank for over 10 years to help producing countries and industrial players control routine flaring of associated gas.

Flaring	2016	2015	2014
Global volumes of flared gas flared in Mm <sup>3</sup> /d	7.1	7.2	9.8
<i>Including routine flaring in Mm<sup>3</sup>/d</i>	1.7 <sup>(a)</sup>	2.3 <sup>(b)</sup>	3.4 <sup>(b)</sup>

(a) Volume estimated based on data as of end of 2016, according to the new routine flaring definition published in June 2016 by the working group of the Global Gas Flaring Reduction program.

(b) Volumes estimated based on available historical data.

## Improving the energy efficiency of the Group's facilities

One of the Group's performance targets is to better control energy consumption. Internal documents (roadmaps and guides) describe the challenges and set out methodologies and action plans. Since the beginning of 2013, a Group directive has defined the requirements to be met at operated sites using more than 50,000 tons of oil equivalent per year of primary energy (approximately 40 sites). At year-end 2016, 83% of the concerned sites have reported compliance or engaged the actions to meet compliance with this directive.

Energy efficiency is a key factor for improvement of economic, environmental and industrial performance. Since 2013 the Group has used a Group Energy Efficiency Index (GEEI) to assess its performance in this area. It consists of a combination of energy intensity ratios (ratio of net primary energy consumption to the level of activity) per business.

The Group's objective for the 2010-2020 period is to improve the energy efficiency of its operated facilities by on average 1% per year. By design, the base value of the GEEI was defined as 100 in 2010 and the goal is to reach 90.4 in 2020.

Energy efficiency	2016	2015	2014
Net primary energy consumption (TWh)	146	153	153
Group Energy Efficiency Index GEEI (base 100 in 2010)	91.0	90.8 <sup>(a)</sup>	100.0 <sup>(a)</sup>

(a) The 2015 and 2014 data have been restated to take account of the new reference period 2010-2020 (the previous target period was 2012-2017).

Since 2010, energy efficiency has already improved by more than 9%.

In addition to the mandatory audits conducted in Europe as per transposition of the European Energy Efficiency Directive 2012/27/EU, the Group is implementing energy management systems based on ISO 50001. After the Leuna refinery and the Brunsbüttel bitumen plant (Germany), which have been certified for several years, the French energy-intensive refining and petrochemicals sites are preparing for ISO 50001 certification supported by the Group's energy services subsidiary BHC. The certification audits are scheduled in 2017.

Several Marketing & Services sites in France obtained ISO50001 certification in 2015: the Solaize research center, the Saint-Martin-d'Hères site, along with 7 depots and 193 service stations. In Exploration & Production, Total ABK (Abu Dhabi) also obtained this certification in early 2016.

TOTAL uses the most appropriate architectures and equipment and introduces technological innovations. For example, on offshore production barges, offshore platforms and onshore facilities, heat recovery systems at gas turbine exhausts have been implemented thereby avoiding the need for furnaces or boiler systems. For some offshore projects, such as Martin Linge (Hild) in the Norwegian North Sea, an "all-electric" facility has been put in place. Electricity is produced onshore then transported undersea to the platform, resulting in higher efficiency compared to electricity generated on an onshore platform.

## Improving the environmental footprint of products and services

Approximately 85% of GHG related to the use of oil and gas are emitted during the customer usage phase, compared to 15% during the production phase<sup>(1)</sup>. For this reason, in addition to the measures taken by TOTAL at its industrial sites, the Group believes that improving the environmental footprint of its products is a key factor in the fight against climate change.

The Group offers its customers solutions (products and services) for responsible energy use. In terms of energy services, TOTAL draws in particular on the know-how of its Tenag joint venture in Germany (49% owned) and BHC Energy in France acquired in 2014. These service companies work mainly for European customers, as well as in Africa and the Middle East. They use results obtained in-house to give industrial customers advice on improving their performance and energy efficiency.

Through the "Total Ecosolutions" program, the Group is also developing innovative products and services that perform above market standards on the environmental front, in particular in terms of reducing energy use, GHG emissions and the impact on human health. At year-end 2016, 96 products and services bore the "Total Ecosolutions" label. They relate to a variety of sectors, including mobility, agriculture, buildings, packaging, infrastructure and industrial manufacturing. Some of the products result in reduced energy consumption, such as Total Excellium fuel, Total Quartz Fuel Economy lubricant, and the Azalt<sup>®</sup> ECO<sup>2</sup> and Styrelf<sup>®</sup> ECO<sup>2</sup> bitumen ranges. Others, such as the new BioLife range of special fluids

(1) Source: IPCC et IEA.

derived from raw materials from fully certified renewable sources, enable a significant reduction in environmental impact (compared to the fossil equivalent).

The CO<sub>2</sub> eq emissions avoided throughout the life cycle by the use of “Total Ecosolutions” products and services, compared to the use of benchmark products on the market and for an equivalent level of service, are measured annually based on sales volumes. This represented 1.75 Mt CO<sub>2</sub> eq in 2016.

In addition to its efforts on facilities and solutions offered to its customers, since 2012 the Group has provided support for its employees in France on improving the energy efficiency of their homes through advice and help with the necessary investment. Since the beginning of this offer, 2,167 energy renovation works were supported by the Group and in 2016 5,300 packs of five LED bulbs were distributed free to employees.

### Progressing in carbon capture, usage and storage technologies

Development of carbon capture usage and storage technologies (CCUS) has been a long-standing Group commitment, in particular through its Lacq pilot project conducted from 2010 to 2013 (oxy-combustion capture and storage in a depleted reservoir). The Group systematically studies opportunities to re-inject the CO<sub>2</sub> contained in the deposits it exploits and is looking at use of CO<sub>2</sub> to improve hydrocarbon recovery. Building on these experiences, TOTAL believes it is important to continue its R&D efforts in various fields including maturity of capture technologies, availability and location of storage capacities, CO<sub>2</sub> usage, technical feasibility on the scale needed and reducing costs of technologies. With this goal in mind, TOTAL intends to devote up to 10% of its R&D investments to CCUS and has initiated work alongside its peers, within the Oil & Gas Climate Initiative, on the issues of marketability, capture technologies and world storage capacities.

### 2.3.5. Access to energy

The World Bank estimate for the number of people without access to electricity has exceeded 1.3 billion. In 2011, TOTAL therefore launched a range of innovative solar energy solutions, accessible to as many as people possible, led by its flagship project *Awango by Total* (refer to point 3.4.5 of this chapter).

### 2.3.6. Sector initiatives and international framework

In 2014, TOTAL decided to join the call of the UN Global Compact, which encourages companies to consider a CO<sub>2</sub> price internally and publicly support the importance of such a price via regulation mechanisms suited to the local context. TOTAL also works alongside the World Bank as part of the Carbon Pricing Leadership Coalition (CPLC): in 2016 the Group was appointed co-chair of one of the CPLC working groups (Convening Leadership). In particular, TOTAL advocates the emergence of a balanced, progressive international agreement that prevents the distortion of competition between industries or regions of the world. Drawing attention to future constraints on GHG emissions is crucial to changing the energy mix. TOTAL therefore encourages the setting of a worldwide price for each ton of carbon emitted, while ensuring fair treatment of “sectors exposed to carbon leakage” (as defined by the EU). To this end, six oil & gas industry leaders, including the Group’s Chairman and Chief Executive Officer, called for the setting up of carbon pricing mechanisms at the UN Framework Convention on Climate Change in June 2015.

According to the IEA, the electricity-generating sector is the sector that must contribute most to the decrease of CO<sub>2</sub> emissions in the world by 2035 in order to remain within the 450 ppm of CO<sub>2</sub> scenario (electricity generation contributes more than 65% to the emission reduction effort, compared to 11% for the industrial sector, 16% for transport and 4% for the construction sector). Substituting coal with gas in the electricity-generating sector is one fastest and cheapest way of reducing worldwide CO<sub>2</sub> emissions. This solution is immediately available and offers the necessary flexibility to electric networks, supplementing intermittent energies. As a result, TOTAL supports standards that impose emission ceilings on electricity generation, such as those in force in the United Kingdom.

In 2014, TOTAL was actively involved in launching and developing the Oil & Gas Climate Initiative (OGCI), a global industry partnership. At year-end 2016, this initiative involves 10 major international energy players. Its purpose is to share experiences, advance technological solutions and catalyze meaningful action in order to assist the evolution of the energy mix in a manner that takes into account climate change issues. In 2016, the OGCI worked in particular on CCUS and on reducing methane emissions. In November 2016, at a panel discussion with international energy and climate experts, the executives of the member companies published the second OGCI report also announcing the creation of an investment fund of \$1 billion over 10 years. This OGCI Climate Investments fund will finance startups and projects demonstrating high potential in terms of reducing greenhouse gas emissions. Initial priority will be given to deploying large-scale solutions for CCUS, reducing methane emissions throughout the gas value chain in order to increase its development, and improving energy efficiency, in both transport and industry.

TOTAL is the technical partner of the Breakthrough Energy Coalition (a \$1 billion fund), and in this capacity should help identify investment priorities and evaluate viable technologies.

TOTAL also actively participates in the debate on climate issues and has long-term partnerships with key stakeholders. For example, TOTAL funds research programs in France conducted by the ADEME, Paris-Saclay and the Climate Economics Chair at Paris-Dauphine University, as well as the Massachusetts Institute of Technology (MIT) in the United States. TOTAL has also been an active member of the World Business Council for Sustainable Development since 2014. Lastly, TOTAL offers training and makes presentations at several universities, thereby taking part in the debate.

### 2.3.7. Adapting to climate change

The Group ensures that it assesses the vulnerability of its facilities to climate hazards so that the consequences do not affect the integrity of the facilities, or the safety or people. More generally, natural hazards (climate hazards but also seismic risks, tsunami risks, subsidence, etc.) are taken account of in the design of industrial facilities enabling them to withstand normal and extreme conditions. The Group routinely assesses the possible consequences of climate change for its future projects. The assessments include a review for each hazard type (sea level, storms, temperature, permafrost, etc.) and consider the lifespan of projects and their capacity to progressively adapt. Studies conducted have not identified any facilities that are not able to withstand the currently known consequences of climate change.

## 3. Societal information

### 3.1. A structured societal approach



On the basis of the values and principles set out in its Code of Conduct and Safety Health Environment and Quality Charter, TOTAL places its commitment to community development at the heart of its corporate responsibility in order to create shared value with people living near its facilities, its customers and suppliers, and its employees. Dialogue with stakeholders, impact management and the creation of value are the pillars of the Group's societal policy.

This approach, which is deployed in direct relation with industrial or commercial operations, guides the actions taken by the Group to improve the way it is integrated into local territories. In line with the strategic priorities defined by the General Management, annual reporting tools are used to track and monitor overall societal performance. Several indicators, which are based on the societal policy, measure the quality of dialogue with stakeholders, the management of the impact of the Group's activities, socioeconomic development projects and access to energy. Four topics have been identified as Group priorities: education, employment, road safety and access to energy.

### 3.2. Dialogue and involvement with stakeholders



Openness, dialogue and engagement are essential for developing long-term, constructive and transparent relations with stakeholders. For the past 20 years or so, changes in the regulatory framework have promoted information, consultation and dialogue prior to high-impact decisions being made.

In addition to complying with regulations, TOTAL encourages dialog at every level of its organization. The Group societal directive demands that "each asset must consult its stakeholders regularly to gain a clearer understanding of their expectations and concerns, measure their level of satisfaction regarding the Group and identify avenues of improvement for its societal strategy".

#### 3.2.1. Stakeholder consultation

In Exploration & Production, dialogue is initiated within the framework of societal baseline studies carried out to identify at a very early stage (even before the start of operational activities) stakeholders that may potentially be affected and to understand the human socioeconomic context of the area in question. The Community Liaison Officer (CLO) maintains a dialogue between the subsidiary and the local communities. CLOs, who are employees of TOTAL and come from the local community and therefore speak the local language and understand local customs; as such they often play a key role in facilitating the Company's integration into the local context. To formalize and organize relations with stakeholders, agreements may also be signed and meetings held, such as public consultations.

For example in the Democratic Republic of the Congo, two societal officers were hired to work shifts and remain present seven days a week, with the support of four CLOs recruited from the impacted communities, in readiness for a seismic campaign launched at the start of 2016. Six additional CLOs were recruited by the contractor in charge of the seismic campaign in order to maintain permanent dialogue with the communities.

In addition to holding regulatory forums for dialogue, Refining & Chemicals has voluntarily set up structures for dialogue with local stakeholders (such as Community Advisory Panels in the United States and special commissions for some European platforms). In application of the worldwide Responsible Care® voluntary charter covering the scope of its worldwide petrochemical activities, Refining & Chemicals consults its stakeholders in order to understand their concerns and offer an appropriate response.

#### 3.2.2. Implementation of the SRM+ tool

To put its societal approach on a professional footing, TOTAL has applied its internal Stakeholder Relationship Management (SRM+) methodology since 2006. The aim is to identify and map out the main stakeholders and the societal issues in the local context, to meet the stakeholders, understand their views and issues, and then define an action plan for building a long-term trusting relationship. These discussions allow the Group to better address the expectations of the stakeholders and consolidate the societal strategy of the subsidiaries and sites. Since 2006, SRM+ has been implemented in over 100 entities, and the deployment will continue in 2016:

- at Exploration & Production, the SRM+ method was rolled out on the site in Pau, France as part of an initiative to optimize the portfolio of societal actions deployed all over the country;
- at Refining & Chemicals, the SRM+ was deployed on three sites in 2016: the Flanders site and the Normandy (France) and Antwerp (Belgium) platforms; and
- at Marketing & Services, a specific module, developed in 2012, has now been deployed in 80% of the countries covered, including Costa Rica, Singapore, Sierra Leone and the Netherlands in 2016.

### 3.2.3. Respecting the rights of indigenous peoples

TOTAL acknowledges the specificities of indigenous and tribal peoples (as referred to in International Labor Organization's Convention No. 169) and has developed a Charter of Principles and Guidelines Regarding Indigenous and Tribal Peoples to be followed with communities that are in contact with its subsidiaries. This Charter encourages the use of experts in order to identify and understand these peoples' expectations and specificities, consult with them and contribute to their socioeconomic development.

In Bolivia, the societal and environmental situation of the Azero Block (indigenous communities and a national park) prompted the Total E&P Bolivia subsidiary to put an even greater focus on human rights in the execution of the project and to improve dialogue with the local communities. The discovery of remains and archaeological tools during the construction of the Incahuasi gas treatment plant, located on the territory of the Guarani indigenous people, was managed in collaboration with the Bolivian authorities and the local Guarani communities. TOTAL agreed to move the treatment plant's

torch to another position, so that the funereal remains could be buried on the spot where they were found. In 2015, International Alert (IA), a British NGO that specializes in finding and supporting peaceful solutions to conflicts, conducted an impact assessment on human rights and the risks of conflict. IA drew up recommendations with a view to better integrating respect of human rights into the management of the project and to improve dialogue with local communities, by taking the cultural dimension into consideration. The report is available online.

Additionally, an internal team of professionals from the social and natural sciences was recruited to initiate a participative approach and to establish dialogue with local actors at the earliest possible stage. The initial societal baseline survey, which was launched in August 2015 and involved several meetings with local organizations and all the affected communities, defined a framework of respect for the stakeholders, of information, dialogue and coordination that was given to every organization. These efforts to establish a dialogue reached more than 2,500 people, of whom 36% were women.

## 3.3. Controlling the impact of the Group's activities



The societal initiative is integrated into operational processes using the internal H3SE management system (occupational health and safety, security, societal commitment and the environment), known as MAESTRO (Management And Expectations Standards Towards Robust Operations). Audits conducted with MAESTRO give rise to recommendations and strengthen efforts in order to better manage the Group's operations.

### 3.3.1. Conducting impact assessments

An understanding of the socioeconomic context is gained through a baseline study, which is generally accompanied by a consultation phase involving local stakeholders.

These societal studies, which are a systematic prerequisite for Exploration & Production projects, are made before any start-up of operations in an effort to avoid, reduce, compensate or remedy any negative impacts. For example, in Egypt dialogue was established by local consultants in the course of the initial societal baseline studies conducted, at the end of 2015, before the drilling of the onshore exploration licenses (Block 2, Block NEMO) of the Nile Delta, and through a number of interviews in a 50 km<sup>2</sup> zone around the exploration well close to a hamlet, in early 2016.

Some 360 responses to a questionnaire from these villages and hamlets led to a better understanding of the societal and the socioeconomic context of the zone. In addition, 20 discussion groups (men and women were usually separated to make it easier for everyone to voice their opinions) and 32 interviews with stakeholders were organized. This dialogue continued as part of the societal impact assessment, which analyzed the potential impacts and defined mitigation measures. The recommendations were then included in the specifications for the drilling contractor. Furthermore, replacement farm land was made available in May 2016 for more than one year.

The Group developed the MOST (Management Operational Societal Tool) tool that allows users to manage stakeholder relations, site-related grievances and societal projects. Specific modules (access to land, compensation and employment) can be added to this common framework. Societal data is geo-referenced, with automatic display in a geographic information system. MOST generates reports that serve as a basis for the analysis of societal performance. Using this tool, a new version of which was released in 2016, is part of the process to raise the standards of professionalism of the local teams. In 2016, the tool was deployed in three new countries (Angola, Argentina and Papua New Guinea), bringing to 15 the number of subsidiaries of Exploration & Production that use the tool.

### 3.3.2. Handling grievances from local communities

The grievance mechanism was reinforced in 2016 in preparation for its gradual introduction at all the Group's subsidiaries and sites.

At Exploration & Production, a manual on the handling of grievances, inspired by the UN Guiding Principles on Business & Human Rights, has been available since 2013. For example, Total E&P RDC has taken several preventive measures related to human rights. The mechanism to handle grievances includes an escalation system for any grievances or incidents that could have consequences for human rights.

At Refining & Chemicals, grievance handling systems are in place on every platform. Certain issues may be addressed with the support of the stakeholders. For example, a program was set up to monitor odors near an industrial park, thanks to the participation of NGOs and volunteers. A panel of "noses" were trained in the characterization of odors, which were monitored for a one-year observation period. The findings were collected and the results were presented at a discussion meeting with the stakeholders.

At Marketing & Services, a guide to raise awareness of grievance management has been available since 2014 to allow the subsidiaries and operating sites to introduce a dedicated system separate from the one used to handle commercial complaints. This mechanism was incorporated into Marketing & Service's societal framework.

### 3.3.3. Improving road safety

Safety is one of TOTAL's values (refer to point 2.1 in this chapter, which covers the safety of employees and transport contractors). Road safety in particular is a global issue that is right at the heart of the Group's business, and one of the top priorities of its societal action.

The Group's ambition to actively take part in the reduction in the numbers of victims of road accidents is reflected by the numerous actions taken as part of the United Nations Decade of Action for Road Safety (2011 – 2020), of which TOTAL is a partner. In 2016, the Chairman and Chief Executive Officer restated the Group's commitment by joining the high-level consultative group initiated by the International Automobile Federation, which has been tasked with uniting leaders from all over the world in the promotion of innovative solutions to the challenge of road safety. In this context, the Group took part in the first study mission in Myanmar, intended to establish a baseline in order to propose a national road safety action plan to the country's authorities.

The Group is also a member of the Global Road Safety Partnership (GRSP), which aims to encourage the development of multi-sector partnerships that will spread good practices on the road all over the world. In 2016, the Group continued to support the seminars organized by the GRSP in Beijing (China) in May, and in Durban (South Africa) in October, that were attended by experts and players in road safety from Asia and Africa respectively.

The GRSP is also helping TOTAL to improve its "En route pour ta Sécurité" flagship program, intended to raise children's awareness of dangers on the road. Developed in 2012, this game-based educational program has been deployed in 37 countries in Africa and the Middle East, and in 8 Asian countries, reaching out to more than 700,000 children. A study conducted with the GRSP identified paths of improvement and produced a methodological guide

intended to strengthen its impact, in particular by involving local stakeholders in the identification of changes to road layouts around schools. TOTAL hopes to build a network of excellence, made up of highly motivated schools and competent partners that will turn everyone into an ambassador of road safety. The system aims to make 200,000 children more aware every year. For several years now, TOTAL has been deploying a game-based and educational cube-shaped tool designed by TOTAL for teachers (the "Cube Sécurité") that is also easy to use in communities. Some 750 schools worldwide already use this cube, and 1,000 more cubes will be distributed in 2017.

Other local initiatives for two-wheelers are also being deployed in Asia, and in particular the "Prends soin de toi aussi bien que de ta monture" campaign, focusing on the importance of wearing a helmet and proper maintenance. TOTAL is continuing its actions to bring the public and private sectors on board through the Safe Way Right Way platforms designed to mobilize partners, raise funds, develop training and awareness-raising actions, or to contribute to improving the regulations and their application along two major highways between Kenya and Uganda on one hand, and in Cameroon on the other.

In 2016, in France, TOTAL and 20 other major companies signed the national appeal in favor of road safety and work, initiated by the Ministry of the Interior, which aims to engage with businesses with a view to reinforcing prevention amongst employees through concrete commitments. Since 1995, TOTAL has been a partner of the "10 de Conduite Jeune" training campaign for young drivers in cooperation with the French national police, Groupama and Renault. Each year, this initiative raises awareness among more than 10,000 junior and secondary school students of dangerous behavior on the road.

## 3.4. Creating local value



The Group has a special responsibility towards communities living in the vicinity of its facilities, and strives to turn its activities into sources of value and opportunity for them. TOTAL's ambition is to act and be recognized as a partner in the sustainable economic and social development of the communities and territories where it operates, and as a standard-setter for access to energy.

TOTAL is building a global, integrated local development approach ("In-Country Value") that creates synergies among all the value-creating elements for host countries (infrastructure, support for local industries, employment, subcontracting, socioeconomic development projects, education, access to energy, etc.) by promoting the Group's industrial know-how. This approach is reflected in two key strategies: on the one hand, the Group's commitment to local content and, on the other hand, support for the implementation of socioeconomic programs, including in particular the implementation of access-to-energy programs.

### 3.4.1. Acting as a partner for human, social and economic development

TOTAL's contribution to the socioeconomic and human development of the countries in which the Group operates is reflected in its involvement in local development programs.

In 2016, €387 million was spent on societal projects, compared to €384 million in 2015 and €459 million in 2014. Certain expenses are managed directly by host countries in application of contractual provisions, for example in Nigeria (Niger Delta Development Committee) or in the Republic of the Congo (*Provisions d'investissements diversifiés*). In 2016, 3,000 societal actions were reported. These programs support local populations and fall into three main categories: local economic development, human and social development and citizenship.

Two cross-functional priorities underlie these projects: partnerships and skills development. Built on constructive dialogue and the determination to forge long-term relationships of trust with stakeholders, partnerships with local institutions and organizations guarantee the long-term success of projects. In all its actions, TOTAL ensures that it respects local authorities' prerogatives and

teams up with NGOs that have field experience. In the same vein, TOTAL promotes actions that help strengthen the ability of individuals and local bodies to organize their development independently in order to ensure sustainability.

The Group's expertise is based on the continued professionalization of its societal teams through structuring projects, setting goals and monitoring performance indicators. At the Group's head office, an individual is dedicated to relations with NGOs. At Exploration & Production, more than 400 people work in societal matters, over 360 of which on a full-time basis. Several in-house training modules have been created for all Group employees, including an e-learning developed in 2016 on the Group's societal approach

### 3.4.2. Committing to local content

The Group is committed to increasing its use of local labor and subcontractors that meet the operational requirements of its activities, in particular through programs designed to train and support SMEs and important players in the local economy. TOTAL contributes to the diversification of the economy in the territories where it operates by supporting multiple local initiatives, with a particular emphasis on the improvement of skills and education.

To this end, Exploration & Production shifted from a local content approach (focused mainly on direct and indirect local employment) to an In-Country Value approach geared toward local value creation. The segment's roadmap is centered on four main areas: publishing future industrial and manpower needs; using a unique supplier database for each subsidiary; developing a large-scale program for training technicians; and comprehensively studying local value creation. TOTAL participated in the development of the IPIECA "Local content strategy guide" and recently helped update this document.

For example, in the Republic of the Congo, Total E&P Congo has had since 2012 an organization dedicated to the development of local content, which identifies and rates local companies that are potential subcontractors. The Moho Nord project introduced a plan for the compulsory use of local content by its international subcontractors and the local lower-level subcontractors. In a drive to favor the use of local labor, training plans were set up to improve the skills of the local workforce and to align them with the needs of the project: more than 200,000 hours of training for junior managers working on the project, and more than 3,200 hours of training for 46 lecturers from technical and engineering universities.

With respect to Marketing & Services, the first "Start-upper of the year by TOTAL" contest was organized in 34 African countries in 2016. This pan-African contest aims to support young entrepreneurs from all backgrounds, and in all fields of activity. Of the 6,642 projects received, 102 winners were selected (three per country), including four continental prize-winners from Egypt, Nigeria, Senegal and Cameroon. The winning start-uppers receive funding, heightened visibility (with the "2016 start-upper of the year by TOTAL") and business support for their project from the Group's local subsidiaries and expert partners in the field selected by TOTAL. For the four continental winners, TOTAL works with Bon'Innov, an incubator for innovative projects with a strong economic and societal impact. In Africa and the Middle East, TOTAL is pursuing the "Young Dealers" program that aims to help young service station employees gain promotion to management positions.

### 3.4.3. Boosting regional development and supporting major industrial changes to the Group's platforms

In addition to the jobs generated by its activities, the Group, as a responsible company, supports SMEs, particularly in France, through its *Total Développement Régional* (TDR) subsidiary. To help and support the economic development of SMEs and the regions, TOTAL has set up a program to examine applications for funding from French SMEs in accordance with the Group's standards.

This support is a major element in TOTAL's commitment to its industrial and economic responsibilities and takes a number of different forms within TDR that help create long-term jobs:

- financial assistance for the setting up, development or takeover of SMEs in the form of loans;
- industrial conversion assistance alongside local development bodies; and
- assistance in the development of export activities and international trade, and help for innovative SMEs.

Between 2014 and 2016, TDR has issued a total of €23.4 million in loans to 434 SME projects, thereby supporting nearly 8,000 jobs.

The Group relies on TDR for the local implementation of agreements signed with governmental authorities in connection with its industrial conversion projects. These included, for example, the conversion of the ICD platform in Dunkirk and the future Carling Saint-Avoid and La Mède platform projects.

To maintain industrial activities and jobs once refining operations at the Flanders facility end, two industrial projects are underway: construction of a dietary phosphate production plant by 2017 (Ecophos), and construction of a pilot biodiesel and biofuel production plant in which the Group has a stake (BioTFuel). Overall, the 2012-2014 regional development framework agreement helped create or maintain 800 jobs.

In Carling (France), the second steam cracker was permanently shut down in 2015. To adapt the platform and ensure its future by restoring its competitiveness, TOTAL invested €180 million in 2016 in order to develop new activities in the growing hydrocarbon resins (Cray Valley) and polymers markets. TOTAL has made a commitment to implement this industrial conversion without any lay-offs and to fulfill all of its contractual obligations with its clients and partner companies, particularly through a support fund for subcontractors. In addition, TOTAL is committed to improving the Carling industrial platform's attractiveness by developing a shared services offer, with the aim of helping new industrial stakeholders become established at the platform. In this way, TOTAL confirms its responsibility towards the employment areas in which the Group operates as well as its commitment to maintain a strong and sustainable industrial presence in the Lorraine region.

Plans to convert the La Mède refinery through an investment greater than €200 million are underway to create the first French bio-refinery, establish an 8 MW solar farm and set up a training center in partnership with the French Institute for Oil and New Energies. This project will be completed without any lay-offs. TDR is particularly involved in providing support to the subcontractors and putting the Group's commitments into action.

In Carling and La Mède, these commitments to local authorities have been set out in a Voluntary Agreement for Economic and Social Development, including Group support for SMEs (e.g., subcontractors, loans to SMEs) and industrial initiatives (e.g., improved platform structure and greater appeal, search and examination of third-party industrial projects).



### 3.4.4. Supporting education

Education is key to creating shared value by helping host countries develop the skills of their young people and training the future employees that industry will need. TOTAL's contributions to education are framed within existing local systems, adapted to local realities and always undertaken in the form of partnerships. In addition to support for primary and secondary education where needs have been identified, the Group's educational initiatives are built around four core international programs: scholarships, partnerships with universities, teaching and research chairs, and professional training.

TOTAL promotes the internationalization of its management, the recruitment of local personnel and their access to positions of responsibility, particularly within their original subsidiaries. To achieve this, the Group offers local, regional and international scholarships prior to recruitment. For example, since 2004, over 1,000 students from the Group's host countries have been able to prepare for qualifications (doctorates, MBAs, Master's degrees, engineering schools, bachelor's degrees and university institutes of technology) at the best institutions, mainly in France.

To help the companies recruit qualified local staff, TOTAL helps to strengthen the African continent's universities by making the Group's technical and scientific expertise available to them. Approximately 30 framework agreements have been signed with leading institutes of higher education, such as the 2IE Institute in Burkina Faso and the universities of Cape Town and Witwatersrand in South Africa. The university partnership program launched in Africa in 2010 has subsequently been deployed across Europe, Asia and the Middle East and now includes 80 establishments in regular dialogue with TOTAL.

TOTAL lends its support to teaching and research chairs, and in particular research and innovation at 24 institutions, to address the needs of the business world.

In addition, professional training programs adapted to the needs of each country are organized in cooperation with local actors and allow trainees to obtain diplomas and recognized professional qualifications. These programs are complemented by "TOTAL associate teachers". This original initiative is a non-profit association run by current or retired employees of the Group who teach courses free of charge in schools and universities. Over 250 teachers give courses and lectures in oil-related fields. During the 2015-2016 academic year, over 17,000 students throughout the world benefited from this expertise.

In 2016, the inaugural session of the Total Energy Summer School (TESS) was attended by 84 students, 40 teachers and researchers from around the world and 75 Group experts. The event included three days of workshops, in which participants addressed the future energy challenges facing science, industry, the economy, education and social responsibility. Some plenary sessions were streamed live or replayed at the Total Campus, the dedicated platform for students, to encourage the widest possible participation.

Finally, to help provide access to education to as many people as possible, TOTAL broke new ground by contributing to the creation and distribution of a free massive open online course (MOOC) on the oil chain (entitled "Oil & Gas: from Exploration to Distribution") a four-week online course taken by 21,800 participants.

### 3.4.5. Giving the most disadvantaged populations greater access to energy

For more than 10 years, several Group subsidiaries have been engaged in various one-off access-to-energy projects for low-income populations, usually in cooperation with neighboring communities and local authorities in host countries. To improve its societal performance, structure its approach and reach out to the widest possible audience, TOTAL aims to develop models that are both profitable and sustainable. For this reason, in 2010 the Group launched the "Total Access to Energy" program, a source of initiatives for identifying and testing solutions that facilitate access to energy for the poorest populations.

#### *Awango by Total, a new business model*

The first large-scale achievement to come out of this program, *Awango by Total* is a business response to a societal problem. This innovative, sustainable and reproducible business model offers a range of solar solutions for lighting and recharging small electrical appliances such as mobile phones.

Launched in 2011 in four pilot countries, this offer was sold in close to 50 countries in 2016, including 12 where it is currently being launched. By the end of 2016, nearly 1.8 million lamps had been sold, improving the day-to-day lives of nearly 9.5 million people. The distribution networks used are both TOTAL's traditional networks (service stations) and "last mile" networks built with local partners to bring these solutions to isolated areas. Reseller networks are then set up and economic programs developed with the support of external partners to recruit and train young solar resellers.

This model is based on innovative partnerships with various stakeholders : in 2016, approximately 50 business partnerships were launched with such varied stakeholders as NGOs, development agencies, professional customers (retailers, TOTAL key account customers, etc.), telecommunications operators or international organizations.

The Group's goal is to further develop this program and reach out to 25 million people in Africa by 2020 by selling five million lamps in a continent that is at the core of TOTAL's global strategy.

Several new business models are being trialed. Two significant examples include:

- the development of solar kit and lamp ownership schemes on a pay-as-you-go or credit basis. The sale of a solar kit (several light sources, a flashlight, a radio and a cable for recharging a cell phone) worth approximately \$100 to \$150 is accompanied by a financing plan allowing customers to spread out their payments; and
- the launch of the first crowdfunding platform to promote access to energy in partnership with Babyloan, a European leader in crowdfunding. This partnership aims to accelerate access to energy and related financing solutions, particularly in Africa, Asia and Latin America, where the need is greatest. This collaboration aims to support the creation of local microbusinesses that will develop distribution networks towards isolated communities and better address last mile distribution challenges. By the end of 2016, three microfinancing institutions were qualified, two of which are operational on the platform, in Peru and Kenya. In 2017, 2,000 projects are expected to be financed in approximately 10 countries.

**Fighting fuel poverty and developing more inclusive mobility**

TOTAL is actively involved in the fight against fuel poverty in France by supporting and guiding low-income households in improving thermal insulation in their homes. The Group is working alongside the French government and other energy producers in the “Living Better” program, which has allowed 200,000 low-income households<sup>(1)</sup> to benefit from thermal renovation since its creation in 2011. In addition, the 90 energy efficiency ambassadors at SOLIHA and FACE (agreement signed with the French Ministry for the City, Youth and Sport) have helped to identify and support households affected by energy poverty in 30 departments in France (assistance with building renovation formalities, financing solutions, training in eco-friendly behavior).

As a driving force for mobility, TOTAL supports the launch and development of mobility platforms aimed at addressing the transport needs of vulnerable people. This initiative is being

spearheaded in partnership with the Wimoov association, which offers mobility advice and solutions to 7,500 people a year<sup>(2)</sup>, 50% of whom find jobs or new employment. TOTAL and Wimoov jointly created the Inclusive Mobility Laboratory, which focuses on the global recognition of mobility advisors and innovative services available to vulnerable groups, including local support via community services and tailored digital solutions that bring together transport operators and players in the social economy. The call for projects issued in partnership with the French Ministry for the City, Youth and Sport (Experimental Youth Development Fund) has made it possible to fund and support, via the Agence nouvelle des Solidarités actives (new agency for active inclusion), 16 innovative youth initiatives throughout France until the end of 2016.

Finally, TOTAL launched service stations with reduced investment and operating costs for municipalities according to a social business model intended to facilitate access to fuel in rural areas in France.

**3.5. Partnerships and philanthropy**



In addition to the societal initiatives that are directly related to the Group’s industrial activities, TOTAL has also been committed for over 20 years to taking general-interest measures in the countries where it has operations. These actions are essentially conducted by the Total Foundation and the Philanthropy Department of TOTAL S.A.

**3.5.1. Total Foundation**

For the period of 2013-2017, the Group has renewed its commitment to its foundation, which has a five-year budget of €50 million. The Total Foundation is active in four fields: health, solidarity, oceans and marine biodiversity, culture and heritage.

In the health field, the Group has been a partner of the Pasteur Institute since 2005. The aim of this partnership, renewed for 2015 to 2017, is to support the fight against childhood diseases through research programs and field actions in partnership with the Group’s subsidiaries. Projects are focused on providing training to local actors and are mainly carried out in Africa and South-East Asia.

In the field of solidarity, the Total Foundation encourages Group employees to engage with the community through support for projects championed by non-profit organizations with which they volunteer on a personal basis. In 2016, the Foundation supported 46 employee projects in 25 countries.

With regard to marine biodiversity, the Total Foundation funds research programs undertaken to improve knowledge about marine species and ecosystems and challenges related to their protection and enhancement. For the 54 projects supported in 2016, the Foundation ensures the sharing of knowledge through awareness and education campaigns.

In the culture and heritage field, the Total Foundation partly funded 11 exhibitions in 2016 that helped to showcase the cultures of the countries in which the Group operates. In 2015, the Total

Foundation and the *Fondation du Patrimoine* (heritage foundation) renewed their partnership for the fourth time for the 2015-2017 period. The partnership primarily focuses its activities on the rehabilitation of the country’s industrial, craft, port and maritime heritage converted for sociocultural purposes and on work sites designed to further professional training and social integration. Since 2006, over 180 projects, including 35 worksites for employment integration (or including social integration clauses), set up across France have received nearly €22 million in funding from this partnership. In 2016, 8 new worksites of this kind have been supported by Total Foundation for an amount of €795,000.

**3.5.2. TOTAL S.A. philanthropy**

In the field of solidarity, the Philanthropy Department has forged a number of major institutional partnerships in France. Since 2009, it has worked with the French government and the ministry responsible for youth to promote the social, professional and civic integration of young people. This program, developed under the “*La France s’engage*” label, has benefited over one million people since 2014. This partnership, with an overall budget of €60 million and the experimental youth development fund as its primary technical and financial tool, has enabled the financing of 31 projects in 2016.

In the marine field, the Group has been a partner of the French Society of Sea Rescuers (SNSM) since 2008. Through its funding and expertise, it plays a role in improving the safety of rescue operations and training volunteers. Thanks to its support, the Sea Rescuers have a center equipped with a state-of-the-art navigation and vessel handling simulator. Each year, over 500 rescuers have access to this training.

In the field of culture, convinced that access to culture from a very young age is key to self-confidence and respect for others, the Group supports numerous initiatives designed to instruct young people in the worlds of art and culture. In total, nearly 100,000 children from metropolitan France and the Overseas Departments have benefited from these projects.

(1) Source: Anah.  
(2) Source: Wimoov.

## 3.6. Contractors and suppliers



TOTAL's activities generate hundreds of thousands of direct and indirect jobs worldwide. The Group's purchases of goods and services (excluding oil products) represented approximately \$34 billion worldwide in 2016. Approximately 25% of these expenditures were for goods (e.g., products, materials) and approximately 75% were for services (including consulting services, work with supply of materials and transport). The number of hours worked by subcontractors is monitored for large projects. This involves a range of environmental, social and societal impact concerns addressed by TOTAL when dealing with its suppliers via its principles, purchasing commitments and sustainable procurement initiatives.

TOTAL's societal commitment is shared by the Group's employees, partners, customers and suppliers, in particular by employing more local staff and subcontracting more work to local businesses wherever the operating constraints of its activities allow. The Group's societal directive stipulates that purchasing processes must be adapted as required in cases where a societal action plan has been implemented.

TOTAL has created a map of the CSR risks and opportunities in the Group's main purchasing categories to identify key issues in three areas: ethics and human rights, environmental impact and the creation of value with local communities. Pilot projects were implemented in certain purchasing categories to integrate the monitoring of CSR aspects into the purchasing process through concrete measures: specific questionnaire focusing on the Fundamental Principles of Purchasing, drafting of suitable contract clauses, good practices factsheets for purchases from the disabled and sheltered employment sectors, organization of a workshop with internal experts on the climate and energy efficiency in preparation of a global request for proposals on the air transportation of passengers, and creation of a guide for buyers on how to calculate the total cost of utilization (TCU) for support boat services and thereby assess commercial solutions with greater accuracy.

### 3.6.1. Monitoring responsible practices among suppliers

In its Code of Conduct, TOTAL states that it works with its suppliers to ensure the protection of the interests of both parties on the basis of clear and fairly negotiated contractual conditions. This relationship is founded on three key principles: dialogue, professionalism and adherence to commitments.

TOTAL expects its suppliers to:

- adhere to principles equivalent to those in its own Code of Conduct, such as those set out in the Fundamental Principles of Purchasing directive; and
- agree to be audited, be particularly attentive to the human rights-related aspects of their standards and procedures, in particular their employees' working conditions, and ensure that their own suppliers and contractors respect equivalent principles.

The Fundamental Principles of Purchasing, launched in 2010 and formally set out in a Group directive in 2014, specify the commitments that TOTAL expects of its suppliers in the following areas: respect for human rights at work, health protection, assurance of safety and security, preservation of the environment, prevention of corruption, conflicts of interest and fraud, respect for competition law, as well as the promotion of economic and social development. TOTAL's suppliers must be made aware of these rules, which apply to all the Group's companies, by including or transposing them into the agreements concluded with these suppliers. These principles are available for consultation by all suppliers in both French and English on TOTAL's website (under "Suppliers").

Questionnaires focused on environmental and societal issues are used to gather more in-depth information from suppliers about their approach to these subjects, either during qualification or as part of an audit. Supplier relations are also considered from an environmental and societal perspective on occasion as part of ethical assessments of Group subsidiaries and entities undertaken by GoodCorporation (refer to point 3.7.2 of this chapter) in all continents in which the Group is present. In 2016, TOTAL also signed a contract with an auditing firm specializing in working conditions with the aim of developing support for suppliers in this particular area. The first audits have been completed in 2016.

In 2015, TOTAL signed an agreement with the worldwide trade union federation, IndustriALL Global Union, which marks a major step in TOTAL's commitment as a responsible employer (refer to point 1.3 of this chapter). In addition, TOTAL is committed to disclosing and promoting the principles of this agreement to its service providers and suppliers.

The Group also pursued a number of one-off initiatives in 2016. For example, Marketing & Services held two awareness-raising sessions to train buyers on how to evaluate suppliers in terms of CSR, sustainable development and respect for human rights at work.

The deployment of the anti-corruption policy in purchasing continued in 2016 with the dispatching of specific questionnaires to select suppliers and, in some cases, external controls. In 2015, Refining & Chemicals ramped up the deployment of this policy and analyzed over 3,000 suppliers. Slightly more than 300 suppliers had to complete and sign a detailed questionnaire. This process continued in 2016 with over 800 suppliers analyzed and over 80 questionnaires sent out. In parallel, an initiative was launched in 2014 in which service providers working on Group sites were asked to take a training module similar to the Group's anti-corruption e-learning module. CDs of this e-learning course were also distributed by several entities to their suppliers. For further information on the prevention of corruption, refer to point 3.7.1 of this chapter.

In addition, pursuant to Rule 13p-1 of the Securities Exchange Act of 1934, as amended, which implemented certain provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, TOTAL has submitted since 2014 to the SEC an annual document relating to certain minerals (deemed "conflict minerals"<sup>(1)</sup> by this Rule) sourced from the Democratic Republic of the Congo

or a neighboring country. The document indicates whether TOTAL S.A. Or one of its affiliates had, during the preceding calendar year, used any such minerals that were necessary to the functionality or production of a product manufactured or contracted to be manufactured by the Group. The document also states whether such minerals were sourced from the Democratic Republic of the Congo or a neighboring country. The main objective of the rule's obligation to publish this information is to prevent the direct or indirect funding of armed groups in central Africa. For more information, refer to TOTAL's most recent publication available at: <http://www.sustainable-performance.total.com/fr/enjeux/supply-chain-management> or <http://www.sec.gov/>.

### 3.6.2. Promoting sustainable procurement

An interdisciplinary working group dedicated to the issue of sustainable procurement is tasked with strengthening TOTAL's policy in this area based on initiatives developed by each segment.

As part of the work pursued by the *Association française des entreprises privées* (AFEP) in 2016, TOTAL presented an action program for 2017-2020 targeting the circular economy, which includes a circular economy-based criterion in the relevant purchasing categories.

In addition to the Human Rights information document that TOTAL published in July 2016, the Group updated its "human rights" roadmap to include the commitments taken by the Purchasing function to raise awareness among buyers and suppliers (refer to point 3.7.2 of this chapter).

The Group's buyers take part in international working groups on sustainable procurement. TOTAL is an active member of IPIECA's Supply Chain Task Force. Building on the workshops held in 2015, TOTAL participated in a special workshop on Operationalization of the UN Guiding Principles organized by the IPIECA in March 2016, aimed at both oil and gas companies and engineering, procurement, construction (EPC) contractors. TOTAL is also represented in the French delegation involved in the international discussions considering the forthcoming ISO 20400 standard on sustainable procurement. The aim of this standard is to transpose the concept of social responsibility – as defined in ISO 26000 – to purchasing activities. Forty-one countries from every continent, as well as international organizations such as the OECD, the UN and the International Labour Organization, are involved in drafting this standard.

Sustainable procurement targets are integrated into the central buyers' annual appraisals. Practical tools have been developed and are available for all employees on the intranet in the Sustainable Procurement community (country factsheets on local laws and regulations, internal feedback and methodology sheets on human rights).

In 2016, TOTAL decided to dedicate the second edition of its Business Ethics Day to the supply chain. This initiative alerted employees and especially buyers to the issues of human rights and the prevention of corruption in the supply chain. Various events were held at the Group's headquarters and subsidiaries. A brochure designed to explain the Fundamental Principles of Purchasing to employees and suppliers was handed out to the workforce and uploaded to the intranet. A video of the interview with the Chairman and Chief Executive Officer was widely disseminated over the intranet to spread the word about TOTAL's commitment. This video contains a discussion about the feedback from a major TOTAL supplier.

As part of the Corporate Purchasing training program for new purchasing hires, an induction e-learning course entitled "Purchasing at Total" reiterates the Group's ethical commitments and the Fundamental Principles of Purchasing. "Purchasing St@rt", a course featuring a mix of virtual classes and e-learning modules, follows on from the Corporate Purchasing training program and once again addresses the issue of compliance and Corporate Social Responsibility in customer relationship management. The first session of "Purchasing St@rt" was held in 2016 with a dozen other sessions lined up for 2017.

In France, the Group's purchases from the disabled and protected employment sectors enabled the achievement of an indirect employment rate of nearly 1% in 2016. TOTAL is a member of the Pas@Pas association and provides its buyers with an online directory that can be used to identify potential suppliers and service providers from the disabled or protected employment sectors by geographical area and by category.

### 3.6.3. Acting as a responsible partner in relation with suppliers

TOTAL received the "Responsible supplier relationships" label in 2014 (maintained in 2015 and 2016) for its Holding and Marketing & Services activities in France. This label, awarded by the French authorities, recognizes companies that maintain sustainable and balanced relationships with their suppliers.

The general terms and conditions of purchase were updated in 2014 to ensure a sharper focus on balanced contractual relations. This balance is monitored in particular by an interdisciplinary working group dedicated to the issue of payment terms, set up in 2014. It involves the Purchasing and Finance departments at the French head offices of all the Group's business segments. The aim is for monitoring payment times, reporting and improving the processing of invoices.

The breakdown of TOTAL S.A.'s accounts payable as of December 31, 2016 and December 31, 2015, in application of the provisions of Article D. 441-4 of the French Commercial Code, is as follows:

	(in M€)		2016
	Group	Non-Group	Total
Balance	295	907	1,202
Overdue as of December 31	17	2	19
0 to 30 days	189	162	351
Over 30 days	0	379	379
Not yet received	89	364	453

	(in M€)		2015
	Group	Non-Group	Total
Balance	307	930	1,237
Overdue as of December 31	3	1	4
0 to 30 days	228	177	405
Over 30 days	0	348	348
Not yet received	76	404	480

(1) Rule 13p-1 defines "conflict minerals" as follows (irrespective of their geographical origin): columbite-tantalite (coltan), cassiterite, gold, wolframite and their derivatives, which are limited to tantalum, tin and tungsten.

TOTAL supports its suppliers in the different countries in which it does business. For example, Total E&P Congo (TEPC) organized five training sessions in the Republic of the Congo to help 75 local SMEs prepare more effectively in responding to a request for proposals. In addition, the subsidiary is taking part in a program to providing welding training for 20 welders from four local SMEs. A partnership has already been signed with a local center to provide training for electricity students. Finally, in order to give its major technical suppliers a clearer insight into SMEs and their expertise, a day event entitled "Discovering the skills and expertise of local industrial SMEs" was organized in November 2016. Close to 30 local SMEs, approximately 100 TEPC technicians, TEPC service providers and several large organizations took part.

In the United Kingdom, Total E&P UK (TEPUK) organized a HSE "Suppliers Day" event in 2016 featuring approximately 15 main suppliers. Every year, TEPUK also takes part in the "Share Fair" event staged by Oil & Gas UK (association whose members include oil and gas operators and suppliers in the UK). During the event, TEPUK presents its activities, its development and procurement program and its HSE and ethical requirements. The 2016 edition attracted 650 participants and gave TEPUK chance to carry out approximately 50 speed meetings. TEPUK received the award for excellence from both Oil & Gas UK and Oil & Gas Authority for its level of conformity to the supply chain code of practice.

Regarding the support given to French SMEs, TOTAL is a member of the "Pacte PME" association and was positively rated by its Monitoring Committee in 2016. One example is the support that the Group gives to the international development of SMEs, occasionally including its own suppliers, through *Total Développement Régional* (refer to point 3.4.2 of this chapter).

The identification of innovative SME suppliers takes place through the appointment of innovation correspondents within each Purchasing department of TOTAL's business segments, the use of the Pacte PME open innovation platform, and participation in events such as BPI France Inno Génération in May 2016.

In July 2016, a Suppliers Day concerning specialized IT services allowed 60 recently selected vendors to present their company and service range during a series of speed meetings at the head office in La Défense.

To contribute toward the development of good practices in business relations, TOTAL launched an initiative to raise its employees' awareness of mediation as an alternative method for resolving disputes. Each year since 2013, a training day run by professional mediators to raise awareness of mediation has been organized in French and English. In 2016, two sessions were held, with one in Abidjan and the other in Singapore. Each session brings together employees of the Group, lawyers and suppliers. This day enables employees to gain an understanding of mediation and its advantages, in particular in cementing long-term business relations, and includes practical exercises. A brochure designed to increase awareness of the mediation process is also made available to all employees. In addition, an email address is available on the Group website (under "Suppliers"). It can be used to contact the Group's internal mediator, whose task is to facilitate relations between the Group and its French and international suppliers. Finally, the general purchase terms and conditions also mention the possibility of recourse to mediation.

## 3.7. Fair operating practices

### 3.7.1. Preventing corruption



The oil industry must be particularly vigilant concerning the risk of corruption, especially given the scale of investments and the number of countries in which operations are conducted. Preventing corruption is therefore a major challenge for the Group and all its employees.

TOTAL's stance on the issue of corruption is based on the principles set out in its Code of Conduct: "The Group adopts a 'zero tolerance' approach to corruption and adheres to the strictest integrity standards". This Code sets out the principles governing the actions and individual behavior of each person, both in their day-to-day decisions and in their relations with the Company's stakeholders.

In it, TOTAL also reiterates its support for the OECD Guidelines and the Tenth Principle of the United Nations Global Compact, which urges businesses to work against corruption in all its forms.

The Group's commitment has led to a number of actions, including:

- the adoption by the Executive Committee in 2009 of a corruption prevention policy and the implementation of a dedicated compliance program. This policy was updated in 2016 to reaffirm the Group's commitment to prevent corruption; and
- the establishment of a specific organization including, in particular, a Compliance and Social Responsibility Department, which is responsible for rolling out a robust anti-corruption

compliance program via a network of more than 370 Compliance Officers wherever TOTAL operates.

The corruption prevention program includes:

- a framework of internal rules that allow employees, with the support of their Compliance Officer, to identify risk situations, conduct due diligence and implement appropriate actions. The adopted rules especially encompass representatives dealing with public officials, purchasing/sales, gifts/invitations, donations/philanthropy, acquisitions/divestments, joint ventures, conflicts of interest and Human Resources;
- activities designed to raise awareness among all employees: an initial e-learning course was rolled out in 2011 in 12 languages, followed by a more in-depth e-learning module in late 2015. This module is accessible to all employees and mandatory for the target groups (approximately 30,000 employees);
- more targeted training activities intended for the most highly exposed positions (particularly for implementation of new rules) and in-depth training for all Compliance Officers;
- the prohibition of "facilitation payments";
- regular reporting and incident feedback mechanisms, including an ethics alert system;
- audits dedicated to compliance (six to eight per year) covering all the Group's activities. These audits are followed up the next year to verify that the formulated recommendations have been implemented. In addition, missions carried out by the Group Audit Department include, depending on their purpose, controls

- to ensure compliance processes are being followed; and
- the application of suitable sanctions.

In 2016, significant internal communications took place to emphasize once again the importance that the Group attaches to these issues. For the UN's International Anti-Corruption Day and International Human Rights Day (both observed annually in December), TOTAL held the second edition of the Business Ethics Day, which focused on these two themes as part of the supply chain. This event was organized at the Group level and relayed locally by the subsidiaries to remind employees how to react appropriately and to encourage dialogue.

Under the settlements reached in 2013 between TOTAL, the U.S. Securities and Exchange Commission and the U.S. Department of Justice, an independent monitor was appointed for three years to conduct a review of anti-corruption compliance and related internal control procedures implemented by the Group and to recommend improvements, when necessary. In July 2016, the monitor submitted his third and final report, in which he certified that TOTAL has devised and implemented an appropriate compliance program. As a result of this certification, the U.S. authorities, after having reviewed the monitor's report, concluded that TOTAL has fulfilled all of its obligations, thus bringing an end to the monitoring process. As a result, a court in the State of Virginia granted a motion to dismiss on November 9, 2016, thereby terminating the procedure directed at the Company, which can no longer be pursued in the United States for these same facts. The Group is continuing to empower all employees and maintain its efforts in a bid to ensure the sustainability, development and continual improvement of this compliance program.

### 3.7.2. Respect for human rights



Activities of companies can affect the human rights of employees, suppliers and partners, customers, local communities and other stakeholders in numerous ways. TOTAL's proactive approach to human rights reflects its ethical commitment and helps to establish and maintain successful relationships with all stakeholders, which is essential for the Group to operate effectively.

TOTAL's approach to respect for human rights is based on several pillars, described below.

#### Written commitments

The Group's Code of Conduct was revised in 2014 to reinforce TOTAL's commitments in terms of respect for human rights. It sets out the Group's adherence to international standards such as the UN Guiding Principles on Business and Human Rights and the Voluntary Principles on Security and Human Rights (VPSHR). In the event of any discrepancy between legal provisions and the Code of Conduct, the highest standard of protection of human rights applies.

Respect for human rights is one of the Group's priority business principles, alongside integrity (preventing corruption and fraud and anti-competitive practices) and HSE standards. The Group ensures that employees' rights are protected and prohibits any form of discrimination against them, including due to sexual orientation or identity. It demands that they themselves respect human rights. TOTAL also expects its suppliers to respect standards equivalent to its own and pay particular attention to their employees' working

conditions. In particular in 2015 TOTAL signed a global agreement with the worldwide trade union federation, IndustriALL Global Union, which represents 50 million employees in 140 countries. Under this agreement, the Group is committed to maintaining minimum Corporate Social Responsibility (CSR) standards and guarantees worldwide for subsidiaries in which it has more than a 50% stake. The Group also ensures that the principles of the agreement on health, safety and human rights are disclosed to and promoted among its service providers and suppliers. The implementation of this agreement is monitored annually (refer to point 1.3 of this chapter).

Furthermore, while respecting the sovereignty of the host countries in which it operates, the Group reserves the right to express its conviction on the importance of respecting human rights in matters concerning it. Finally, TOTAL respects the rights of local communities by identifying, preventing and limiting the impacts of its activities on their way of life and remediating them.

Some of these principles are set out in the "To find out more" section of the Code of Conduct and are detailed in TOTAL's Human Rights Guide, as updated in 2015 (available in English and French at [total.com](http://total.com)).

In 2013, the Group developed a strategic human rights roadmap to better integrate respect for human rights into its various risk and impact management systems. The roadmap, approved by the Executive Committee, has been implemented by various Group entities. For example, easy-to-use auto-diagnostic and self-assessment tools for VPSHR risks for use by subsidiaries have been developed and were the subject of a pilot deployment in 2016 in 20 exposed entities. This roadmap has been updated for 2016-2018 in order to continue the efforts already made by the Group. It proposes actions to:

- integrate respect for human rights more globally into operational decisions at the local level;
- improve management's awareness level and accountability with regard to human rights at all levels of the company; and
- strengthen the analysis process and action and monitoring plans in the Group's at-risk entities.

#### A dedicated organization

The Ethics Committee and the Ethics and Human Rights unit advise employees, help operatives and monitor efforts to promote respect for human rights. In particular, they run a human rights Committee that coordinates the actions taken internally and externally by the various Group entities. The Ethics Committee is a central, independent structure that represents all of TOTAL's business segments. Its role is to listen and support. Both employees and people outside the Group can refer matters to it by email at [ethics@total.com](mailto:ethics@total.com). The Committee maintains confidentiality with regard to referrals, which can only be lifted with the agreement of the person in question. At the local level, mechanisms for handling grievances raised by local communities are also implemented by subsidiaries exposed to societal risks (refer to point 3.3.2 of this chapter).

#### Awareness and training

To ensure its adopted principles are disseminated in-house, TOTAL raises employee awareness via corporate communications channels, such as a group for sharing best practices and challenges in the area of respect for human rights accessible to Group employees on the TOTAL intranet, and through events such

as the annual Business Ethics Day (refer to point 3.7.1 of this chapter). The theme of this day event in 2016 focused on challenges in terms of human rights and anti-corruption in the supply chain. On this occasion an awareness-raising brochure was circulated on the Fundamental Principles of Purchasing, which include human rights. The Group has also produced several videos on three human rights topics that are key for TOTAL: responsible security, prevention of societal impacts on local communities, and working conditions, both for its own employees and within its supply chain. The Group also offers some employees special training tailored to the challenges faced in the field, such as the Responsible Leadership for a Sustainable Business program. Finally, actions are taken to raise awareness among the Group's external stakeholders, such as training related to the VPSHR for its security providers.

### Assessments and reporting

Tools are used to regularly assess the subsidiaries' human rights practices and the risks they may have to face. Their objective is to analyze the societal impacts of a project at the local level or to verify that the subsidiaries' practices are in line with the Group's ethical standards. TOTAL commissions approximately 10 ethical assessments per year, with more than 120 subsidiaries evaluated since 2002. These assessments are undertaken by GoodCorporation (GoodCorp), a qualified ethics expert. Certain assessments are also conducted in partnership with the Danish Institute for Human Rights, a Danish public non-profit organization. A reference catalog containing approximately 90 questions relating to human rights, labor law and rules on competition, is used on site, and numerous internal and external stakeholders are interviewed by GoodCorp over the course of several weeks. GoodCorp then issues a final report identifying points requiring improvement and good practices. The entity is then given several months to correct any issues that have been identified. A follow-up report is issued by GoodCorp for the subsidiaries that were assessed. Other non-profit partner organizations, such as the CDA Corporate Engagement Project, also contribute by evaluating the societal impact of the Group's activities on nearby local communities, for example by surveying the populations in question. CDA's reports are published online on their website. In July 2016, TOTAL published a dedicated human rights report (available at [www.sustainable-performance.total.com](http://www.sustainable-performance.total.com)) based on the UN Guiding Principles Reporting Framework – becoming the first oil & gas company to do so. This information document presents TOTAL's approach to integrate respect for human rights into its operations and business relations. It focuses on the three key topics for the Group and presents the most important subjects for each topic:

- human rights in the workplace, concerning TOTAL's employees but also those of its suppliers, contractors, partners, and those of their subcontractors. The subjects identified are forced labor and child labor, discrimination, fair and just working conditions and safety;
- human rights and local communities, concerning the impact of its activities on the communities in countries where TOTAL is present and including issues of access to land and the right to health and an adequate standard of living; and
- human rights and security, concerning measures to protect against the risks and threats to which the Group's employees and facilities are exposed, while ensuring that the risk of disproportionate use of force is avoided.

For each of these subject areas, the information document summarizes TOTAL's policies, the training and awareness-raising actions taken, and the due diligence measures implemented in response to the identified issues.

### Participation in external initiatives

TOTAL is actively involved in numerous initiatives and working groups on human rights that bring together various stakeholders including Global Compact, Global Compact LEAD (initiative for sustainable leadership), Global Business Initiative on Human Rights, IPIECA, VPSHR and non-profit organizations such as Shift.

### 3.7.3. Consumer health and safety



Many of the products that TOTAL markets pose potential risks; for example, if they are used incorrectly. The Group therefore aims to meet its current and future obligations with regard to information and prevention in order to minimize the risks throughout its products' life cycle. TOTAL's health and products directive sets out the minimum requirements for marketing the Group's products worldwide in order to reduce potential risks to consumer health and the environment.

TOTAL identifies and assesses the risks inherent to its products and their use, and then informs customers and users of these risks and the applicable prevention and protection measures. The material safety data sheets (MSDS) that accompany all products marketed by the Group (in at least one of the languages used in the country) and product labels are two key sources of information in this regard. All new products comply fully with the regulatory requirements in the countries and markets for which they are intended.

## 4. Reporting scopes and method

### 4.1. Reporting guidance

The Group's reporting is based:

- for social indicators, on a practical handbook titled "Corporate Social Reporting Protocol and Method";
- for Industrial Safety indicators, on the Corporate Guidance on Event and Statistical Reporting; and

- for environmental indicators, on a Group reporting procedure, together with segment-specific instructions.

These documents are available to all TOTAL companies and can be consulted at Corporate headquarters, in the relevant departments.

### 4.2. Scopes

In 2016, **environmental reporting** covered all activities, sites and industrial assets in which TOTAL S.A., or one of its companies it controls, is the operator (*i.e.*, either operates or contractually manages the operations): 808 sites at year-end 2016. greenhouse gas (GHG) emissions "based on the Group's equity interest" are the only data which are published for the "equity interest" scope. This scope, which is different from the "operated domain" mentioned above, includes all the assets in which the Group has a financial interest or rights to production.

**Safety reporting** covers all TOTAL employees, employees of contractors working at Group-operated sites and employees of transport companies under long-term contracts. Each site submits its safety reporting to the relevant operational entity. The data is then consolidated at the business level and every month at the Group level. In 2016, the Group safety reporting scope covered 486 million hours worked, equivalent to approximately 271,000 people.

**Reporting on occupational illnesses** follows the scope of the Worldwide Human Resources Survey (see below).

**Social reporting** is based on two surveys: the Global Workforce Analysis, and the complementary Worldwide Human Resources Survey. Two centralized tools (Sogreat and HR4U) facilitate performance of the above surveys.

The **Global Workforce Analysis** is conducted twice a year, on June 30 and December 31, in all fully consolidated companies at least 50% owned and consolidated by the global integration method. The survey mainly covers worldwide workforces, hiring under permanent and fixed-term contracts (non-French equivalents of *contrats à durée déterminée or indéterminée*) as well as employee turnover. This survey produces a breakdown of the workforce by gender, professional category (managers and other employees), age and nationality.

The **Worldwide Human Resources Survey (WHRS)** is an annual survey which comprises approximately 100 indicators in addition to those used in the Global Workforce Analysis. The indicators are selected in cooperation with the relevant counterparties and cover major components of the Group Human Resources policy, such as mobility, career management, training, work conditions, employee

dialogue, Code of Conduct application, human rights, health, compensation, retirement benefits and insurance. The survey covers a representative sample of the consolidated scope. The data published in this document are extracted from the most recent survey, carried out in December 2016 and January 2017; 135 companies in 57 countries, representing 87.5% of the consolidated Group workforce (89,365 employees) replied to the survey. With regard to training only, this scope covers 84.7% of the Group's consolidated workforce and 132 companies.

#### 4.2.1. Consolidation method

For the scopes defined above, safety indicators and social data are fully consolidated. Environmental indicators consolidate 100% of the emissions of Group operated sites for the "operated" indicators. GHG emissions are also published on an equity interest basis, *i.e.*, by consolidating the Group share of the emissions of all assets in which the Group has a financial interest or rights to production.

#### 4.2.2. Changes in scope

Social and environmental indicators are calculated on the basis of the consolidated scope of the Group as of December 31, 2016.

Variations in scope between the Group's different activities associated with the new "One Total" organization will be integrated in 2017. For 2016, social data have been reported based on the existing structures at the entry date. These data are presented on the basis of the operational business segments identified in the 2016 Consolidated Financial Statements.

For environmental indicators, acquisitions are taken into account as from January 1 of the current year as far as possible or as from the next fiscal year. Any facility sold before December 31 is excluded from the Group's reporting scope for the current year.

For safety indicators, acquisitions are taken into account as soon as possible and at the latest on January 1 of the following year, and divestments are taken into account at the end of the quarter preceding their effective date of implementation.



## 4.3. Principles

### 4.3.1. Indicator selection and relevance

The data published in the Registration Document are intended to inform stakeholders about TOTAL's Corporate Social Responsibility performance for the year in question. The environmental indicators include Group performance indicators referring to the IPIECA reporting guidelines, updated in 2015. The indicators have been selected in order to monitor:

- TOTAL's commitments and policies, and their effects on matters of safety, environment, social, etc.;
- performance relative to TOTAL's main challenges and impacts; and
- information required by laws and regulations (Article L. 225-102-1 of the French Commercial Code).

### 4.3.2. Terminology used in social reporting

Outside of France, "management staff" refers to any employee whose job level is the equivalent of 300 or more Hay points. Permanent contracts correspond to *contrats à durée indéterminée* (CDI) and fixed-term contracts to *contrats à durée déterminée* (CDD), according to the terminology used in the Group's social reporting.

**Managed scope:** all subsidiaries in which one or more Group companies own a stake of 50% or more, *i.e.*, 495 companies in 124 countries as of December 31, 2016.

**Consolidated scope:** all companies fully consolidated by the global integration method, *i.e.*, 340 companies having employees in 104 countries as of December 31, 2016.

**Employees present:** employees present are employees on the payroll of the consolidated scope, less employees who are not present, *i.e.*, persons who are under suspended contract (sabbatical, business development leave, etc.), absent on long-term sick leave (more than six months), assigned to a company outside the Group, etc.

## 4.4. Details of certain indicators

### 4.4.1. Industrial Safety definitions and indicators

**TRIR** (Total Recordable Injury Rate): number of recorded injuries per million hours worked.

**LTIR** (Lost Time Injury Rate): number of lost time injuries per million hours worked.

**SIR** (Severity Injury Rate): average number of days lost per lost time injury.

**Employees of external contractors:** any employee of a service provider working at a Group-operated site or assigned by a transport company under a long-term contract.

**Tier 1 and Tier 2:** indicator of the number of loss of primary containment events, with more or less significant consequences, as defined by the API 754 (for downstream) and IOGP 456 (for upstream) standards.

**Near miss:** event which, under slightly different circumstances, could have resulted in a serious accident. The term "potential severity" is used for near misses.

### 4.3.3. Methods

The methods may be adjusted to reflect the diversity of TOTAL's activities, recent integration of subsidiaries, lack of regulations or standardized international definitions, practical procedures for collecting data, or changes in methods.

Restatement of previous years published data, unless there is a specific statement, is now limited to changes of methodology.

### 4.3.4. Consolidation and internal controls

Environmental, social and industrial safety data are consolidated and checked by each business unit and business segment, and then at Group level. Data pertaining to certain specific indicators are calculated directly by the business segments. These processes undergo regular internal audits.

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Incidents and near misses are assessed in terms of actual or potential severity based on a scale that consists of six levels. Events with an actual or potential severity level of four or more are considered serious.

### 4.4.2. Environmental indicators

**ISO sites:** sites covered by an ISO 14001 certificate that is valid; some certificates may cover several sites.

**Safety flaring:** flaring to ensure the safe performance of operations conducted at the production site.

**Continuous flaring of associated gas:** flaring during normal production operations conducted in the absence of sufficient facilities or adequate geological conditions permitting the reinjection, on-site utilization or commercialization of produced gas. Continuous flaring of associated gas includes neither safety flaring nor very low pressure gas.

**Routine flaring:** flaring that includes the continuous flaring of associated gas (see above) and very low pressure gas generated during the production process, the reuse of which is neither technically nor economically feasible. Continuous flaring does not include safety flaring.

**Fresh water:** water with salinity below 1.5 g/l.

**Hydrocarbon spills:** spills with a volume greater than 1 barrel (159 liters) are counted. These are accidental spills of which at least part of the volume spilled reaches the natural environment (including non-waterproof ground). Spills resulting from sabotage or malicious acts are included. Spills which remain in a confined watertight containment system are excluded.

**Waste:** the contaminated soil excavated and removed from active sites to be treated externally is counted as waste. However, drilling debris, mining cuttings or soil polluted in inactive sites are not reported as waste.

**GEEI (Group Energy Efficiency Index):** a combination of energy intensity ratios (ratio of net primary energy consumption to the level of activity) per business reduced to base 100 in 2010 and consolidated with a weighting by each business's net primary energy consumption.

**GHG:** the six gases of the Kyoto protocol, which are CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>, with their respective GWP (Global Warming Potential) as described in the 2007 GIEC report. PFCs and SF<sub>6</sub> are virtually absent from the Group's emissions.

**GHG based on the Group's equity interest:** GHG emissions of non-significant assets are generally excluded, *i.e.*, assets in which the Group's equity interest is less than 10% and for which the Group share of emissions are less than 50 kt CO<sub>2</sub> eq/year. For non-operated assets, TOTAL relies on information provided by its partner operators. In cases where this information is not available, estimates are made based on past data, budget data or by pro rata with similar assets.

**GHG scope 1 emissions:** direct GHG emissions from sources located within the boundaries of a site coming under the operated domain or in which TOTAL holds a financial interest.

**GHG scope 2 emissions:** indirect emissions attributable to brought-in energy (electricity, heat, steam), excluding purchased industrial gases (H<sub>2</sub>).

**GHG scope 3 emissions:** other indirect emissions. The Group follows the Oil & Gas industry reporting guidelines published by IPIECA and which conform to the GHG Protocol methodologies. In this Registration Document, only item 11 of Scope 3 (use of sold products), which is the most significant, is reported. Emissions for this item are calculated based on sales of finished products for which the next stage is end use, in other words combustion of the products to obtain energy. A stoichiometric emission factor is applied to these sales (oxidation of molecules to carbon dioxide) to obtain an emission volume.

**Material loss:** this is represented by the following four indicators: safety or operational gas flaring (Exploration & Production only), cold venting (Exploration & Production only), total volume of oil and gas discharged in wastewater (Exploration & Production and Refining & Chemicals only), and accidental hydrocarbon spills.

**Oil spill preparedness:**

- an oil spill scenario is deemed "important" as soon as its consequences are on a small scale and with limited impacts on the environment (orders of magnitude of several hundred meters of beaches impacted, and several tons of hydrocarbons);
- an oil spill preparedness plan is deemed operational if it describes the alert mechanisms, if it is based on pollution scenarios that stem from risk analyses and if it describes mitigation strategies that are adapted to each scenario, if it defines the technical and organizational means, internal and external, to be implemented and, lastly, if it mentions elements to be taken into account to implement a follow-up of the environmental impacts of the pollution; and
- oil spill preparedness exercise: only exercises conducted on the basis of one of the scenarios identified in the oil spill preparedness plan and which are played out until the stage of equipment deployment are included for this indicator.

# TOTAL and its shareholders

1.	Listing details	178
1.1.	Listing .....	178
1.2.	Share performance .....	179
2.	Dividend	181
2.1.	Dividend policy .....	181
2.2.	Dividend payment .....	182
2.3.	Coupons .....	182
3.	Share buybacks	183
3.1.	Share buybacks and cancellations in 2016 .....	183
3.2.	Board's report on share buybacks and sales .....	183
3.3.	2017-2018 share buyback program .....	185
4.	Shareholders	187
4.1.	Major shareholders .....	187
4.2.	Employee shareholding .....	189
4.3.	Shareholding structure .....	190
	[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]	
4.5.	Factors likely to have an impact in the event of a public offering .....	190
	[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]	
6.	Investor Relations	192
6.1.	Documents on display .....	192
6.2.	Relationships with institutional investors, financial analysts and individual shareholders .....	192
6.3.	Registered shareholding .....	193
6.4.	2017 calendar .....	193
6.5.	2018 calendar .....	193
6.6.	Investor Relations contacts .....	194

# 1. Listing details

## 1.1. Listing

### 1.1.1. Stock Exchanges

Paris, New York, London and Brussels.

### 1.1.2. Codes

ISIN	FR0000120271
Reuters	TOTF.PA
Bloomberg	FP FP
Datastream	F: TAL
Mnémono	FP

### 1.1.3. Included in the following stock indexes

CAC 40, Euro Stoxx 50, Stoxx Europe 50 and DJ Global Titans.

### 1.1.4. Included in the following ESG (Environment, Social, Governance) indexes

DJSI World, DJSI Europe, FTSE4Good and Nasdaq Global Sustainability.

### 1.1.5. Weighting in the main stock indexes as of December 31, 2016

CAC 40	10.9%	Largest component in the index
EURO STOXX 50	5.6%	Largest component in the index
STOXX EUROPE 50	3.1%	6 <sup>th</sup> largest component in the index
DJ GLOBAL TITANS	1.6%	29 <sup>th</sup> largest component in the index

### 1.1.6. Market capitalization on Euronext Paris and in the Euro zone as of December 31, 2016

TOTAL has the largest capitalization on the Euronext Paris regulated market. Based on the market capitalization of the companies that make up the Euro Stoxx 50, the largest market capitalizations in the Euro zone are as follows<sup>(a)</sup>:

#### As of December 31, 2016

(€B)

AB InBev	203.0
<b>TOTAL<sup>(b)</sup></b>	<b>118.4</b>
Unilever	116.5
SAP SE	101.7
Industria de Diseno Textil	101.1
Siemens	99.3

(a) Source: Bloomberg for companies other than TOTAL.

(b) Shares composing the capital on December 31, 2016: 2,430,365,862. TOTAL closing share price in Paris on December 31, 2016: €48.72.

### 1.1.7. Market capitalization as of December 31, 2016<sup>(1)</sup>

€118.4 billion<sup>(2)</sup>

\$123.8 billion<sup>(3)</sup>

### 1.1.8. Percentage of free float

As of December 31, 2016, the free float factor determined by Euronext for calculating TOTAL's weight in the CAC 40 was 95%. The free float factor determined by Stoxx for calculating TOTAL's weight in the Euro Stoxx 50 was 100%.

### 1.1.9. Par value

€2.50.

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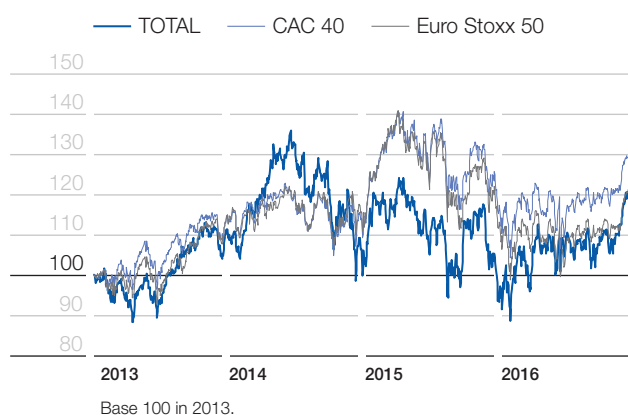
(1) Shares composing the capital on December 31, 2016: 2,430,365,862.

(2) TOTAL closing share price in Paris on December 31, 2016: €48.72.

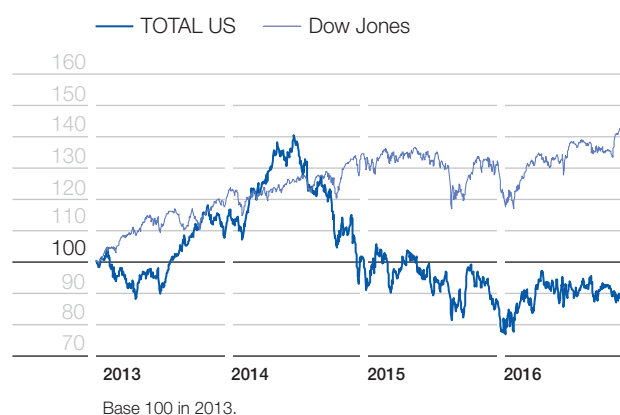
(3) TOTAL closing ADR price in New York on December 31, 2016: \$50.97.

## 1.2. Share performance

**TOTAL share price in Paris (2013-16)**  
(in euros)



**TOTAL ADR price in New York (2013-16)**  
(in dollars)



### 1.2.1. Arkema spin-off

Within the framework of the spin-off of Arkema's chemical activities from the Group's other chemical activities, TOTAL's Annual Shareholders' Meeting of May 12, 2006 approved TOTAL S.A.'s contribution to Arkema, under the regulation governing spin-offs, of all its interests in the businesses included under Arkema's scope, as well as the allocation for each TOTAL share of an allotment right for Arkema shares, with ten allotment rights entitling the holder to one Arkema share. Since May 18, 2006, Arkema's shares have been traded on Euronext Paris.

Pursuant to the provisions of the notice prior to the sale of unclaimed shares (*Avis préalable à la mise en vente de titres non réclamés*) published on August 3, 2006 in the French newspaper *Les Echos*, Arkema shares corresponding to allotment rights for fractional shares which were unclaimed as of August 3, 2008 were sold on Euronext Paris at an average price of €32.5721 per share. As a result, from August 3, 2008, the indemnity price per share of allotment rights for Arkema shares is €3.25721 (NYSE Euronext notice No. PAR-20080812-02958-EUR). BNP Paribas Securities Services paid an indemnity to the financial intermediaries on remittance of corresponding allotment rights for Arkema shares.

As from August 4, 2018, the unclaimed amounts will be handed over to the French *Caisse des dépôts et consignations* where the holders will still be able to claim them for a period of 20 years. After this time limit, the amounts will permanently become the property of the French State.

### 1.2.2. Change in share prices from January 1, 2016 to December 31, 2016

**In Europe, for the major European oil companies**  
(closing price in local currency)

TOTAL (euro)	18.1%
Royal Dutch Shell A (euro)	23.2%
Royal Dutch Shell B (pound sterling)	52.6%
BP (pound sterling)	44.0%
ENI (euro)	12.1%

Source: Bloomberg.

**In the United States (ADR quotes for European companies), for the major international oil companies**  
(closing price in dollars)

TOTAL	13.4%
ExxonMobil	15.8%
Chevron	30.8%
Royal Dutch Shell A	18.8%
Royal Dutch Shell B	25.9%
BP	19.6%
ENI	8.2%

Source: Bloomberg.

### 1.2.3. Annual total return

As of December 31, 2016, for every €1,000 invested in TOTAL shares by an individual residing in France, assuming that the net dividends are reinvested in TOTAL shares, and excluding tax and social withholding:

Investment length	Annual total return		Value as of December 31, 2016 of €1,000 invested	
	TOTAL <sup>(a)</sup>	CAC 40 <sup>(b)</sup>	TOTAL	CAC 40
1 year	24.85%	8.78%	1,249	1,088
5 years	10.35%	12.92%	1,636	1,836
10 years	4.38%	2.41%	1,535	1,269
15 years	6.44%	3.71%	2,550	1,727

(a) TOTAL's share prices, used for the calculation of the total return, take into account the adjustment made by Euronext Paris in 2006 following the detachment of Arkema's share allocation rights.

(b) CAC 40 quotes taken into account to calculate the total return include all dividends distributed by the companies that are in the index.

### 1.2.4. Market information summary

#### Share price

(€)	2016	2015	2014	2013	2012
Highest (during regular trading session)	48.89	50.30	54.71	45.67	42.97
Lowest (during regular trading session)	35.21	36.92	38.25	35.18	33.42
End of the year (closing)	48.72	41.27	42.52	44.53	39.01
Average of the last 30 trading sessions (closing)	46.22	43.57	44.32	43.60	38.73
<b>Trading volume (average per session) <sup>(a)</sup></b>					
Euronext Paris	6,508,817	7,412,179	5,519,597	4,439,725	5,622,504
NYSE (number of ADRs)	2,109,802	1,853,669	1,277,433	1,371,780	3,291,705

(a) Number of shares traded. Source: Euronext Paris, NYSE, composite price.

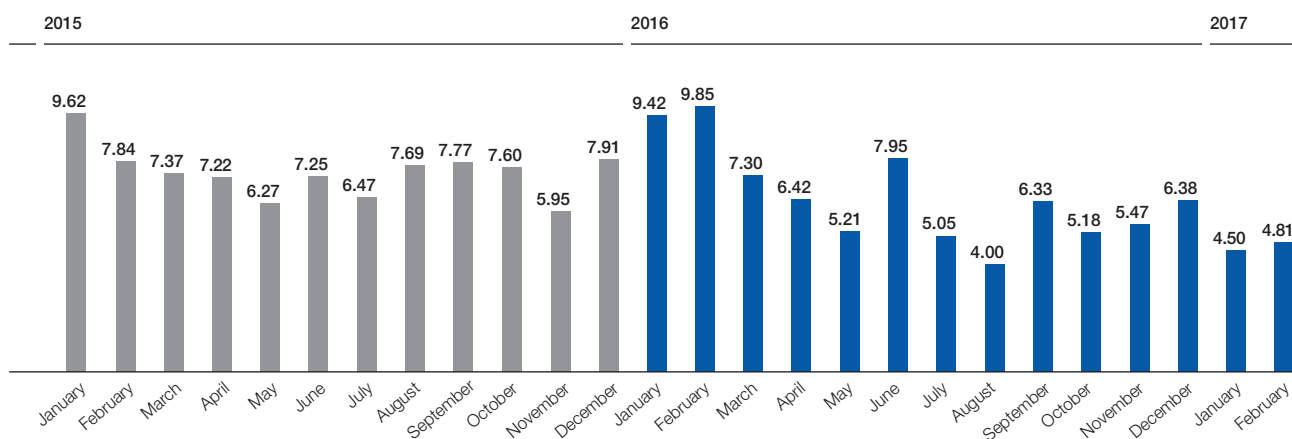
#### TOTAL share price at closing on Euronext Paris

(€)



#### TOTAL average daily volume traded on Euronext Paris

(in millions of shares)



## 2. Dividend

### 2.1. Dividend policy

#### 2.1.1. Dividend payment policy

On October 28, 2010, TOTAL S.A.'s Board of Directors adopted a policy based on quarterly dividend payments starting in fiscal year 2011.

#### 2.1.2. Fiscal years 2016 and 2017 dividends

TOTAL has paid the following quarterly interim dividends with respect to fiscal year 2016:

- on September 21, 2016, the Board of Directors decided on the payment of the first quarterly interim dividend of €0.61 per share. The ex-dividend date was September 27, 2016 and the payment in cash or new shares was made on October 14, 2016. The issuance price of these newly issued shares was set by the Board of Directors on September 21, 2016 at €38.00 per share, equal to 90% of the average Euronext Paris opening price of the shares for the 20 trading days preceding the Board of Directors meeting, reduced by the amount of the first interim dividend;
- on December 15, 2016, the Board of Directors decided on the payment of the second interim dividend of €0.61 per share. The ex-dividend date was December 21, 2016 and the payment in cash or new shares was made on January 12, 2017. The issuance price of these newly issued shares was set by the Board on December 15, 2016 at €41.87 per share, equal to 95% of the average Euronext Paris opening price of the shares for the 20 trading days preceding the Board of Directors meeting, reduced by the amount of the second interim dividend.

The third quarterly interim dividend of €0.61 per share for fiscal year 2016, the payment of which was decided by the Board of Directors on March 15, 2017, will be paid on April 6, 2017 (the ex-dividend date will be March 20, 2017) in cash or in new shares of the Company.

After closing the 2016 statutory accounts, the Board of Directors decided on February 8, 2017, to propose to the Annual Shareholders' Meeting on May 26, 2017 an annual dividend of €2.45 per share for fiscal year 2016. Taking into account the interim dividends for the first three quarters of 2016 decided by the Board of Directors, the remaining 2016 dividend is €0.62 per share, a 1.6% increase compared to the previous three quarterly dividends.

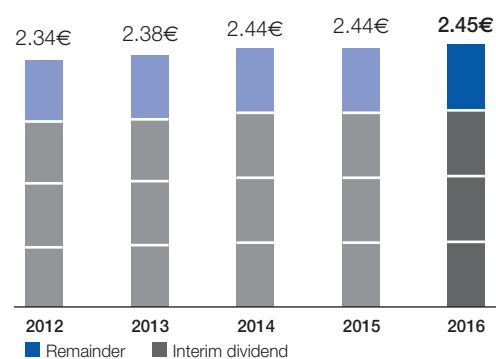
The Board of Directors also decided to propose to the shareholders the option of receiving the remaining 2016 dividend payment in new shares of the Company. Pending the approval at the Annual Shareholders' Meeting, the ex-dividend date would be June 5, 2017, and the payment date for the cash dividend or the delivery of the new shares, depending on the election of the shareholder, would be set for June 22, 2017.

Subject to the applicable legislative and regulatory provisions, and pending the approval by the Board of Directors and the shareholders at the Shareholders' Meeting for the statutory accounts and the remaining dividend, the ex-date calendar for the interim quarterly dividends and the final dividend for fiscal year 2017 is expected to be as follows:

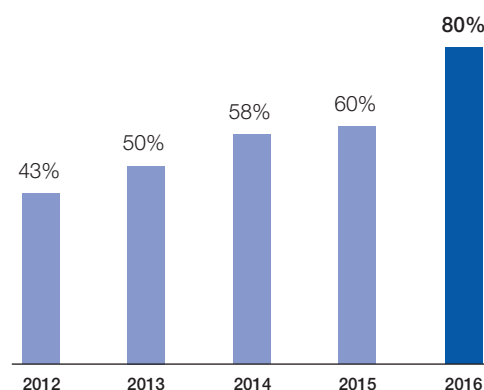
- 1<sup>st</sup> interim dividend: September 25, 2017;
- 2<sup>nd</sup> interim dividend: December 19, 2017;
- 3<sup>rd</sup> interim dividend: March 19, 2018; and
- remaining dividend: June 11, 2018.

The provisional ex-dividend dates above relate to the TOTAL shares traded on Euronext Paris.

#### Dividends for the last five fiscal years <sup>(1)</sup> (in euros)



In 2016, TOTAL's pay-out ratio was 80% <sup>(2)</sup>. Changes in the pay-out ratio <sup>(3)</sup> over the past five fiscal years are as follows:



(1) Pending approval at the May 26, 2017 Shareholders' Meeting. Dividends are eligible for the 40% rebate applicable to individuals residing in France for tax purposes, as stipulated in Article 158 of the French General Tax Code.

(2) Based on adjusted fully diluted earnings per share of €3.06 and a dividend of €2.45 per share pending approval at the May 26, 2017 Shareholders' Meeting.

(3) Based on adjusted fully diluted earnings for the relevant year.

## 2.2. Dividend payment

BNP Paribas Securities Services manages the payment of the dividend, which is made through financial intermediaries using the Euroclear France direct payment system.

JP Morgan Chase Bank (4 New York Plaza, New York, NY 10005-1401, USA) manages the payment of dividends to holders of American Depositary Receipts (ADRs).

### 2.2.1. Dividend payment on stock certificates

TOTAL issued stock certificates (*certificats représentatifs d'actions*, CRs) as part of the public exchange offer for Total Petrochemicals & Refining SA/NV (formerly PetroFina) shares.

The CR is a stock certificate provided for by French rules, issued by Euroclear France, intended to circulate exclusively outside of France, and which may not be held by French residents. The CR is freely convertible from a physical certificate into a security registered on a custody account and vice-versa. However, in compliance with the Belgian law of December 14, 2005 on the dematerialization of securities in Belgium, CRs may only be delivered in the form of a dematerialized certificate as of January 1, 2008. In addition, ING Belgique is the bank handling the payment of all coupons detached from outstanding CRs.

No fees are applicable to the payment of coupons detached from CRs, except for any income or withholding taxes; the payment may be received on request at the following bank branches:

ING Belgique Avenue Marnix 24, 1000 Brussels, Belgium  
 BNP Paribas Fortis Avenue des Arts 45, 1040 Brussels, Belgium  
 KBC BANK N.V. Avenue du Port 2, 1080 Brussels, Belgium

## 2.3. Coupons

For the year ended December 31	Ex-dividend date	Date of payment	Date of expiration	Type of coupon	Net amount (€)
2010	11/12/2010	11/17/2010	11/17/2015	Interim dividend	1.14
	05/23/2011	05/26/2011	05/26/2016	Remaining dividend	1.14
2011	09/19/2011	09/22/2011	09/22/2016	Interim dividend	0.57
	12/19/2011	12/22/2011	12/22/2016	Interim dividend	0.57
	03/19/2012	03/22/2012	03/22/2017	Interim dividend	0.57
	06/18/2012	06/21/2012	06/21/2017	Remaining dividend	0.57
2012	09/24/2012	09/27/2012	09/27/2017	Interim dividend	0.57
	12/17/2012	12/20/2012	12/20/2017	Interim dividend	0.59
	03/18/2013	03/21/2013	03/21/2018	Interim dividend	0.59
	06/24/2013	06/27/2013	06/27/2018	Remaining dividend	0.59
2013	09/24/2013	09/27/2013	09/27/2018	Interim dividend	0.59
	12/16/2013	12/19/2013	12/19/2018	Interim dividend	0.59
	03/24/2014	03/27/2014	03/27/2019	Interim dividend	0.59
	06/02/2014	06/05/2014	06/05/2019	Remaining dividend	0.61
2014	09/23/2014	09/26/2014	09/26/2019	Interim dividend	0.61
	12/15/2014	12/17/2014	12/17/2019	Interim dividend	0.61
	03/23/2015	03/25/2015	03/25/2020	Interim dividend	0.61
	06/08/2015	07/01/2015	07/01/2020	Remaining dividend	0.61
2015	09/28/2015	10/21/2015	10/21/2020	Interim dividend	0.61
	12/21/2015	01/14/2016	01/14/2021	Interim dividend	0.61
	03/21/2016	04/12/2016	04/12/2021	Interim dividend	0.61
	06/06/2016	06/23/2016	06/23/2021	Remaining dividend	0.61
2016 <sup>(a)</sup>	09/27/2016	10/14/2016	10/14/2021	Interim dividend	0.61
	12/21/2016	01/12/2017	01/12/2022	Interim dividend	0.61
	03/20/2017	04/06/2017	04/06/2022	Interim dividend	0.61
	06/05/2017	06/22/2017	06/22/2022	Remaining dividend	0.62

(a) A resolution will be submitted to the Annual Shareholders' Meeting on May 26, 2017 to pay a dividend of €2.45 per share for fiscal year 2016, including a remaining dividend of €0.62 per share, with an ex-dividend date on June 5, 2017 and a payment date set for June 22, 2017, in cash or in new shares.



## 3. Share buybacks

The Annual Shareholders' Meeting of May 24, 2016, after acknowledging the report of the Board of Directors, authorized the Board of Directors, in accordance with the provisions of Article L. 225-209 of the French Commercial Code and of EC Regulation 2273/2003 of December 22, 2003<sup>(1)</sup>, to buy and sell the Company's shares as part of a share buyback program. The

maximum purchase price was set at €70 per share. The number of shares acquired may not exceed 10% of the share capital. This authorization was granted for a period of 18 months and replaced the previous authorization granted by the Annual Shareholders' Meeting of May 29, 2015.

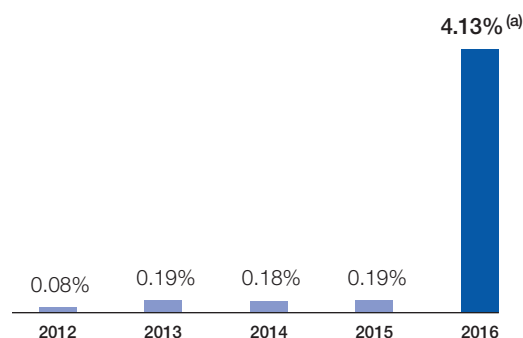
### 3.1. Share buybacks and cancellations in 2016

At its meeting on December 15, 2016, and pursuant to the authorization of the Extraordinary Shareholders' Meeting of May 11, 2012, the Board of Directors of TOTAL S.A. decided to cancel 100,331,268 treasury shares. TOTAL S.A. had previously bought back these shares off-market from four of its 100% indirectly controlled subsidiaries.

These buybacks of shares, immediately followed by their cancellation, mean that Group affiliates no longer hold treasury shares as part of the policy to simplify the Group's structures.

Following their cancellation, the number of shares composing the share capital of TOTAL S.A. was 2,429,723,768 shares.

#### Percentage of share capital bought back



(a) Buyback of treasury shares off-market immediately followed by their cancellation.

### 3.2. Board's report on share buybacks and sales

#### 3.2.1. Share buybacks during fiscal year 2016

Under the authorization granted by the Annual Shareholders' Meeting of May 24, 2016, 100,331,268 TOTAL treasury shares owned by Group affiliates, each with a par value of €2.50, were bought back by TOTAL S.A. in 2016 in order to be immediately canceled. These buybacks were completed off-market at a price of €47.495 per share equal to the closing price of TOTAL ordinary share on Euronext Paris on the day of the buyback, on December 15, 2016, for a total cost of approximately €4,765 million.

These buybacks of shares, immediately followed by their cancellation, means that Group affiliates no longer hold treasury shares as part of the policy to simplify the Group's structures.

#### 3.2.2. Cancellation of Company shares during fiscal years 2014, 2015 and 2016

TOTAL S.A. did not cancel any shares during fiscal year 2014 and 2015.

At its meeting on December 15, 2016, and pursuant to the authorization of the combined Shareholders' Meeting of May 11, 2012, the Board of Directors of TOTAL S.A. decided to reduce the share capital by a global nominal amount of €250,828,170.00 by canceling 100,331,268 treasury shares that TOTAL S.A. had previously bought back under the buyback program as described in point 3.2.1 of this chapter.

(1) Repealed and replaced by Regulation (EU) 596/2014 on market abuse.

### 3.2.3. Transfer of shares during fiscal year 2016

3,048,668 TOTAL shares were transferred in 2016 following the final award of TOTAL shares under the restricted share grant plans.

### 3.2.4. Shares held in the name of the Company and its subsidiaries as of December 31, 2016

As of December 31, 2016, the Company held 10,587,822 treasury shares, representing 0.44% of TOTAL S.A.'s share capital including 10,555,887 shares held to cover the performance share grant plans and 31,935 shares to be awarded under new share purchase option plans or new restricted share grant plans. Pursuant to French law, these shares are deprived of voting rights and dividend rights.

For shares bought back to be allocated to Company or Group employees pursuant to the objectives referred to in Article 3 of EC Regulation 2273/2003 of December 22, 2003 (which has been repealed and replaced by Regulation (EU) 596/2014 on market abuse), note that, when such shares are held to cover share purchase option plans that have expired or performance share grants that have not been awarded at the end of the vesting period, they will be allocated to new TOTAL share purchase option plans or restricted share grant plans that may be approved by the Board of Directors.

### 3.2.5. Reallocation for other purposes during fiscal year 2016

Shares purchased by the Company under the authorization granted by the Annual Shareholders' Meeting of May 24, 2016, or under previous authorizations, were not reallocated in 2016 to purposes other than those initially specified at the time of purchase.

### 3.2.6. Conditions for the buyback and use of derivative products

Between March 1, 2016 and February 28, 2017, the Company did not use any derivative products on the financial markets as part of the share buyback programs successively authorized by the Annual Shareholders' Meetings of May 29, 2015 and May 24, 2016.

### 3.2.7. Shares held in the name of the Company and its subsidiaries as of February 28, 2017

As of February 28, 2017, the Company held 10,587,822 shares, representing 0.43% of TOTAL S.A.'s share capital. Pursuant to French law, these shares are deprived of voting rights and dividend rights.

## Summary table of transactions completed by the Company involving its own shares from March 1, 2016 to February 28, 2017<sup>(1)</sup>

	Cumulative gross movements		Open positions as of February 28, 2017			
	Purchases	Sales	Open purchase positions		Open sales positions	
			Bought calls	Purchases	Sold calls	Sales
Number of shares	100,331,268	-	-	-	-	-
Maximum average maturity	-	-	-	-	-	-
Transaction price (€) <sup>(a)</sup>	47.495	-	-	-	-	-
Average strike price	-	-	-	-	-	-
Amounts (M€)	4,765	-	-	-	-	-

(a) Price equal to the closing price of TOTAL ordinary share on Euronext Paris on the day of the buyback, which was completed off-market on December 15, 2016, i.e., €47.495 per share.

Moreover, following the final award of shares under the performance share grant plans, 3,048,388 TOTAL shares were transferred between March 1, 2016 and February 28, 2017.

### As of February 28, 2017

<b>Percentage of share capital held by TOTAL S.A.</b>	<b>0.43%</b>
Number of shares held in portfolio <sup>(a)</sup>	10,587,822
Book value of portfolio (M€)	485.7
Market value of the portfolio (M€) <sup>(b)</sup>	498.2

(a) TOTAL S.A. did not buy back any shares during the two trading days preceding February 28, 2017. As a result, TOTAL S.A. owns all the shares held in portfolio as of that date.

(b) Based on a closing price of €47.050 per share as of February 28, 2017.

(1) In compliance with the applicable regulations as of February 28, 2017, the period indicated begins on the day after the date used as a reference for the publication of information regarding the previous program published in the Registration Document for fiscal year 2015.

### 3.3. 2017-2018 share buyback program

#### 3.3.1. Description of the share buyback program under Article 241-1 et seq. of the General Regulation of the French Financial Markets Authority

The objectives of the share buyback program are as follows:

- reduce the Company's capital through the cancellation of shares;
- honor the Company's obligations related to securities convertible or exchangeable into Company shares;
- honor the Company's obligations related to stock option programs or other share grants to the Company's executive directors or to employees of the Company or a Group subsidiary; and
- stimulate the secondary market or the liquidity of the TOTAL share under a liquidity agreement.

#### 3.3.2. Legal framework

Implementation of this share buyback program, which is covered by Article L. 225-209 et seq. of the French Commercial Code, Article 241-1 et seq. of the General Regulation of the French Financial Markets Authority (*Autorité des marchés financiers* – AMF), and the provisions of Regulation (EU) 596/2014 on market abuse, is subject to approval by the TOTAL S.A. Annual Shareholders' Meeting of May 26, 2017 through the 5<sup>th</sup> resolution that reads as follows:

"Upon presentation of the report by the Board of Directors and information appearing in the description of the program prepared pursuant to Articles 241-1 et seq. of the General Regulation (*règlement général*) of the French Financial Markets Authority (*Autorité des marchés financiers*, AMF), and voting under the conditions of quorum and majority required for Ordinary General Meetings, the shareholders hereby authorize the Board of Directors, with the possibility to sub-delegate such authority under the terms provided for by French law, pursuant to the provisions of Article L. 225-209 of the French Commercial Code, of Regulation (EU) 596/2014 on market abuse and of the General Regulation of the AMF, to buy or sell shares of the Company within the framework of a share buyback program.

The purchase, sale or transfer of such shares may be transacted by any means on regulated markets, multilateral trading facilities or over the counter, including the purchase or sale by block-trades, in accordance with the regulations of the relevant market authorities. Such transactions may include the use of any financial derivative instrument traded on regulated markets, multilateral trading facilities or over the counter, and implementing option strategies.

These transactions may be carried out at any time, in accordance with the applicable rules and regulations, except during any public offering periods applying to the Company's share capital.

The maximum purchase price is set at €80 per share.

In the case of a share capital increase by incorporation of reserves or share grants for no consideration and in the case of a stock-split or a reverse-stock-split, this maximum price shall be adjusted by applying the ratio of the number of shares outstanding before the transaction to the number of shares outstanding after the transaction.

Pursuant to the provisions of Article L. 225-209 of the French Commercial Code, the maximum number of shares that may be bought back under this authorization may not exceed 10% of the total number of shares composing the capital as of the date on which this authorization is used. This limit of 10% is applicable to a capital of the Company which may be adjusted from time to time as a result of transactions after the date of the present Meeting. Purchases made by the Company may under no circumstances result in the Company holding more than 10% of the share capital, either directly or indirectly through indirect subsidiaries.

As of December 31, 2016, out of the 2,430,365,862 shares outstanding at this date, the Company held 10,587,822 shares directly. Under these circumstances, the maximum number of shares that the Company could buy back is 232,448,764 shares and the maximum amount that the Company may spend to acquire such shares is €18,595,901,120.

The purpose of this share buyback program is to reduce the number of shares outstanding or to allow the Company to fulfill its engagements in connection with:

- convertible or exchangeable securities that may give holders rights to receive shares of the Company upon conversion or exchange; or
- share purchase option plans, employee shareholding plans, Company savings plans or other share allocation programs for executive directors or employees of the Company or Group companies.

The purpose of buybacks may also be the market practice accepted by the French Financial Markets Authority (*Autorité des marchés financiers*), i.e., support the secondary market or the liquidity of TOTAL shares by an investment services provider by means of a liquidity agreement compliant with the deontology charter recognized by the French Financial Markets Authority (*Autorité des marchés financiers*).

This program may also be used by the Company to trade in its own shares, either on or off the market, for any other purpose that is authorized under the applicable law or any other permitted market practice that may be authorized. In case of transactions other than the above-mentioned intended purposes, the Company will inform its shareholders in a press release.

According to the intended purposes, the treasury shares that are acquired by the Company through this program may, in particular, be:

- canceled, up to the maximum legal limit of 10% of the total number of shares composing the capital on the date of the operation, per each 24-month period;
- granted for no consideration to the employees of the Group and to the executive directors of the Company or of other companies of the Group;
- delivered to the holders of the Company's shares purchase options having exercised such options;
- sold to employees, either directly or through the intermediary of Company savings funds;
- delivered to the holders of securities that grant such rights to receive such shares, either through redemption, conversion, exchange, presentation of a warrant or in any other manner; or
- used in any other way consistent with the purposes stated in this resolution.

While they are bought back and held by the Company, such shares will be deprived of voting rights and dividend rights.

This authorization is granted for a period of 18 months from the date of this Meeting. It renders ineffective up to the unused portion, the previous authorization granted by the Ordinary Shareholders' Meeting held on May 24, 2016.

The Board of Directors is hereby granted full authority, with the right to delegate such authority, to undertake all actions authorized by this resolution."

### 3.3.3. Conditions

#### Maximum share capital to be purchased and maximum funds allocated to the transaction

The maximum number of shares that may be purchased under the authorization proposed to the Annual Shareholders' Meeting of May 26, 2017 may not exceed 10% of the total number of shares composing the capital, with this limit applying to an amount of the Company's share capital that will be adjusted, if necessary, to include transactions affecting the share capital subsequent to this

Meeting. Purchases made by the Company may under no circumstances result in the Company holding more than 10% of the share capital, either directly or indirectly through subsidiaries.

Before any share cancellation under the authorization given by the Annual Shareholders' Meeting of May 26, 2017, based on the number of shares outstanding as of February 28, 2017 (2,453,807,693 shares), and given the 10,587,822 shares held by the Group as of February 28, 2017, *i.e.*, 0.43% of the share capital, the maximum number of shares that may be purchased would be 234,792,947, representing a theoretical maximum investment of €18,783,435,760 based on the maximum purchase price of €80.

#### Conditions for buybacks

Such shares may be bought back by any means on regulated markets, multilateral trading facilities or over the counter, including through the purchase or sale of blocks of shares, under the conditions authorized by the relevant market authorities. These means include the use of any financial derivative instrument traded on a regulated market or over the counter and the implementation of option strategies, with the Company taking measures, however, to avoid increasing the volatility of its stock. The portion of the program carried out through the purchase of blocks of shares will not be subject to quota allocation, up to the limit set by this resolution. These transactions may be carried out at any time, in accordance with the applicable rules and regulations, except during any public offering periods applying to the Company's share capital.

#### Duration and schedule of the share buyback program

In accordance with the 5<sup>th</sup> resolution, which will be submitted to the Annual Shareholders' Meeting of May 26, 2017, the share buyback program may be implemented over an 18-month period following the date of this Meeting, and therefore expires on November 25, 2018.

#### Transactions carried out under the previous program

Transactions carried out under the previous program are listed in the special report of the Board of Directors on share buybacks (refer to point 3.2 of this chapter).

## 4. Shareholders

### 4.1. Major shareholders

#### 4.1.1. Changes in major shareholders' holdings

TOTAL's major shareholders<sup>(1)</sup> as of December 31, 2016, 2015 and 2014 were as follows:

As of December 31	2016			2015		2014	
	% of share capital	% of voting rights	% of theoretical voting rights <sup>(2)</sup>	% of share capital	% of voting rights	% of share capital	% of voting rights
BlackRock, Inc. <sup>(b)</sup>	5.6	4.9	4.9	5.5	5	6.2	5.4
Group employees <sup>(c)</sup>	4.8	8.6	8.5	4.9	9	4.6	8.8
<i>of which FCPE "TOTAL ACTIONNARIAT FRANCE"</i>	3.5	6.4	6.3	3.5	6.7	3.4	6.7
Other shareholders <sup>(d)</sup>	89.6	86.5	86.6	89.6	86	89.2	85.8
<i>of which holders of ADRs<sup>(e)</sup></i>	9.1	8.6	8.6	7.2	7.2	8.5	8.4

(a) Pursuant to Article 223-11 of the AMF General Regulation, the number of theoretical voting rights is calculated on the basis of all outstanding shares to which voting rights are attached, including treasury shares that are deprived of voting rights.

(b) Information taken from Schedule 13G filed by BlackRock, Inc. ("BlackRock") with the SEC on January 27, 2017, in which BlackRock declared a holding of 137,248,950 shares of the Company as of December 31, 2016 (i.e., 5.6% of the Company's share capital). BlackRock stated that it has the exclusive right to dispose of the holding, together with an amount of 125 402 097 voting rights (i.e., 4.9% of the Company's voting rights). In addition, BlackRock stated that it does not have any joint voting rights or joint right to dispose of these shares.

(c) On the basis of the definition of employee shareholding set forth in Article L. 225-102 of the French Commercial Code. Amundi Group, the Holding company of Amundi Asset Management, which in turn manages the TOTAL ACTIONNARIAT FRANCE collective investment fund (see below), filed a Schedule 13G with the SEC on February 13, 2017 declaring a holding of 187,778,448 shares of the Company as of December 31, 2016 (i.e., 7.7% of the Company's share capital). Amundi Group stated that it does not have any exclusive voting rights or exclusive right to dispose of these shares and that it has joint voting rights on 71,212,856 of these shares (i.e., 2.9% of the Company's share capital) and a joint right to dispose of all of these shares. In addition, a director representing the employees sits on the Board of Directors of TOTAL S.A.

(d) Including 1.56% registered shareholders (non-Group) in 2016.

(e) Including all of the ADS represented by ADR listed on the New York Stock Exchange.

As of December 31, 2016, the holdings of the major shareholders were calculated based on 2,430,365,862 shares, representing 2,572,363,626 voting rights exercisable at Shareholders' Meetings, or 2,582,951,448 theoretical voting rights<sup>(2)</sup> including 10,587,822 voting rights attached to the 10,587,822 TOTAL shares held by TOTAL S.A. that are deprived of voting rights.

For prior years, the holdings of the major shareholders were calculated on the basis of 2,440,057,883 shares to which 2,460,619,275 voting rights exercisable at Shareholders' Meetings were attached as of December 31, 2015, and 2,385,267,525 shares to which 2,406,809,364 voting rights exercisable at Shareholders' Meetings were attached as of December 31, 2014.

#### 4.1.2. Holdings above the legal thresholds

In accordance with Article L. 233-13 of the French Commercial Code, to TOTAL's knowledge, two known shareholders hold 5% or more of TOTAL's share capital or voting rights at year-end 2016.

As of December 31, 2016, the TOTAL ACTIONNARIAT FRANCE collective investment fund held 3.45% of the share capital representing 6.35% of the voting rights exercisable at Shareholders' Meetings and 6.32% of the theoretical voting rights.

As of December 31, 2016, BlackRock held 5.65% of the share capital representing 4.87% of the voting rights exercisable at Shareholders' Meetings and 4.85% of the theoretical voting rights.

(1) Major shareholders are defined herein as shareholders whose interest (in the share capital or voting rights) exceeds 5%.

(2) Pursuant to Article 223-11 of the AMF General Regulation, the number of theoretical voting rights is calculated on the basis of all outstanding shares to which voting rights are attached, including treasury shares that are deprived of voting rights.

### 4.1.3. Legal threshold notifications in fiscal year 2016

N° AMF disclosure	Date on which threshold were breached	Company	Number of shares	% capital shares	% voting rights	Comments	Share capital	Number of voting rights
216C0495	02/10/2016	Blackrock	134,165,277	5.50%	5.02%	Crossed upward the 5% threshold in the Company's voting rights	2,440,057,883	2,674,918,301
216C0514	02/11/2016	Blackrock	132,455,871	5.40%	4.93%	Crossed downward the 5% threshold in the Company's voting rights	2,454,003,592	2,688,804,793
216C0520	02/12/2016	Blackrock	134,571,995	5.48%	5.01%	Crossed upward the 5% threshold in the Company's voting rights	2,454,003,592	2,688,804,793
216C0525	02/15/2016	Blackrock	132,707,518	5.41%	4.94%	Crossed downward the 5% threshold in the Company's voting rights	2,454,003,592	2,688,804,793
216C0543	02/17/2016	Blackrock	134,815,508	5.49%	5.01%	Crossed upward the 5% threshold in the Company's voting rights	2,454,003,592	2,688,804,793
216C0711	03/17/2016	Blackrock	126,094,618	5.14%	4.69%	Crossed downward the 5% threshold in the Company's voting rights	2,454,012,342	2,688,761,040
216C0770	03/24/2016	Blackrock	134,770,826	5.49%	5.01%	Crossed upward the 5% threshold in the Company's voting rights	2,454,012,342	2,688,761,040
216C0876	04/07/2016	Blackrock	131,985,422	5.38%	4.91%	Crossed downward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C0892	04/08/2016	Blackrock	135,661,976	5.53%	5.05%	Crossed upward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C0907	04/12/2016	Blackrock	131,111,629	5.34%	4.88%	Crossed downward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C0913	04/13/2016	Blackrock	135,325,364	5.51%	5.03%	Crossed upward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C0964	04/19/2016	Blackrock	134,275,767	5.47%	4.99%	Crossed downward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C0992	04/22/2016	Blackrock	134,838,741	5.49%	5.02%	Crossed upward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C1024	04/26/2016	Blackrock	131,401,183	5.35%	4.89%	Crossed downward the 5% threshold in the Company's voting rights	2,454,029,976	2,688,636,563
216C1294	06/02/2016	Blackrock	122,995,244	4.96%	4.53%	Crossed downward the 5% threshold in the Company's capital shares	2,478,822,637	2,713,396,788
216C1325	06/06/2016	Blackrock	125,977,432	5.08%	4.64%	Crossed upward the 5% threshold in the Company's capital shares	2,478,822,637	2,713,396,788
216C1734	07/25/2016	Blackrock	121,864,146	4.87%	4.45%	Crossed downward the 5% threshold in the Company's capital shares	2,503,262,274	2,737,740,593
216C1748	07/26/2016	Blackrock	127,830,803	5.11%	4.67%	Crossed upward the 5% threshold in the Company's capital shares	2,503,262,274	2,737,740,593
216C1974	09/02/2016	Blackrock	123,340,466	4.93%	4.50%	Crossed downward the 5% threshold in the Company's capital shares	2,503,371,652	2,741,896,002
216C1988	09/05/2016	Blackrock	126,721,692	5.06%	4.62%	Crossed upward the 5% threshold in the Company's capital shares	2,503,371,652	2,741,896,002
216C2043	09/12/2016	Blackrock	125,149,247	4.99%	4.56%	Crossed downward the 5% threshold in the Company's capital shares	2,503,371,652	2,741,896,002
216C2063	09/13/2016	Blackrock	125,753,406	5.02%	4.59%	Crossed upward the 5% threshold in the Company's capital shares	2,503,371,652	2,741,896,002
216C2075	09/14/2016	Blackrock	124,455,432	4.97%	4.54%	Crossed downward the 5% threshold in the Company's capital shares	2,503,371,652	2,741,896,002
216C2092	09/15/2016	Blackrock	127,198,461	5.08%	4.64%	Crossed upward the 5% threshold in the Company's capital shares	2,503,371,652	2,741,896,002
216C2168	09/22/2016	Blackrock	120,685,732	4.82%	4.40%	Crossed downward the 5% threshold in the Company's capital shares	2,503,428,524	2,741,599,965
216C2266	10/04/2016	Blackrock	125,606,963	5.02%	4.58%	Crossed upward the 5% threshold in the Company's capital shares	2,503,428,524	2,741,599,965
216C2277	10/05/2016	Blackrock	123,688,339	4.94%	4.51%	Crossed downward the 5% threshold in the Company's capital shares	2,503,428,524	2,741,599,965
216C2323	10/10/2016	Blackrock	125,825,505	5.03%	4.59%	Crossed upward the 5% threshold in the Company's capital shares	2,503,428,524	2,741,599,965
216C2334	10/11/2016	Blackrock	122,635,030	4.90%	4.47%	Crossed downward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2367	10/14/2016	Blackrock	125,664,996	5.02%	4.58%	Crossed upward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2405	10/19/2016	Blackrock	123,971,240	4.95%	4.52%	Crossed downward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2415	10/20/2016	Blackrock	126,186,273	5.04%	4.60%	Crossed upward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2521	11/07/2016	Blackrock	124,754,489	4.98%	4.55%	Crossed downward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2530	11/08/2016	Blackrock	126,892,344	5.07%	4.63%	Crossed upward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2544	11/10/2016	Blackrock	124,702,835	4.98%	4.55%	Crossed downward the 5% threshold in the Company's capital shares	2,504,029,528	2,742,027,455
216C2560	11/11/2016	Blackrock	126,847,315	5.01%	4.55%	Crossed upward the 5% threshold in the Company's capital shares	2,529,582,139	2,785,259,009
216C2572	11/14/2016	Blackrock	124,839,806	4.94%	4.48%	Crossed downward the 5% threshold in the Company's capital shares	2,529,582,139	2,785,259,009
216C2600	11/16/2016	Blackrock	127,191,901	5.03%	4.57%	Crossed upward the 5% threshold in the Company's capital shares	2,529,582,139	2,785,259,009
216C2606	11/17/2016	Blackrock	126,388,314	4.99%	4.54%	Crossed downward the 5% threshold in the Company's capital shares	2,529,582,139	2,785,259,009
216C2691	11/29/2016	Blackrock	127,181,007	5.03%	4.57%	Crossed upward the 5% threshold in the Company's capital shares	2,529,582,139	2,785,259,009
216C2964	12/27/2016	Blackrock	129,535,883	5.33%	5.01%	Crossed upward the 5% threshold in the Company's voting rights	2,429,723,768	2,584,615,655
216C2980	12/29/2016	Blackrock	127,980,062	5.27%	4.95%	Crossed downward the 5% threshold in the Company's voting rights	2,429,723,768	2,584,615,655

#### 4.1.4. Threshold notifications required by the bylaws

In addition to the legal obligation to inform the Company and the French Financial Markets Authority within four trading days of the date on which the number of shares (or securities similar to shares or voting rights pursuant to Article L. 233-9 of the French Commercial Code) held represents more than 5%, 10%, 15%, 20%, 25%, 30%, one third, 50%, two thirds, 90% or 95% of the share capital or theoretical voting rights (Article L. 233-7 of the French Commercial Code), any individual or legal entity who directly or indirectly comes to hold a percentage of the share capital, voting rights or rights giving future access to the Company's share capital that is equal to or greater than 1%, or a multiple of this percentage, is required to notify the Company, within 15 days of the date on which each of the above thresholds is exceeded, by registered mail with return receipt requested, and indicate the number of shares held.

In case the shares above these thresholds are not declared, any shares held in excess of the threshold that should have been declared will be deprived of voting rights at Shareholders' Meetings if, at a Shareholders' Meeting, the failure to make a declaration is acknowledged and if one or more shareholders holding collectively at least 3% of the Company's share capital or voting rights so request at that meeting.

Any individual or legal entity is also required to notify the Company in due form and within the time limits stated above when their direct or indirect holdings fall below each of the aforementioned thresholds.

Notifications must be sent to the Senior Vice President of Investor Relations in London (contact details in point 6.6 of this chapter).

#### 4.1.5. Temporary transfer of securities

Pursuant to legal provisions, any legal entity or individual (with the exception of those described in paragraph IV-3 of Article L. 233-7 of the French Commercial Code) holding alone or in concert a number of shares representing more than 0.5% of the Company's voting rights pursuant to one or more temporary transfers or similar operations as described in Article L. 225-126 of the aforementioned Code is required to notify the Company and the French Financial Markets Authority of the number of shares temporarily owned no later than the second business day preceding the Shareholders' Meeting at midnight.

Notifications must be e-mailed to the Company at the following address: [holding.df-declarationdeparticipation@total.com](mailto:holding.df-declarationdeparticipation@total.com)

If no notification is sent, any shares acquired under any of the above temporary transfer operations will be deprived of voting rights at the relevant Shareholders' Meeting and at any Shareholders' Meeting that may be held until such shares are transferred again or returned.

#### 4.1.6. Shareholders' agreements

TOTAL is not aware of any agreements among its shareholders.

## 4.2. Employee shareholding

Presented below is the total number of TOTAL shares held directly or indirectly by the Group's employees as of December 31, 2016:

TOTAL ACTIONNARIAT FRANCE	83,729,061
TOTAL ACTIONNARIAT INTERNATIONAL CAPITALISATION	22,871,049
TOTAL FRANCE CAPITAL+	4,641,529
TOTAL INTERNATIONAL CAPITAL	1,902,635
Shares subscribed by employees in the U.S.	517,342
Group Caisse Autonome (Belgium)	515,211
TOTAL shares from the exercise of the Company's stock options and held as registered shares within a Company Savings Plan	3,138,747
<b>Total shares held by employees</b>	<b>117,315,574</b>

As of December 31, 2016, the Group's employees held, on the basis of the definition of employee shareholding set forth in Article L. 225-102 of the French Commercial Code, 117,315,574 TOTAL shares, representing 4.83% of the Company's share capital and 8.58% of the voting rights. The management of each of the FCPEs (Collective investment funds) mentioned above is controlled by a dedicated Supervisory Board, two thirds of its members representing holders of fund units and one third representing the Company. The Board is responsible for reviewing the Collective investment fund's Management Report and annual financial statements, as well as the financial, administrative and accounting management of the fund, exercising voting rights attached to portfolio securities, deciding contribution of securities in case of a public tender offer, deciding mergers, spin-offs or liquidations, and

granting its approval prior to changes in the rules and procedures of the Collective investment fund in the conditions provided for by the rules and procedures.

These rules and procedures also stipulate a simple majority vote for decisions, except for decisions requiring a qualified majority vote of two-thirds plus one related to a change in a fund's rules and procedures, its conversion or disposal.

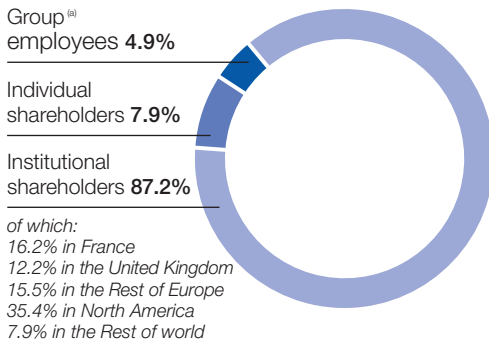
For employees holding shares outside of the employee collective investment funds mentioned in the table above, voting rights are exercised individually.

The information regarding shares held by the administration and management bodies is set forth in point 3 of chapter 5.

### 4.3. Shareholding structure

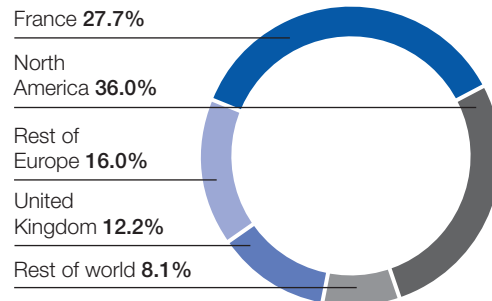
Estimates below are as of December 31, 2016, excluding treasury shares, based on the survey of identifiable holders of bearer shares conducted on that date.

#### By shareholder type



(a) On the basis of employee shareholdings as defined in Article L. 255-102 of the French Commercial Code, treasury shares excluded (4.8% of the total share capital, refer to point 4.1 of chapter 8).

#### By area



The number of French individual TOTAL shareholders is estimated at approximately 450,000.

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### 4.5. Factors likely to have an impact in the event of a public offering

In accordance with Article L. 225-100-3 of the French Commercial Code, information relating to factors likely to have an impact in the event of a public offering is provided below.

- Structure of the share capital and direct or indirect interests of which the Company is aware pursuant to Articles L. 233-7 and L. 233-12 of the French Commercial Code**  
 The structure of the Company's share capital and the interests that the Company is aware of pursuant to Articles L. 233-7 and L. 233-12 of the French Commercial Code are presented in point 4.1 to 4.3 of this chapter.
- Restrictions on the exercise of voting rights and transfers of shares provided in the bylaws – Clauses of the agreements of which the Company has been informed in accordance with Article L. 233-11 of the French Commercial Code**  
 The provisions of the bylaws relating to shareholders' voting rights are mentioned in point 2.4 of chapter 9. The Company has

not been informed of any clauses as specified in paragraph 2 of Article L. 225-100-3 of the French Commercial Code.

- Holders of securities conferring special control rights**  
 Article 18 of the bylaws stipulates that double voting rights are granted to all the shares held in the name of the same shareholder for at least two years. Subject to this condition, there are no securities conferring special control rights as specified in paragraph 4 of Article L. 225-100-3 of the French Commercial Code.
- Control mechanisms specified in an employee shareholding system**  
 The rules relating to the exercise of voting rights within the Company collective investment funds are presented in point 4.2 of this chapter.



- **Shareholder agreements of which the company is aware and that could restrict share transfers and the exercise of voting rights**  
 The Company is not aware of any agreements between shareholders as specified in paragraph 6 of Article L. 225-100-3 of the French Commercial Code which could result in restrictions on the transfer of shares and exercise of the voting rights of the Company.
- **Rules applicable to the appointment and replacement of members of the Company's Board of Directors and amendment of the bylaws**  
 No provision of the bylaws or an agreement made between the Company and a third party contains a specific provision relating to the appointment and/or replacement of the Company's directors that is likely to have an impact in the event of a public offering.
- **Powers of the Board of Directors in the event of a public offering**  
 The delegations of authority or authorizations granted by the Shareholders' Meeting that are currently in effect limit the powers of the Board of Directors over the Company's shares during a public offering.
- **Agreements to which the Company is party and which are altered or terminated in the event of a change of control of the Company – Agreements providing for the payment of compensation to members of the Board of Directors or employees in the event of their resignation or dismissal without real and serious cause or if their employment were to be terminated as a result of a tender offer**  
 Although a number of agreements made by the Company contain a change in control clause, the Company believes that there are no agreements as specified in paragraph 9 of Article L. 225-100-3 of the French Commercial Code. The Company also believes that there are no agreements as specified in paragraph 10 of Article L. 225-100-3 of the French Commercial Code. For commitments made for the Chairman and Chief Executive Officer in the event of a forced departure owing to a change of control or strategy, refer to point 2.2 of chapter 6.

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[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

## 6. Investor Relations

### 6.1. Documents on display

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Information and documents regarding TOTAL S.A., its bylaws and the Company's Statutory and Consolidated Financial Statements for the year ended December 31, 2016 or previous fiscal years, may be consulted at its registered office pursuant to the legal and regulatory provisions in force.

In addition, the French version of TOTAL S.A.'s Registration Documents (including the annual financial reports) and mid-year financial reports filed with the French Financial Markets Authority

(*Autorité des marchés financiers*) for each of the past 10 financial years are available on its website [total.com](http://total.com) (under Investors/Publications and regulated information). The Group's bi-annual presentations of its results and outlook, as well as the quarterly financial information are also available on its website.

In addition, in order to meet its obligations related to the listing of its shares in the United States, the Company also files an annual report on Form 20-F, in English, with the SEC.

### 6.2. Relationships with institutional investors, financial analysts and individual shareholders

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Members of the Group's General Management and Investor Relations regularly meet with institutional investors and financial analysts in the leading financial centers throughout the world. In 2016, the Group organized more than 1,000 meetings.

Each year, two main presentations are given to the financial community: one in February following the publication of the results for the previous fiscal year, and one in September to present the Group's outlook and objectives. A series of meetings is held after each of these presentations. In addition, each year the Chief Financial Officer hosts three conference calls to discuss results for the first, second and third quarters of the year.

The information presented and broadcast at these events is available on the Group's website [total.com](http://total.com) (under Investors/Results and outlook).

With a dedicated team, the Group maintains an active dialog with shareholders in the field of Corporate Social Responsibility (CSR) and governance. Meetings covering these themes are organized in France and worldwide. About 90 meetings were held in 2016. In addition, chapter 7 of this Registration Document focuses on social and environmental information.

The Group also has a team dedicated to relationships with individual shareholders. This department, which is ISO 9001 certified, offers a comprehensive communication package, featuring:

- a direct line, email address, and postal address (refer to point 6.6 of this chapter);
- documentation and material provided for individual shareholders (*i.e.*, the shareholders' newsletter, individual shareholders pages available on the Company's website, and a Total Investors mobile app for digital tablets and smartphones);
- shareholder meetings and investor fairs held in France and worldwide;
- the Shareholders' Club, which organizes visits to industrial facilities, visits to natural sites and cultural events sponsored by the Total Foundation, and conferences about the Group; and
- the Shareholders' e-Advisory Committee, which expresses its views on the communication service as a whole.

This team also organizes the Annual Shareholders' Meeting, which was held on May 24, 2016 at the *Palais des Congrès* in Paris and attended by 3,400 people.

The documentation on relationships with individual shareholders is available on the Company's website [total.com](http://total.com) (under Investors/Individual shareholders).

## 6.3. Registered shareholding

TOTAL S.A. shares can be held in bearer form or registered form. In the latter case, shareholders are identified by TOTAL S.A., in its capacity as the issuer, or by its agent, BNP Paribas Securities Services, which is responsible for keeping the register of shareholders' registered shares.

### 6.3.1. Registered shares

There are two forms of registration:

- **administered registered shares:** shares are registered with TOTAL through BNP Paribas Securities Services, but the holder's financial intermediary continues to administer them with regard to sales, purchases, coupons, etc.; and
- **pure registered shares:** TOTAL holds and directly administers shares on behalf of the holder through BNP Paribas Securities Services, which administers sales, purchases, coupons, Shareholders' Meeting notices, etc., so that the shareholder does not need to appoint a financial intermediary.

### 6.3.2. Main advantages of registered shares

The advantages of registered shares include:

- double voting rights if the shares are held continuously for two successive years (refer to point 2.4.1 of chapter 9);

- a number for all contacts with BNP Paribas Securities Services (a toll-free call within France from a landline): 0 800 117 000 or +33 1 40 14 80 61 (from outside France); from Monday to Friday (business days), 8:45 a.m. to 6:00 p.m., GMT+1;
- registration as a recipient of all information published by the Group for its shareholders; and
- the ability to join the TOTAL Shareholders' Club by holding at least 50 shares.

The advantages of pure registered shares, in addition to those of administered registered shares, include:

- no custodial fees;
- easier placement of market orders<sup>(1)</sup> (phone, mail, fax, internet);
- brokerage fees of 0.20% (before tax) of the gross amount of the trade, with no minimum charge and up to €1,000 per trade; and
- the option to view and manage shareholdings online and via the Planetshares app for digital tablets.

To convert TOTAL shares into pure registered shares, shareholders must fill out a form that can be obtained upon request from the Individual Shareholder Relations Department and send it to their financial intermediary.

## 6.4. 2017 calendar

February 9	Results of the fourth quarter and full year 2016, and Investors' Day – London	July 27	Results of the second quarter and first half 2017
March 20	Ex-dividend date for the 2016 third interim dividend	September 25	Investors' Day (outlook and objectives) – London
April 27	Results of the first quarter 2017	September 25	Ex-dividend date for the 2017 first interim dividend <sup>(b)</sup>
May 26	2017 Annual Shareholders' Meeting in Paris ( <i>Palais des Congrès</i> )	October 27	Results of the third quarter and first nine months of 2017
June 5	Ex-dividend date for the 2016 remaining dividend <sup>(a)</sup>	December 19	Ex-dividend date for the 2017 second interim dividend <sup>(b)</sup>

(a) Subject to approval at the May 26, 2017 Annual Shareholders' Meeting.

(b) Subject to the Board of Directors' decision.

The full calendar including shareholder meetings and investor fairs is available on the Company's website [total.com](http://total.com) (under Investors).

## 6.5. 2018 calendar

March 19	Ex-dividend date for the 2017 third interim dividend <sup>(a)</sup>	June 11	Ex-dividend date for the 2017 remaining dividend <sup>(b)</sup>
June 1	2018 Annual Shareholders' Meeting in Paris ( <i>Palais des Congrès</i> )		

(a) Subject to the Board of Directors' decision.

(b) Subject to approval at the June 1, 2018 Annual Shareholders' Meeting.

(1) Provided the subscriber has signed the market service agreement. Signing this agreement is free of charge.

## 6.6. Investor Relations contacts

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Mr. Mike Sangster, Senior Vice President, Investor Relations  
TOTAL S.A.  
10 Upper Bank Street  
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United Kingdom  
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Phone: +44 (0)207 7197 962

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Phone: +1 (713) 483-5070

Ms. Nathalie Portes-Laville, Head of Individual Shareholder Relations  
TOTAL S.A.  
Individual Shareholder Relations Department  
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92078 Paris-La Défense Cedex  
France  
E-mail: [actionnairesindividuels@total.com](mailto:actionnairesindividuels@total.com)  
Phone (Monday to Friday from 9 a.m. to 12:30 p.m. and from  
1:30 p.m. to 5:30 p.m., GMT+1):  
– from France: 0 800 039 039 (toll-free number from a landline)  
– from Belgium: 02 288 3309  
– from the United Kingdom: 020 7719 6084  
– from Germany: 30 2027 7700  
– from other countries: +33 1 47 44 24 02

# General information

1.	Share capital	196
1.1.	Share capital as of December 31, 2016	196
1.2.	Features of the shares	196
1.3.	Authorized share capital not issued as of December 31, 2016	196
1.4.	Potential share capital as of December 31, 2016	197
1.5.	TOTAL shares held by the Company or its subsidiaries	197
1.6.	Share capital history (since January 1, 2014)	197
2.	Articles of incorporation and bylaws; other information	198
2.1.	General information concerning the Company	198
2.2.	Summary of the Company's corporate purpose	198
2.3.	Provisions of the bylaws governing the administration and management bodies	199
2.4.	Rights, privileges and restrictions attached to the shares	200
2.5.	Amending shareholders' rights	200
2.6.	Shareholders' Meetings	201
2.7.	Identification of the holders of bearer shares	201
2.8.	Thresholds to be declared according to the bylaws	201
2.9.	Changes in the share capital	202

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# 1. Share capital

## 1.1. Share capital as of December 31, 2016

€6,075,914,655 consisting of 2,430,365,862 fully paid ordinary shares.

## 1.2. Features of the shares

There is only one class of shares, and the par value of each share is €2.50. A double voting right is granted under certain conditions (refer to point 2.4.1 of this chapter) to every shareholder. The shares

are in bearer or registered form at the shareholder's discretion. The shares are in book-entry form and registered in an account.

## 1.3. Authorized share capital not issued as of December 31, 2016

### 1.3.1. Table compiled in accordance with Article L. 225-100 of the French Commercial Code summarizing the use of delegations of authority and powers granted to the Board of Directors with respect to share capital increases as of December 31, 2016

Type	Cap on par value, or number of shares or expressed as % of share capital	Use in 2016, par value, or number of shares	Available balance as of 12/31/2016 par value, or number of shares	Date of delegation of authority or authorization by the Extraordinary Shareholders' Meeting (ESM)	Expiry date and term of authorization granted to the Board of Directors	
Maximum cap for the issuance of securities granting immediate or future rights to share capital	Debt securities representing rights to capital	10 B€ in securities	-	10 B€	May 24, 2016 (18 <sup>th</sup> , 19 <sup>th</sup> , 20 <sup>th</sup> and 22 <sup>nd</sup> resolutions)	July 24, 2018, 26 months
	Nominal share capital	An overall cap of 2.5 B€ (i.e., a maximum of 1,000 million shares issued with a pre-emptive subscription right), from which can be deducted:	18 million shares <sup>(a)</sup>	2.455 B€ (i.e., 982 million shares)	May 24, 2016 (18 <sup>th</sup> resolution)	July 24, 2018, 26 months
		1/ a specific cap of 600 M€, i.e., a maximum of 240 million shares for issuances without pre-emptive subscription rights (with potential use of a greenshoe), including in compensation with securities contributed within the scope of a public exchange offer, provided that they meet the requirements of Article L. 225-148 of the French Commercial Code, from which can be deducted:	-	600 M€	May 24, 2016 (19 <sup>th</sup> and 21 <sup>st</sup> resolutions)	July 24, 2018, 26 months
		1/a a sub-cap of 600 M€ with a view to issuing, through an offer as set forth in Article L. 411-2 II of the French Monetary and Financial Code, shares and securities resulting in a share capital increase, without a shareholders' pre-emptive subscription right	-	600 M€	May 24, 2016 (20 <sup>th</sup> and 21 <sup>st</sup> resolutions)	July 24, 2018, 26 months
		1/b a sub-cap of 600 M€ through in-kind contributions when provisions of Article L. 225-148 of the French Commercial Code are not applicable	-	600 M€	May 24, 2016 (22 <sup>nd</sup> resolution)	July 24, 2018, 26 months
	2/ a specific cap of 1.5% of the share capital on the date of the Board <sup>(b)</sup> decision for share capital increases reserved for employees participating in a Company savings plan	18 million shares <sup>(c)</sup>	18.5 million shares	May 24, 2016 (23 <sup>rd</sup> resolution)	July 24, 2018, 26 months	
Stock option grants	0.75% of share capital <sup>(b)</sup> on the date of the Board decision to grant options	-	18.2 million shares	May 24, 2016 (25 <sup>th</sup> resolution)	July 24, 2019, 38 months	
Restricted shares awarded to Group employees and to executive directors	0.8% of share capital <sup>(b)</sup> on the date of the Board decision to grant the restricted shares	5.6 million shares <sup>(d)</sup>	13.8 million shares <sup>(d)</sup>	May 24, 2016 (24 <sup>th</sup> resolution)	July 24, 2019, 38 months	

(a) The number of new shares authorized under the 18<sup>th</sup> resolution of the ESM held on May 24, 2016 cannot exceed 1,000 million shares. Pursuant to the 23<sup>rd</sup> resolution of the ESM held on May 24, 2016, the Board of Directors decided on July 27, 2016 to proceed with a share capital increase reserved for Group employees in 2017 (see note (c) below). As a result, the available balance under this authorization was 982,000,000 new shares as of December 31, 2016.

(b) Share capital as of December 31, 2016: 2,430,365,862 shares.

(c) The number of new shares authorized under the 23<sup>rd</sup> resolution of the May 24, 2016 ESM may not exceed 1.5% of the share capital on the date when the Board of Directors decides to use the delegation. The meeting of the Board of Directors of July 27, 2016 decided to proceed with a share capital increase in 2017 with a cap of 18,000,000 shares (subscription to the shares under this operation is planned for the first quarter of 2017, subject to the decision of the Chairman and Chief Executive Officer). As a result, the available balance under this authorization was 18,455,487 new shares as of December 31, 2016.

(d) The number of shares that may be awarded as restricted share grants under the 24<sup>th</sup> resolution of the May 24, 2016 ESM may not exceed 0.8% of the share capital on the date when the restricted shares are awarded by the Board of Directors. 5,639,400 shares were awarded by the Board of Directors on July 27, 2016. As a result, the number of shares that could still be awarded as of December 31, 2016 was 13,803,526 shares. In addition, the shares awarded under presence and performance conditions to the Company's executive directors under the 24<sup>th</sup> resolution of the ESM held on May 24, 2016, cannot exceed 0.01% of the outstanding share capital on the date of the decision of the Board of Directors to proceed with the grant. Taking into account the 60,000 existing shares awarded under presence and performance conditions to the Chairman and Chief Executive Officer by the meeting of the Board of Directors of July 27, 2016, the remaining number of shares that may still be awarded to the executive directors is 183,036.

### 1.3.2. Authorization to cancel shares of the Company

Pursuant to the terms of the 19<sup>th</sup> resolution of the Annual Shareholders' Meeting held on May 11, 2012, the Board of Directors is authorized to cancel shares of the Company up to a maximum of 10% of the share capital of the Company existing as of the date of the operation within a 24-month period. This authorization is effective until the Shareholders' Meeting held to approve the financial statements for the year ending December 31, 2016.

Based on 2,430,365,862 shares outstanding on December 31, 2016, the Company may, up until the conclusion of the Annual Shareholders' Meeting called to approve the financial statements for the fiscal year ending on December 31, 2016, cancel a maximum of 142,705,318 shares, taking into account the 100,331,268 shares canceled by the Board of Directors' decision of December 15, 2016, before reaching the cancellation threshold of 10% of share capital canceled over a 24-month period.

## 1.4. Potential share capital as of December 31, 2016

Securities granting rights to TOTAL shares through exercise are TOTAL share subscription options amounting to 5,285,618 as of December 31, 2016, divided into:

- 1,779,053 options awarded on September 15, 2009 under the plan decided by the Board of Directors;
- 2,880,237 options awarded on September 14, 2010 under the plan decided by the Board of Directors; and
- 626,328 options awarded on September 14, 2011 under the plan decided by the Board of Directors.

The potential share capital (*i.e.*, the existing share capital plus rights and securities that could result in the issuance of new TOTAL shares through exercise), *i.e.*, 2,435,651,480 shares, represents 100.22% of the share capital as of December 31, 2016, on the basis of 2,430,365,862 TOTAL shares constituting the share capital as of December 31, 2016, and 5,285,618 TOTAL shares that could be issued upon the exercise of TOTAL options.

## 1.5. TOTAL shares held by the Company or its subsidiaries

As of December 31, 2016

Percentage of share capital held by TOTAL S.A.	0.44%
Number of shares held in portfolio	10,587,822
Book value of portfolio (at purchase prices) (M€)	486
Market value of portfolio (M€) <sup>(a)</sup>	516

(a) Based on a market price of €48.72 per share as of December 31, 2016.

## 1.6. Share capital history

(since January 1, 2014)

### 1.6.1. For fiscal year 2014

- July 1, 2014 Acknowledgment of the issuance of 666,575 new shares, par value €2.50 per share, as part of the global free TOTAL share plan to Group employees decided by the Board of Directors on May 21, 2010, raising the share capital by €1,666,437.50 from €5,944,195,400 to €5,945,861,837.50.
- January 12, 2015 Acknowledgment of the issuance of 6,922,790 new shares, par value €2.50 per share, through the exercise of stock options between January 1 and December 31, 2014, raising the share capital by €17,306,975 from €5,945,861,837.50 to €5,963,168,812.50.

### 1.6.2. For fiscal year 2015

- April 27, 2015 Acknowledgment of the issuance of 10,479,410 new shares, par value €2.50 per share, as part of the share capital increase reserved for Group employees approved by the Board of Directors on July 29, 2014, raising the share capital by €26,198,525 from €5,963,168,812.50 to €5,989,367,337.50.
- July 1, 2015 Acknowledgment of the issuance of 18,609,466 new shares, par value €2.50 per share and a share price of €42.02 (*i.e.*, a par value of €2.50 value and issue premium of €39.52) for the payment of the 2014 remaining dividend in shares, raising the share capital by €46,523,665 from €5,989,367,337.50 to €6,035,891,002.50.
- October 21, 2015 Acknowledgment of the issuance of 24,231,876 new shares, par value €2.50 per share and a share price of €35.63 (*i.e.*, a par value of €2.50 value and issue premium of €33.13) for the payment of the first quarterly interim dividend for fiscal year 2015 in shares, raising the share capital by €60,579,690 from €6,035,891,002.50 to €6,096,470,692.50.

## 9 General information

Articles of incorporation and bylaws; other information

January 14, 2016 Acknowledgment of the issuance of 1,469,606 new shares, par value €2.50 per share, through the exercise of stock options between January 1 and December 31, 2015, raising the share capital by €3,674,015 from €6,096,470,692.50 to €6,100,144,707.50.

### 1.6.3. For fiscal year 2016

January 14, 2016 Acknowledgment of the issuance of 13,945,709 new shares, par value €2.50 per share and a share price of €39.77 (i.e., a par value of €2.50 value and issue premium of €37.27) for the payment of the second quarterly interim dividend for fiscal year 2015 in shares, raising the share capital by €34,864,272.50 from €6,100,144,707.50 to €6,135,008,980.

April 12, 2016 Acknowledgment of the issuance of 24,752,821 new shares, par value €2.50 per share and a share price of €36.24 (i.e., a par value of €2.50 value and issue premium of €33.74) for the payment of the third quarterly interim dividend for fiscal year 2015 in shares, raising the share capital by €61,882,052.50 from €6,135,008,980 to €6,196,891,032.50.

June 23, 2016 Acknowledgment of the issuance of 24,372,848 new shares, par value €2.50 per share and a share price of €38.26 (i.e., a par value of €2.50 value and issue premium of €35.76) for the payment of the 2015 fourth quarter dividend in shares, raising the share capital by €60,932,120 from €6,196,891,032.50 to €6,257,823,152.50.

October 14, 2016 Acknowledgment of the issuance of 25,329,951 new shares, par value €2.50 per share and a share price of €38.00 (i.e., a par value of €2.50 value and issue premium of €35.50) for the payment of the first quarterly interim dividend for fiscal year 2016 in shares, raising the share capital by €63,324,877.50 from €6,257,823,152.50 to €6,321,148,030.

December 15, 2016 Reduction of the share capital by 100,331,268 shares, par value €2.50 per share for the cancellation of treasury shares, reducing the share capital by €250,828,170 from €6,321,148,030 to €6,070,319,860.

January 12, 2017 Acknowledgment of the issuance of 2,237,918 new shares, par value €2.50 per share, through the exercise of stock options between January 1 and December 31, 2016, raising the share capital by €5,594,795 from €6,070,319,860 to €6,075,914,655.

Acknowledgment of the issuance of 23,206,171 new shares, par value €2.50 per share and a share price of €41.87 (i.e., a par value of €2.50 value and issue premium of €39.37) for the payment of the second quarterly interim dividend for fiscal year 2016 in shares, raising the share capital by €58,015,427.50 from €6,075,914,655 to €6,133,930,082.50.

## 2. Articles of incorporation and bylaws; other information

### 2.1. General information concerning the Company

The Company's name is TOTAL S.A.

TOTAL S.A. is a French limited liability company (*société anonyme*) headquartered at 2, place Jean Millier, La Défense 6, 92400 Courbevoie, France. It is registered in the French trade registry in Nanterre under No. 542 051 180 RCS.

The company has two secondary establishments in France, located in Lacq and Pau.

The Company's term was extended for 99 years from March 22, 2000, to expire on March 22, 2099, unless dissolved prior to this date or extended.

Fiscal year: from January 1 to December 31 of each year.

EC Registration Number: FR 59 542 051 180.

APE Code (NAF): 111Z until January 7, 2008; 7010Z since January 8, 2008.

The Company's bylaws are on file with K.L. Associés, Notaries in Paris.

Its telephone number is +33 (0)1 47 44 45 46 and its internet address is [total.com](http://total.com).

### 2.2. Summary of the Company's corporate purpose

The direct and indirect purpose of the Company is to search for and extract mining deposits in all countries, particularly hydrocarbons in all forms, and to perform industrial refining, processing and trading in said materials as well as their derivatives and by-products, as well as all activities relating to production and

distribution of all forms of energy, as well as the chemicals sector in all of its forms and to the rubber and health sectors. The complete details of the Company's corporate purpose are set forth in Article 3 of the bylaws.



## 2.3. Provisions of the bylaws governing the administration and management bodies

### 2.3.1. Election of directors and term of office

Directors are elected by the Shareholders' Meeting for a 3-year term up to a maximum number of directors authorized by law (currently 18), subject to the legal provisions that allow the term to be extended until the next Ordinary Shareholders' Meeting called to approve the financial statements for the previous fiscal year.

In addition, one director representing the employee shareholders is also elected by the Shareholders' Meeting for a 3-year term from a list of at least two candidates pre-selected by the employee shareholders under the conditions provided for by the laws, regulations and bylaws in force. However, his or her term shall expire automatically once this Director is no longer an employee or a shareholder. The Board of Directors may meet and conduct valid deliberations until the date his or her replacement is named.

Furthermore, a director representing the employees is designated by the Company's Central Works Council. Where the number of directors appointed by the Shareholders' Meeting is greater than 12<sup>(1)</sup>, a second director representing the employees is designated by the Company's European Works Council. In accordance with applicable legal provisions, the director elected by the Central Works Council must have held an employment contract with the Company or one of its direct or indirect subsidiaries, whose registered office is based in mainland France, for at least two years prior to appointment. The second director elected by the European Works Council must have held an employment contract with the Company or one of its direct or indirect subsidiaries for at least two years prior to appointment. The term of office for a director representing the employees is three years. However, the term of office ends following the Ordinary Shareholders' Meeting called to approve the financial statements for the last fiscal year and held in the year during which the said director's term of office expires.

### 2.3.2. Age limit of directors

On the closing date of each fiscal year, the number of individual directors over the age of 70 may not be greater than one third of the directors in office. If this percentage is exceeded, the oldest Board member is automatically considered to have resigned. The director permanent representative of a legal entity must be under 70 years old.

### 2.3.3. Age limit of the Chairman of the Board and the Chief Executive Officer

The duties of the Chairman of the Board automatically cease on his or her 70<sup>th</sup> birthday at the latest.

To hold this office, the Chief Executive Officer must be under the age of 67. When the age limit is reached during his or her duties, such duties automatically cease, and the Board of Directors elects

a new Chief Executive Officer. However, his or her duties as Chief Executive Officer will continue until the date of the Board of Directors' meeting aimed at electing his or her successor. Subject to the age limit specified above, the Chief Executive Officer can always be re-elected.

The age limits specified above are stipulated in the Company's bylaws and were approved by the Annual Shareholders' Meeting held on May 16, 2014.

### 2.3.4. Minimum interest in the Company held by directors

Each director (other than the director representing the employee shareholders or the director representing the employees) must own at least 1,000 shares of stock during his or her term of office. If, however, any director ceases to own the required number of shares, they may adjust their position subject to the conditions set by law. The director representing employee shareholders must hold, during his or her term of office, either individually or through a Company Savings Plan (*Fonds Commun de Placement d'Entreprise*, FCPE) governed by Article L. 214-165 of the French Monetary and Financial Code, at least one share or a number of units in said fund equivalent to at least one share. The director representing the employees is not bound to be a shareholder.

### 2.3.5. Majority rules for Board meetings

Decisions are adopted by a majority vote of the directors present or represented. In the event of a tie vote, the person chairing the meeting shall cast the deciding vote.

### 2.3.6. Rules of procedure of the Board and Committees of the Board of Directors

Refer to point 1 of chapter 5 of this Registration Document.

### 2.3.7. Form of management

Management of the Company is assumed either by the Chairman of the Board (who then holds the title of the Chairman and Chief Executive Officer), or by another person appointed by the Board of Directors with the title of Chief Executive Officer. It is the responsibility of the Board of Directors to choose between these two forms of management under the majority rules described above.

At its meeting on December 16, 2015, the Board of Directors decided to reunify the positions of Chairman and Chief Executive Officer of TOTAL S.A. as of December 19, 2015. As of such date, Mr. Pouyanné was appointed Chairman and Chief Executive Officer of TOTAL S.A. For further information on governance structure, refer to point 1.2.1 of chapter 5.

(1) Neither the director representing employee shareholders, elected by the Annual Shareholders' Meeting, nor the director(s) representing employees are taken into consideration when calculating the 12-member threshold, which is assessed on the date on which the employee director(s) is/are elected.

## 2.4. Rights, privileges and restrictions attached to the shares

In addition to the right to vote, each share entitles the holder to a portion of the corporate assets, distributions of profits and liquidation dividend that is proportional to the number of shares issued, subject to the laws and regulations in force and the bylaws.

With the exception of double voting rights, no privilege is attached to a specific class of shares or to a specific class of shareholders.

### 2.4.1. Double voting rights

Double voting rights, in relation to the portion of share capital they represent, are granted to all fully paid-up registered shares held continuously in the name of the same shareholder for at least two years<sup>(1)</sup>, and to additional registered shares allotted to a shareholder in connection with a share capital increase by capitalization of reserves, profits or premiums on the basis of the existing shares which entitle the shareholder to a double voting right.

### 2.4.2. Limitation of voting rights

Article 18 of the Company's bylaws provides that at Shareholders' Meetings, no shareholder may cast, by himself or through his agent, on the basis of the single voting rights attached to the shares he holds directly or indirectly and the shares for which he holds powers, more than 10% of the total number of voting rights attached to the Company's shares. In the case of double voting rights, by himself or through his agent, this limit may be exceeded, taking only the resulting additional voting rights into account, provided that the total voting rights that he exercises do not exceed 20% of the total voting rights associated with the shares in the Company.

Moreover, Article 18 of the bylaws also provides that the limitation on voting rights no longer applies, absent any decision of the Shareholders' Meeting, if an individual or a legal entity acting solely or together with one or more individuals or entities acquires at least two thirds of the Company's shares following a public tender offer for all the Company's shares. In that case, the Board of Directors acknowledges that the limitation no longer applies and carries out the necessary procedure to modify the Company's bylaws accordingly.

Once acknowledged, the fact that the limitation no longer applies is final and applies to all Shareholders' Meetings following the public tender offer under which the acquisition of at least two thirds of the overall number of shares of the Company was made possible, and not solely to the first meeting following that public tender offer.

Since in such circumstances the limitation no longer applies, such limitation on voting rights cannot prevent or delay any takeover of the Company, except in case of a public tender offer where the bidder does not acquire at least two thirds of the Company's shares.

### 2.4.3. Fractional rights

Whenever it is necessary to own several shares in order to exercise a right, a number of shares less than the number required does not give the owners any right with respect to the Company; in such case, the shareholders are responsible for aggregating the required number of shares.

### 2.4.4. Statutory allocation of profits

The Company may distribute dividends under the conditions provided for by the French Commercial Code and the Company's bylaws.

The net profit for the period is equal to the net income minus general expenses and other personnel expenses, all amortization and depreciation of the assets, and all provisions for commercial and industrial contingencies.

From this profit, minus prior losses, if any, the following items are deducted in the order indicated:

- 1) 5% to constitute the legal reserve fund, until said fund reaches 10% of the share capital;
- 2) the amounts set by the Shareholders' Meeting to fund reserves for which it determines the allocation or use; and
- 3) the amounts that the Shareholders' Meeting decides to retain.

The remainder is paid to the shareholders as dividends.

The Board of Directors may pay interim dividends.

The Shareholders' Meeting held to approve the financial statements for the fiscal year may decide to grant shareholders an option, for all or part of the dividend or interim dividends, between payment of the dividend in cash or in shares.

The Shareholders' Meeting may decide at any time, but only based on a proposal by the Board of Directors, to make a full or partial distribution of the amounts in the reserve accounts, either in cash or in Company shares.

Dividends that have not been claimed at the end of a 5-year period are forfeited to the French State.

## 2.5. Amending shareholders' rights

Any amendment to the bylaws must be approved or authorized by the Shareholders' Meeting voting with the quorum and majority

required by the laws and regulations governing Extraordinary Shareholders' Meetings.

<sup>(1)</sup> This term is not interrupted and the right acquired is retained in case of a conversion of bearer to bearer pursuant to intestate or testamentary succession, share of community property between spouses or donation to the spouse or relatives entitled to inherit (Article 18 § 6 of the bylaws).

## 2.6. Shareholders' Meetings

### 2.6.1. Notice of meetings

Shareholders' Meetings are convened and conducted under the conditions provided for by law.

The Ordinary Shareholders' Meeting is called to take any decisions that do not modify the Company's bylaws. It is held at least once a year within six months of the closing date of each fiscal year to approve the financial statements of that year. It may only deliberate, at its first meeting, if the shareholders present, represented or participating by remote voting hold at least one fifth of the shares that confer voting rights. No quorum is required at its second meeting. Ordinary Shareholders' Meeting decisions are made with the majority of votes of shareholders present, represented or participating by remote voting.

Only the Extraordinary Shareholders' Meeting is authorized to modify the bylaws. It may not, however, increase shareholders' commitments. It may only deliberate, at its first meeting, if the shareholders present, represented or participating by remote voting hold at least one quarter, and, at the second meeting, one fifth, of the shares that confer voting rights. Decisions of Extraordinary Shareholders' Meetings are made with a two thirds majority of votes of shareholders present, represented or participating by remote voting.

One or several shareholders holding a certain percentage of the Company's share capital (calculated using a decreasing scale based on the share capital) may ask for items or resolution drafts to be added to the agenda of a Shareholders' Meeting under the forms, terms and deadlines set forth by the French Commercial Code. Requests to add items or resolution drafts to the agenda must be sent no later than 20 days after the publication of the notice of meeting that the Company must publish in the French official journal of legal notices (*Bulletin des annonces légales obligatoires*, BALO). Any request to add an item to the agenda

must be justified. Any request to add a draft resolution must be accompanied by the draft resolution text and brief summary of the grounds for this request. Requests made by shareholders must be accompanied by a proof of their share ownership and their ownership of the portion of capital as required by the regulations. Review of the item or draft resolution filed pursuant to regulatory conditions is subject to those making the request providing a new attestation justifying the shares being recorded in a book-entry form in the same accounts on the second working date preceding the date of the meeting.

The Central Works Council may also request the addition of draft resolutions to the meeting agendas under the forms, terms and deadlines set by the French Labor Code. In particular, requests to add draft resolutions must be sent within 10 business days following the date the notice of meeting was published.

### 2.6.2. Admission to meetings

Participation in any form in Shareholders' Meetings is subject to registration of participating shares, either in the registered account maintained by the Company (or its securities agent) or recorded in bearer form in a securities account maintained by a financial intermediary. Proof of this registration is obtained under a certificate of participation (*attestation de participation*) delivered to the shareholder. Registration of the shares must be effective no later than midnight (Paris time) on the second business day preceding the date of the Shareholders' Meeting. If, after having received such a certificate, shares are sold or transferred prior to this record date, the certificate of participation will be canceled and the votes sent by mail or proxies granted to the Company for such shares will be canceled accordingly. If shares are sold or transferred after this record date, the certificate of participation will remain valid and votes cast or proxies granted will be taken into account.

## 2.7. Identification of the holders of bearer shares

In accordance with Article 9 of its bylaws, TOTAL S.A. is authorized, to the extent permitted under applicable law, to identify the holders

of securities that grant immediate or future voting rights at the Company's Shareholders' Meetings.

## 2.8. Thresholds to be declared according to the bylaws

Any individual or entity who directly or indirectly acquires a percentage of the share capital, voting rights or rights giving future access to the share capital of the Company that is equal to or greater than 1%, or a multiple of this percentage, is required to notify the Company within 15 days by registered mail with return receipt requested, and declare the number of securities held.

In case the shares above these thresholds are not declared, as specified in the preceding paragraph, any shares held in excess of the threshold that should have been declared will be deprived of

voting rights at Shareholders' Meetings if, at a Shareholders' Meeting, the failure to make a declaration is acknowledged and if one or more shareholders holding collectively at least 3% of the Company's share capital or voting rights so request at that meeting.

All individuals and entities are also required to notify the Company, in due form and within the time limits stated above, when their direct or indirect holdings fall below each of the thresholds mentioned in the first paragraph.

## 2.9. Changes in the share capital

---

The Company's share capital may be changed only under the conditions stipulated by the legal and regulatory provisions in force. No provision of the bylaws, charter, or internal regulations provide for more stringent conditions than the law governing changes in the Company's share capital.

The French Commercial Code stipulates that shareholders hold, in proportion to their number of shares, a pre-emptive subscription right to shares issued for cash to increase the share capital. The Extraordinary Shareholders' Meeting can decide, under the conditions provided for by law, to remove this pre-emptive subscription right.

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

# Consolidated Financial Statements

The Consolidated Financial Statements were approved by the Board of Directors on February 8, 2017 and have not been updated with subsequent events.

[REDACTED SECTION: CERTAIN TEXT HAS BEEN REDACTED.]

2.	Consolidated statement of income	207
3.	Consolidated statement of comprehensive income	208
4.	Consolidated balance sheet	209
5.	Consolidated statement of cash flow	210
6.	Consolidated statement of changes in shareholders' equity	211
7.	Notes to the Consolidated Financial Statements	212
	Basis of preparation of the Consolidated Financial Statements	.212
	Major judgments and accounting estimates	.212
	Judgments in case of transactions not addressed by any accounting standard or interpretation	.213
1)	General accounting policies	.213
2)	Changes in the Group structure	.214
3)	Business segment information	.215
4)	Segment Information by geographical area	.227
5)	Main items related to operating activities	.228
6)	Other items from operating activities	.233
7)	Intangible and tangible assets	.235
8)	Equity affiliates, other investments and related parties	.239
9)	Shareholders' equity and share-based payments	.245
10)	Payroll, staff and employee benefits obligations	.254
11)	Income taxes	.258
12)	Provisions and other non-current liabilities	.260
13)	Commitments and lease contracts	.263
14)	Financial assets and liabilities analysis per instrument class and strategy	.267
15)	Financial structure and financial costs	.270
16)	Financial instruments related to commodity contracts	.285
17)	Post closing events	.289
18)	Consolidation scope	.290

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## 2. Consolidated statement of income

### TOTAL

For the year ended December 31,  
 (M\$)<sup>(a)</sup>

		2016	2015	2014
<b>Sales</b>	<i>(Notes 3, 4, 5)</i>	<b>149,743</b>	<b>165,357</b>	<b>236,122</b>
Excise taxes	<i>(Notes 3, 5)</i>	(21,818)	(21,936)	(24,104)
Revenues from sales	<i>(Notes 3, 5)</i>	127,925	143,421	212,018
Purchases, net of inventory variation	<i>(Note 5)</i>	(83,377)	(96,671)	(152,975)
Other operating expenses	<i>(Note 5)</i>	(24,302)	(24,345)	(28,349)
Exploration costs	<i>(Note 5)</i>	(1,264)	(1,991)	(1,964)
Depreciation, depletion and impairment of tangible assets and mineral interests	<i>(Note 5)</i>	(13,523)	(17,720)	(19,656)
Other income	<i>(Note 6)</i>	1,299	3,606	2,577
Other expense	<i>(Note 6)</i>	(1,027)	(1,577)	(954)
Financial interest on debt		(1,108)	(967)	(748)
Financial income and expense from cash & cash equivalents		4	94	108
Cost of net debt	<i>(Note 15)</i>	(1,104)	(873)	(640)
Other financial income	<i>(Note 6)</i>	971	882	821
Other financial expense	<i>(Note 6)</i>	(636)	(654)	(676)
Equity in net income (loss) of affiliates	<i>(Note 8)</i>	2,214	2,361	2,662
Income taxes	<i>(Note 11)</i>	(970)	(1,653)	(8,614)
<b>Consolidated net income</b>		<b>6,206</b>	<b>4,786</b>	<b>4,250</b>
Group share		6,196	5,087	4,244
Non-controlling interests		10	(301)	6
Earnings per share (\$)		2.52	2.17	1.87
Fully-diluted earnings per share (\$)		2.51	2.16	1.86

(a) Except for per share amounts.

### 3. Consolidated statement of comprehensive income

TOTAL

For the year ended December 31,  
(M\$)

	2016	2015	2014
<b>Consolidated net income</b>	<b>6,206</b>	<b>4,786</b>	<b>4,250</b>
<b>Other comprehensive income</b>			
Actuarial gains and losses (Note 10)	(371)	557	(1,526)
Tax effect	55	(278)	580
Currency translation adjustment generated by the parent company (Note 9)	(1,548)	(7,268)	(9,039)
<b>Items not potentially reclassifiable to profit and loss</b>	<b>(1,864)</b>	<b>(6,989)</b>	<b>(9,985)</b>
Currency translation adjustment (Note 9)	(1,098)	2,456	4,245
Available for sale financial assets (Note 8)	4	9	(29)
Cash flow hedge (Notes 15, 16)	239	(185)	97
Share of other comprehensive income of equity affiliates, net amount (Note 8)	935	120	(1,538)
Other	1	1	3
Tax effect	(76)	53	(18)
<b>Items potentially reclassifiable to profit and loss</b>	<b>5</b>	<b>2,454</b>	<b>2,760</b>
<b>Total other comprehensive income (net amount)</b>	<b>(1,859)</b>	<b>(4,535)</b>	<b>(7,225)</b>
<b>Comprehensive income</b>	<b>4,347</b>	<b>251</b>	<b>(2,975)</b>
Group share	4,336	633	(2,938)
Non-controlling interests	11	(382)	(37)



## 4. Consolidated balance sheet

### TOTAL

As of December 31,  
(M\$)

ASSETS		2016	2015	2014
<b>Non-current assets</b>				
Intangible assets, net	(Notes 4 & 7)	15,362	14,549	14,682
Property, plant and equipment, net	(Notes 4 & 7)	111,971	109,518	106,876
Equity affiliates: investments and loans	(Note 8)	20,576	19,384	19,274
Other investments	(Note 8)	1,133	1,241	1,399
Non-current financial assets	(Note 15)	908	1,219	1,319
Deferred income taxes	(Note 11)	4,368	3,982	4,079
Other non-current assets	(Note 6)	4,143	4,355	4,192
<b>Total non-current assets</b>		<b>158,461</b>	<b>154,248</b>	<b>151,821</b>
<b>Current assets</b>				
Inventories, net	(Note 5)	15,247	13,116	15,196
Accounts receivable, net	(Note 5)	12,213	10,629	15,704
Other current assets	(Note 5)	14,835	15,843	15,702
Current financial assets	(Note 15)	4,548	6,190	1,293
Cash and cash equivalents	(Note 15)	24,597	23,269	25,181
Assets classified as held for sale	(Note 2)	1,077	1,189	4,901
<b>Total current assets</b>		<b>72,517</b>	<b>70,236</b>	<b>77,977</b>
<b>Total assets</b>		<b>230,978</b>	<b>224,484</b>	<b>229,798</b>
<b>LIABILITIES &amp; SHAREHOLDERS' EQUITY</b>				
<b>Shareholders' equity</b>				
Common shares		7,604	7,670	7,518
Paid-in surplus and retained earnings		105,547	101,528	94,646
Currency translation adjustment		(13,871)	(12,119)	(7,480)
Treasury shares		(600)	(4,585)	(4,354)
<b>Total shareholders' equity – Group share</b>	(Note 9)	<b>98,680</b>	<b>92,494</b>	<b>90,330</b>
<b>Non-controlling interests</b>		<b>2,894</b>	<b>2,915</b>	<b>3,201</b>
<b>Total shareholders' equity</b>		<b>101,574</b>	<b>95,409</b>	<b>93,531</b>
<b>Non-current liabilities</b>				
Deferred income taxes	(Note 11)	11,060	12,360	14,810
Employee benefits	(Note 10)	3,746	3,774	4,758
Provisions and other non-current liabilities	(Note 12)	16,846	17,502	17,545
Non-current financial debt	(Note 15)	43,067	44,464	45,481
<b>Total non-current liabilities</b>		<b>74,719</b>	<b>78,100</b>	<b>82,594</b>
<b>Current liabilities</b>				
Accounts payable		23,227	20,928	24,150
Other creditors and accrued liabilities	(Note 5)	16,720	16,884	16,641
Current borrowings	(Note 15)	13,920	12,488	10,942
Other current financial liabilities	(Note 15)	327	171	180
Liabilities directly associated with the assets classified as held for sale	(Note 2)	491	504	1,760
<b>Total current liabilities</b>		<b>54,685</b>	<b>50,975</b>	<b>53,673</b>
<b>Total liabilities &amp; shareholders' equity</b>		<b>230,978</b>	<b>224,484</b>	<b>229,798</b>

## 5. Consolidated statement of cash flow

### TOTAL

For the year ended December 31,  
(M\$)

	2016	2015	2014
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>			
Consolidated net income	6,206	4,786	4,250
Depreciation, depletion, amortization and impairment <i>(Note 5.3)</i>	14,423	19,334	20,859
Non-current liabilities, valuation allowances, and deferred taxes <i>(Note 5.5)</i>	(1,559)	(2,563)	(1,980)
(Gains) losses on disposals of assets	(263)	(2,459)	(1,979)
Undistributed affiliates' equity earnings	(643)	(311)	29
(Increase) decrease in working capital <i>(Note 5.5)</i>	(1,119)	1,683	4,480
Other changes, net	(524)	(524)	(51)
<b>Cash flow from operating activities</b>	<b>16,521</b>	<b>19,946</b>	<b>25,608</b>
<b>CASH FLOW USED IN INVESTING ACTIVITIES</b>			
Intangible assets and property, plant and equipment additions <i>(Note 7)</i>	(18,106)	(25,132)	(26,320)
Acquisitions of subsidiaries, net of cash acquired	(1,123)	(128)	(471)
Investments in equity affiliates and other securities	(180)	(513)	(949)
Increase in non-current loans	(1,121)	(2,260)	(2,769)
<b>Total expenditures</b>	<b>(20,530)</b>	<b>(28,033)</b>	<b>(30,509)</b>
Proceeds from disposals of intangible assets and property, plant and equipment	1,462	2,623	3,442
Proceeds from disposals of subsidiaries, net of cash sold	270	2,508	136
Proceeds from disposals of non-current investments	132	837	1,072
Repayment of non-current loans	1,013	1,616	1,540
<b>Total divestments</b>	<b>2,877</b>	<b>7,584</b>	<b>6,190</b>
<b>Cash flow used in investing activities</b>	<b>(17,653)</b>	<b>(20,449)</b>	<b>(24,319)</b>
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>			
Issuance (repayment) of shares:			
– Parent company shareholders	100	485	420
– Treasury shares	-	(237)	(289)
Dividends paid:			
– Parent company shareholders	(2,661)	(2,845)	(7,308)
– Non-controlling interests	(93)	(100)	(154)
Issuance of perpetual subordinated notes <i>(Note 9)</i>	4,711	5,616	-
Payments on perpetual subordinated notes	(133)	-	-
Other transactions with non-controlling interests	(104)	89	179
Net issuance (repayment) of non-current debt <i>(Note 15)</i>	3,576	4,166	15,786
Increase (decrease) in current borrowings	(3,260)	(597)	(2,374)
Increase (decrease) in current financial assets and liabilities	1,396	(5,517)	(351)
<b>Cash flow from/(used in) financing activities</b>	<b>3,532</b>	<b>1,060</b>	<b>5,909</b>
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>2,400</b>	<b>557</b>	<b>7,198</b>
Effect of exchange rates	(1,072)	(2,469)	(2,217)
Cash and cash equivalents at the beginning of the period	23,269	25,181	20,200
<b>Cash and cash equivalents at the end of the period</b> <i>(Note 15)</i>	<b>24,597</b>	<b>23,269</b>	<b>25,181</b>

## 6. Consolidated statement of changes in shareholders' equity

### TOTAL

(M\$)	Common shares issued		Paid-in surplus and retained earnings	Currency translation adjustment	Treasury shares		Shareholders' equity Group share	Non-controlling interests	Total shareholders' equity
	Number	Amount			Number	Amount			
<b>As of January 1, 2014</b>	<b>2,377,678,160</b>	<b>7,493</b>	<b>98,254</b>	<b>(1,203)</b>	<b>(109,214,448)</b>	<b>(4,303)</b>	<b>100,241</b>	<b>3,138</b>	<b>103,379</b>
Net income 2014	-	-	4,244	-	-	-	4,244	6	4,250
Other comprehensive income	-	-	(907)	(6,275)	-	-	(7,182)	(43)	(7,225)
<b>Comprehensive income</b>	-	-	<b>3,337</b>	<b>(6,275)</b>	-	-	<b>(2,938)</b>	<b>(37)</b>	<b>(2,975)</b>
Dividend	-	-	(7,378)	-	-	-	(7,378)	(154)	(7,532)
Issuance of common shares	7,589,365	25	395	-	-	-	420	-	420
Purchase of treasury shares	-	-	-	-	(4,386,300)	(283)	(283)	-	(283)
Sale of treasury shares <sup>(a)</sup>	-	-	(232)	-	4,239,335	232	-	-	-
Share-based payments	-	-	114	-	-	-	114	-	114
Share cancellation	-	-	-	-	-	-	-	-	-
Other operations with non-controlling interests	-	-	148	(2)	-	-	146	195	341
Other items	-	-	8	-	-	-	8	59	67
<b>As of December 31, 2014</b>	<b>2,385,267,525</b>	<b>7,518</b>	<b>94,646</b>	<b>(7,480)</b>	<b>(109,361,413)</b>	<b>(4,354)</b>	<b>90,330</b>	<b>3,201</b>	<b>93,531</b>
Net income 2015	-	-	5,087	-	-	-	5,087	(301)	4,786
Other comprehensive income	-	-	185	(4,639)	-	-	(4,454)	(81)	(4,535)
<b>Comprehensive income</b>	-	-	<b>5,272</b>	<b>(4,639)</b>	-	-	<b>633</b>	<b>(382)</b>	<b>251</b>
Dividend	-	-	(6,303)	-	-	-	(6,303)	(100)	(6,403)
Issuance of common shares	54,790,358	152	2,159	-	-	-	2,311	-	2,311
Purchase of treasury shares	-	-	-	-	(4,711,935)	(237)	(237)	-	(237)
Sale of treasury shares <sup>(a)</sup>	-	-	(6)	-	105,590	6	-	-	-
Share-based payments	-	-	101	-	-	-	101	-	101
Share cancellation	-	-	-	-	-	-	-	-	-
Issuance of perpetual subordinated notes	-	-	5,616	-	-	-	5,616	-	5,616
Payments on perpetual subordinated notes	-	-	(114)	-	-	-	(114)	-	(114)
Other operations with non-controlling interests	-	-	23	-	-	-	23	64	87
Other items	-	-	134	-	-	-	134	132	266
<b>As of December 31, 2015</b>	<b>2,440,057,883</b>	<b>7,670</b>	<b>101,528</b>	<b>(12,119)</b>	<b>(113,967,758)</b>	<b>(4,585)</b>	<b>92,494</b>	<b>2,915</b>	<b>95,409</b>
Net income 2016	-	-	6,196	-	-	-	6,196	10	6,206
Other comprehensive income	-	-	(108)	(1,752)	-	-	(1,860)	1	(1,859)
<b>Comprehensive income</b>	-	-	<b>6,088</b>	<b>(1,752)</b>	-	-	<b>4,336</b>	<b>11</b>	<b>4,347</b>
Dividend	-	-	(6,512)	-	-	-	(6,512)	(93)	(6,605)
Issuance of common shares	90,639,247	251	3,553	-	-	-	3,804	-	3,804
Purchase of treasury shares	-	-	-	-	-	-	-	-	-
Sale of treasury shares <sup>(a)</sup>	-	-	(163)	-	3,048,668	163	-	-	-
Share-based payments	-	-	112	-	-	-	112	-	112
Share cancellation	(100,331,268)	(317)	(3,505)	-	100,331,268	3,822	-	-	-
Issuance of perpetual subordinated notes	-	-	4,711	-	-	-	4,711	-	4,711
Payments on perpetual subordinated notes	-	-	(203)	-	-	-	(203)	-	(203)
Other operations with non-controlling interests	-	-	(98)	-	-	-	(98)	(43)	(141)
Other items	-	-	36	-	-	-	36	104	140
<b>As of December 31, 2016</b>	<b>2,430,365,862</b>	<b>7,604</b>	<b>105,547</b>	<b>(13,871)</b>	<b>(10,587,822)</b>	<b>(600)</b>	<b>98,680</b>	<b>2,894</b>	<b>101,574</b>

(a) Treasury shares related to the restricted stock grants.

Changes in equity are detailed in Note 9.

## 7. Notes to the Consolidated Financial Statements

On February 8, 2017, the Board of Directors established and authorized the publication of the Consolidated Financial Statements of TOTAL S.A. for the year ended December 31, 2016, which will be submitted for approval to the Shareholders' Meeting to be held on May 26, 2017.

### Basis of preparation of the Consolidated Financial Statements

The Consolidated Financial Statements of TOTAL S.A. and its subsidiaries (the Group) are presented in U.S. dollars and have been prepared on the basis of IFRS (International Financial Reporting Standards) as adopted by the European Union and IFRS as issued by the IASB (International Accounting Standard Board) as of December 31, 2016.

The accounting policies and principles applied in the Consolidated Financial Statements as of December 31, 2016 were the same as those that were used as of December 31, 2015 except for standards, amendments and interpretations of IFRS which were mandatory for the periods beginning after January 1, 2016 (and not early adopted). Their application did not have a significant impact on the financial statements as of December 31, 2016.

### Major judgments and accounting estimates

The preparation of financial statements in accordance with IFRS for the closing as of December 31, 2016 requires the executive management to make estimates, assumptions and judgments that affect the information reported in the Consolidated Financial Statements and the Notes thereto.

These estimates, assumptions and judgments are based on historical experience and other factors believed to be reasonable at the date of preparation of the financial statements. They are reviewed on an on-going basis by management and therefore could be revised as circumstances change or as a result of new information.

Different estimates, assumptions and judgments could significantly affect the information reported, and actual results may differ from the amounts included in the Consolidated Financial Statements and the Notes thereto.

The following summary provides further information about the key estimates, assumptions and judgments that are involved in preparing, the Consolidated Financial Statements and the Notes thereto. It should be read in conjunction with the sections of the Notes mentioned in the summary.

#### Estimation of hydrocarbon reserves

The estimation of oil and gas reserves is a key factor in the Successful Efforts method used by the Group to account for its oil and gas activities.

The Group's oil and gas reserves are estimated by the Group's petroleum engineers in accordance with industry standards and SEC (U.S. Securities and Exchange Commission) regulations.

Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geosciences and engineering data, can be determined with reasonable certainty to be recoverable (from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations), prior to the time at which contracts providing the rights to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation.

Proved oil and gas reserves are calculated using a 12-month average price determined as the unweighted arithmetic average of the first-day-of-the-month price for each month of the relevant year

unless prices are defined by contractual arrangements, excluding escalations based upon future conditions. The Group reassesses its oil and gas reserves at least once a year on all its properties.

The Successful Efforts method and the mineral interests and property and equipment of exploration and production are presented in Note 7 "Intangible and tangible assets".

#### Impairment of assets

As part of the determination of the recoverable value of assets for impairment (IAS36), the estimates, assumptions and judgments mainly concern hydrocarbon prices scenarios, operating costs, production volumes and oil and gas proved reserves, refining margins and product marketing conditions (mainly petroleum, petrochemical and chemical products as well as solar industry products). The estimates and assumptions used by the executive management are determined in specialized internal departments in light of economic conditions and external expert analysis. The discount rate is reviewed annually.

Asset impairment and the method applied are described in Note 3 "Business segment information".

#### Employee benefits

The benefit obligations and plan assets can be subject to significant volatility due in part to changes in market values and actuarial assumptions. These assumptions vary between different pension plans and thus take into account local conditions. They are determined following a formal process involving expertise and Group internal judgments, in financial and actuarial terms, and also in consultation with actuaries and independent experts.

The assumptions for each plan are reviewed annually and adjusted if necessary to reflect changes from the experience and actuarial advices.

Payroll, staff and employee benefits obligations and the method applied are described in Note 10 "Payroll, staff and employee benefits obligations".

#### Asset retirement obligations

Asset retirement obligations, which result from a legal or constructive obligation, are recognized based on a reasonable estimate in the period in which the obligation arises.

This estimate is based on information available in terms of costs and work program. It is regularly reviewed to take into account the changes in laws and regulations, the estimates of reserves and production, the analysis of site conditions and technologies.

The discount rate is reviewed annually.

Asset retirement obligations and the method used are described in Note 12 “Provisions and other non-current liabilities”.

## Income Taxes

A tax liability is recognized when a future payment, in application of a tax regulation, is considered probable and can be reasonably estimated. The exercise of judgment is required to assess the impact of new events on the amount of the liability.

Deferred tax assets are recognized in the accounts to the extent that their recovery is considered probable. The amount of these assets is determined based on future taxable profits estimated inherently uncertain and subject to change over time. The exercise of judgment is required to assess the impact of new events on the value of these assets and including changes in estimates of future taxable profits and the deadlines for their use.

In addition, these tax positions may depend on interpretations of tax laws and regulations in the countries where the Group operates. These interpretations may have uncertain nature. Depending on the circumstances, they are final only after negotiations or resolution of disputes with authorities that can last several years.

Incomes taxes and the accounting methods are described in Note 11 “Income taxes”.

## Judgments in case of transactions not addressed by any accounting standard or interpretation

Furthermore, when the accounting treatment of a specific transaction is not addressed by any accounting standard or interpretation, the management applies its judgment to define and apply accounting policies that provide information consistent with the general IFRS concepts: faithful representation, relevance and materiality.

### 1) General accounting policies

#### 1.1) Accounting policies

##### A) Principles of consolidation

Entities that are directly controlled by the parent company or indirectly controlled by other consolidated entities are fully consolidated.

Investments in joint ventures are consolidated under the equity method. The Group accounts for joint operations by recognizing its share of assets, liabilities, income and expenses.

Investments in associates, in which the Group has significant influence, are accounted for by the equity method. Significant influence is presumed when the Group holds, directly or indirectly (e.g., through subsidiaries), 20% or more of the voting rights. Companies in which ownership interest is less than 20%, but over which the Company is deemed to exercise significant influence, are also accounted for by the equity method.

All internal balances, transactions and income are eliminated.

##### B) Business combinations

Business combinations are accounted for using the acquisition method. This method requires the recognition of the acquired identifiable assets and assumed liabilities of the companies acquired by the Group at their fair value.

The value of the purchase price is finalized up to a maximum of one year from the acquisition date.

The acquirer shall recognize goodwill at the acquisition date, being the excess of:

- the consideration transferred, the amount of non-controlling interests and, in business combinations achieved in stages, the fair value at the acquisition date of the investment previously held in the acquired company;
- over the fair value at the acquisition date of acquired identifiable assets and assumed liabilities.

If the consideration transferred is lower than the fair value of acquired identifiable assets and assumed liabilities, an additional analysis is performed on the identification and valuation of the identifiable elements of the assets and liabilities. After having completed such additional analysis, any goodwill is recorded as income.

Non-controlling interests are measured either at their proportionate share in the net assets of the acquired company or at fair value.

In transactions with non-controlling interests, the difference between the price paid (received) and the book value of non-controlling interests acquired (sold) is recognized directly in equity.

##### C) Foreign currency translation

The presentation currency of the Group’s Consolidated Financial Statements is the US dollar. However the functional currency of the parent company is the euro. The resulting currency translation adjustments are presented on the line “currency translation adjustment generated by the parent company” of the consolidated statement of comprehensive income, within “items not potentially reclassifiable to profit and loss”. In the balance sheet, they are recorded in “currency translation adjustment”.

The financial statements of subsidiaries are prepared in the currency that most clearly reflects their business environment. This is referred to as their functional currency.

##### (i) Monetary transactions

Transactions denominated in currencies other than the functional currency of the entity are translated at the exchange rate on the transaction date. At each balance sheet date, monetary assets and liabilities are translated at the closing rate and the resulting exchange differences are recognized in the statement of income.

##### (ii) Translation of financial statements

Assets and liabilities of entities denominated in currencies other than dollar are translated into dollar on the basis of the exchange rates at the end of the period. The income and cash flow statements

are translated using the average exchange rates for the period. Foreign exchange differences resulting from such translations are either recorded in shareholders' equity under "Currency translation

adjustments" (for the Group share) or under "Non-controlling interests" (for the share of non-controlling interests) as deemed appropriate.

## 1.2) Significant accounting policies applicable in the future

The standards or interpretations published respectively by the International Accounting Standards Board (IASB) and the International Financial Reporting Standards Interpretations Committee (IFRS IC) which were not yet in effect at December 31, 2016, are as follows:

- **Standards adopted by the European Union at December 31, 2016**
- In May 2014, the IASB issued standard IFRS 15 that includes requirements for the recognition of revenue from contracts with customers. The standard is applicable for annual periods starting on or after January 1, 2018. An analysis was performed at Group level in order to evaluate the impacts of the standard. Main issues analyzed are related to take or pay, incoterms, excise duties, principal vs agent considerations, variable price adjustment clause. Impact of the standard is expected to be not significant for the Group.

- In July 2014, the IASB issued standard IFRS 9 "Financial Instruments" that includes requirements for the recognition and measurement of financial instruments. This standard brings together three phases: classification and measurement, impairment of financial assets and hedge accounting excluding macro-hedging. The standard is applicable for annual periods starting on or after January 1, 2018. The impacts of the application of this standard are under analysis.

- **Standards not yet adopted by the European Union at December 31, 2016**

- In addition, in January 2016, the IASB issued standard IFRS 16, which sets out the principles for recognition of leases contracts. The standard is applicable for annual periods starting on or after January 1, 2019. A working group was set up to evaluate the impacts of the standard and manage the transition. This working group is currently identifying lease contracts and estimating expected impacts at Group level.

## 2) Changes in the Group structure

### 2.1) Main acquisitions and divestments

In 2016, the main changes in the Group structure and main acquisitions and divestments were as follows:

#### Upstream

- In March 2016, TOTAL finalized the sale to North Sea Midstream Partners of all its interests in the FUKA and SIRGE gas pipelines, and the St. Fergus gas terminal in the United Kingdom.
- In June 2016, TOTAL has signed an agreement with Qatar Petroleum, granting the Group a 30% interest in the concession covering the offshore Al Shaheen oil field in Qatar for a period of 25 years beginning July 14, 2017.
- In June 2016, TOTAL and Lampiris, the third-largest supplier of natural gas and renewable power to the Belgium residential sector, have signed an agreement under which TOTAL has acquired all of the shares in Lampiris. All regulatory approvals being obtained, the transaction was finalized on September 29, 2016.
- In August 2016, TOTAL finalized the transfer to Zarubezhneft of a 20% stake and the operatorship in Kharyaga, Russia.

- In September 2016, TOTAL exercised its preemption rights to acquire Chesapeake's 75% interests in the Barnett Shale operating area located in North Texas, in which it already held a 25% interest since December 2009. The acquisition breakdown is presented in Note 2.2 to the Consolidated Financial Statements.

#### Marketing & Services

- In January 2016, TOTAL finalized the acquisition of a majority 70% interest in the leading Dominican fuel retailer.
- In April 2016, TOTAL finalized the sale to Demirören Group of its service station network and commercial sales, supply and logistics assets located in Turkey.
- In July 2016, in the activity of New Energies, TOTAL has acquired via a friendly tender offer a majority 90.14% interest in SAFT Groupe, a world leading designer and manufacturer of advanced technology batteries for the industry. In August 2016, following the reopening of the public tender offer, TOTAL increased its interest to 100%. The acquisition breakdown is presented in Note 2.2 to the Consolidated Financial Statements.

## 2.2) Major business combinations

### Upstream

- The acquisition of Chesapeake's 75% interests in the Barnett Shale operating area was finalized on November 1, 2016 at cost of \$638 million. In accordance with IFRS 3, TOTAL is currently assessing the fair value of identifiable acquired assets and assumed liabilities and contingent liabilities. At December 31, 2016 the fair value of the identifiable assets acquired and assumed liabilities amounted to \$638 million of which \$612 million of mining interests, \$76 million of tangible assets and \$(50) million of other assets and liabilities.

### Marketing & Services – New Energies

- The acquisition cost of SAFT Groupe amounts to €961 million (\$1,064 million), for a net book value of the assets and liabilities acquired at 100% of €482 million (\$535 million).

The acquisition was carried out in two steps:

- a first step where TOTAL obtained control over SAFT by the acquisition of 90.14% of its shares for an amount of €856 million (\$954 million) and recorded on this operation a partial goodwill of €423 million (\$472 million);
- a second step where TOTAL acquired the remaining 9.86% for an amount of €105 million, treated as a transaction with non-controlling interests.

The net book value by main categories of assets and liabilities is as follows:

(\$ million)	At the acquisition date
Goodwill	472
Intangible assets	497
Tangible assets	236
Other assets and liabilities	(106)
Debt net of acquired cash & cash equivalents	(92)
Net assets attributable to non-controlling interests	(53)
<b>Fair value of the consideration paid</b>	<b>954</b>

## 2.3) Divestment projects

### Accounting policies

Pursuant to IFRS 5 "Non-current assets held for sale and discontinued operations", assets and liabilities of affiliates that are held for sale are presented separately on the face of the balance sheet.

Depreciation of assets ceases from the date of classification in "Non-current assets held for sale".

### Refining & Chemicals

- Following the sale offering of its electroplating activity Atotech in May 2016, the assets and liabilities have been classified in the consolidated balance sheet respectively in "assets classified as held for sale" for an amount of \$1,077 million and "liabilities directly associated with the assets classified as held for sale" for an amount of \$491 million at December 31, 2016. The assets and liabilities concerned mainly include tangible assets for an

amount of \$351 million, inventories for an amount of \$145 million, receivables for an amount of \$236 million, non-current liabilities for an amount of \$181 million, payables for an amount of \$97 million and other creditors and accrued liabilities for an amount of \$199 million.

On October 7, 2016, TOTAL announced the sale of Atotech to the Carlyle Group for an amount of \$3.2 billion. As of January 31, 2017, all required authorizations being obtained, the transaction was closed.

## 3) Business segment information

### Description of the business segments

Financial information by business segment is reported in accordance with the internal reporting system and shows internal segment information that is used to manage and measure the performance of TOTAL and which is reviewed by the main operational decision-making body of the Group, namely the Executive Committee.

The operational profit and assets are broken down by business segment prior to the consolidation and inter-segment adjustments.

Sales prices between business segments approximate market prices.

The Group's activities are divided into three business segments as follows:

- an Upstream segment including, alongside the activities of the Exploration & Production of hydrocarbons, the activities of Gas;
- a Refining & Chemicals segment constituting a major industrial hub comprising the activities of refining, petrochemicals and specialty chemicals. This segment also includes the activities of oil Trading & Shipping; and marine shipping;
- a Marketing & Services segment including the global activities of supply and marketing in the field of petroleum products as well as the activity of New Energies.

In addition, the Corporate segment includes holdings operating and financial activities.

## Definition of the indicators

### (i) Operating income

#### (measure used to evaluate operating performance)

Revenue from sales after deducting cost of goods sold and inventory variation, other operating expenses, exploration expenses and depreciation, depletion, and impairment of tangible assets and mineral interests.

Operating income excludes the amortization of intangible assets other than mineral interests, currency translation adjustments and gains or losses on the disposal of assets.

### (ii) Net operating income

#### (measure used to evaluate the return on capital employed)

Operating income after taking into account the amortization of intangible assets other than mineral interests, currency translation adjustments, gains or losses on the disposal of assets, as well as all other income and expenses related to capital employed (dividends from non-consolidated companies, equity in income of affiliates, capitalized interest expenses), and after income taxes applicable to the above.

The only income and expense not included in net operating income but included in net income Group share are interest expenses related to net financial debt, after applicable income taxes (net cost of net debt) and non-controlling interests.

### (iii) Adjusted income

Operating income, net operating income, or net income excluding the effect of adjustment items described below.

### (iv) Fully-diluted adjusted earnings per share

Adjusted net income divided by the fully-diluted weighted-average number of common shares.

### (v) Capital employed

Non-current assets and working capital, at replacement cost, net of deferred income taxes and non-current liabilities.

### (vi) ROACE (return on average capital employed)

Ratio of adjusted net operating income to average capital employed between the beginning and the end of the period.

Performance indicators excluding the adjustment items, such as adjusted operating income, adjusted net operating income, and adjusted net income are meant to facilitate the analysis of the financial performance and the comparison of income between periods.

## Adjustment items

Adjustment items include:

### (i) Special items

Due to their unusual nature or particular significance, certain transactions qualified as “special items” are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. However, in certain instances, transactions such as restructuring costs or assets disposals, which are not considered to be representative of the normal course of business, may be qualified as special items although they may have occurred within prior years or are likely to occur again within the coming years.

### (ii) The inventory valuation effect

The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments’ performance and facilitate the comparability of the segments’ performance with those of its competitors.

In the replacement cost method, which approximates the LIFO (Last-In, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end prices differential between one period and another or the average prices of the period rather than the historical value. The inventory valuation effect is the difference between the results according to the FIFO (First-In, First-Out) and the replacement cost.

### (iii) Effect of changes in fair value

The effect of changes in fair value presented as adjustment items reflects for some transactions differences between internal measure of performance used by TOTAL’s management and the accounting for these transactions under IFRS.

IFRS requires that trading inventories be recorded at their fair value using period end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices.

Furthermore, TOTAL, in its trading activities, enters into storage contracts, which future effects are recorded at fair value in Group’s internal economic performance. IFRS precludes recognition of this fair value effect.



A) Information by business segment

For the year ended December 31, 2016 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	14,683	65,632	69,421	7	-	149,743
Intersegment sales	17,070	21,467	747	307	(39,591)	-
Excise taxes	-	(3,544)	(18,274)	-	-	(21,818)
<b>Revenues from sales</b>	<b>31,753</b>	<b>83,555</b>	<b>51,894</b>	<b>314</b>	<b>(39,591)</b>	<b>127,925</b>
Operating expenses	(20,438)	(77,553)	(49,538)	(1,005)	39,591	(108,943)
Depreciation, depletion and impairment of tangible assets and mineral interests	(11,589)	(1,002)	(895)	(37)	-	(13,523)
<b>Operating income</b>	<b>(274)</b>	<b>5,000</b>	<b>1,461</b>	<b>(728)</b>	<b>-</b>	<b>5,459</b>
Equity in net income (loss) of affiliates and other items	1,489	833	84	415	-	2,821
Tax on net operating income	363	(1,245)	(506)	164	-	(1,224)
<b>Net operating income</b>	<b>1,578</b>	<b>4,588</b>	<b>1,039</b>	<b>(149)</b>	<b>-</b>	<b>7,056</b>
Net cost of net debt						(850)
Non-controlling interests						(10)
<b>Net income</b>						<b>6,196</b>

For the year ended December 31, 2016 (adjustments) <sup>(a)</sup> (M\$)	Upstream Total	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	(231)	-	-	-	-	(231)
Intersegment sales	-	-	-	-	-	-
Excise taxes	-	-	-	-	-	-
<b>Revenues from sales</b>	<b>(231)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(231)</b>
Operating expenses	(691)	627	(217)	-	-	(281)
Depreciation, depletion and impairment of tangible assets and mineral interests	(2,089)	-	(140)	-	-	(2,229)
<b>Operating income <sup>(b)</sup></b>	<b>(3,011)</b>	<b>627</b>	<b>(357)</b>	<b>-</b>	<b>-</b>	<b>(2,741)</b>
Equity in net income (loss) of affiliates and other items	(199)	(39)	(230)	(4)	-	(472)
Tax on net operating income	1,155	(201)	40	1	-	995
<b>Net operating income <sup>(b)</sup></b>	<b>(2,055)</b>	<b>387</b>	<b>(547)</b>	<b>(3)</b>	<b>-</b>	<b>(2,218)</b>
Net cost of net debt						(23)
Non-controlling interests						150
<b>Net income</b>						<b>(2,091)</b>

(a) Adjustments include special items, inventory valuation effect and the effect of changes in fair value.

(b) Of which inventory valuation effect

On operating income	-	695	(43)	-
On net operating income	-	500	(13)	-

For the year ended December 31, 2016 (adjusted) (M\$) <sup>(a)</sup>	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	14,914	65,632	69,421	7	-	149,974
Intersegment sales	17,070	21,467	747	307	(39,591)	-
Excise taxes	-	(3,544)	(18,274)	-	-	(21,818)
<b>Revenues from sales</b>	<b>31,984</b>	<b>83,555</b>	<b>51,894</b>	<b>314</b>	<b>(39,591)</b>	<b>128,156</b>
Operating expenses	(19,747)	(78,180)	(49,321)	(1,005)	39,591	(108,662)
Depreciation, depletion and impairment of tangible assets and mineral interests	(9,500)	(1,002)	(755)	(37)	-	(11,294)
<b>Adjusted operating income</b>	<b>2,737</b>	<b>4,373</b>	<b>1,818</b>	<b>(728)</b>	<b>-</b>	<b>8,200</b>
Equity in net income (loss) of affiliates and other items	1,688	872	314	419	-	3,293
Tax on net operating income	(792)	(1,044)	(546)	163	-	(2,219)
<b>Adjusted net operating income</b>	<b>3,633</b>	<b>4,201</b>	<b>1,586</b>	<b>(146)</b>	<b>-</b>	<b>9,274</b>
Net cost of net debt						(827)
Non-controlling interests						(160)
<b>Adjusted net income</b>						<b>8,287</b>
<b>Adjusted fully-diluted earnings per share (\$)</b>						<b>3.38</b>

(a) Except for earnings per share.

For the year ended December 31, 2016 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Total expenditures	16,035	1,849	2,506	140	-	20,530
Total divestments	2,331	86	446	14	-	2,877
Cash flow from operating activities	9,675	4,587	1,623	636	-	16,521
<b>Balance sheet as of December 31, 2016</b>						
Property, plant and equipment, intangible assets, net	109,775	9,293	7,900	365	-	127,333
Investments & loans in equity affiliates	16,213	3,303	1,060	-	-	20,576
Other non-current assets	7,097	568	1,857	122	-	9,644
Working capital	1,909	2,641	1,114	(3,316)	-	2,348
Provisions and other non-current liabilities	(26,281)	(3,569)	(2,019)	217	-	(31,652)
Assets and liabilities classified as held for sale - Capital Employed	-	446	-	-	-	446
<b>Capital Employed (balance sheet)</b>	<b>108,713</b>	<b>12,682</b>	<b>9,912</b>	<b>(2,612)</b>	<b>-</b>	<b>128,695</b>
Less inventory valuation effect	-	(1,064)	(211)	3	-	(1,272)
<b>Capital Employed (Business segment information)</b>	<b>108,713</b>	<b>11,618</b>	<b>9,701</b>	<b>(2,609)</b>	<b>-</b>	<b>127,423</b>
<b>ROACE as a percentage</b>	<b>3%</b>	<b>38%</b>	<b>18%</b>	<b>-</b>	<b>-</b>	<b>7%</b>

For the year ended December 31, 2015 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	16,840	70,623	77,887	7	-	165,357
Intersegment sales	17,927	26,794	911	218	(45,850)	-
Excise taxes	-	(4,107)	(17,829)	-	-	(21,936)
<b>Revenues from sales</b>	<b>34,767</b>	<b>93,310</b>	<b>60,969</b>	<b>225</b>	<b>(45,850)</b>	<b>143,421</b>
Operating expenses	(21,851)	(87,674)	(58,467)	(865)	45,850	(123,007)
Depreciation, depletion and impairment of tangible assets and mineral interests	(15,857)	(1,092)	(744)	(27)	-	(17,720)
<b>Operating income</b>	<b>(2,941)</b>	<b>4,544</b>	<b>1,758</b>	<b>(667)</b>	<b>-</b>	<b>2,694</b>
Equity in net income (loss) of affiliates and other items	2,019	1,780	297	522	-	4,618
Tax on net operating income	(294)	(1,105)	(585)	171	-	(1,813)
<b>Net operating income</b>	<b>(1,216)</b>	<b>5,219</b>	<b>1,470</b>	<b>26</b>	<b>-</b>	<b>5,499</b>
Net cost of net debt						(713)
Non-controlling interests						301
<b>Net income</b>						<b>5,087</b>

For the year ended December 31, 2015 (adjustments) <sup>(a)</sup> (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	(519)	-	-	-	-	(519)
Intersegment sales	-	-	-	-	-	-
Excise taxes	-	-	-	-	-	-
<b>Revenues from sales</b>	<b>(519)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(519)</b>
Operating expenses	(564)	(1,035)	(316)	-	-	(1,915)
Depreciation, depletion and impairment of tangible assets and mineral interests	(6,783)	(70)	(24)	-	-	(6,877)
<b>Operating income<sup>(b)</sup></b>	<b>(7,866)</b>	<b>(1,105)</b>	<b>(340)</b>	<b>-</b>	<b>-</b>	<b>(9,311)</b>
Equity in net income (loss) of affiliates and other items	(264)	1,172	24	(19)	-	913
Tax on net operating income	2,140	263	87	7	-	2,497
<b>Net operating income<sup>(b)</sup></b>	<b>(5,990)</b>	<b>330</b>	<b>(229)</b>	<b>(12)</b>	<b>-</b>	<b>(5,901)</b>
Net cost of net debt						(11)
Non-controlling interests						481
<b>Net income</b>						<b>(5,431)</b>

(a) Adjustments include special items, inventory valuation effect and the effect of changes in fair value.

(b) Of which inventory valuation effect

On operating income	-	(859)	(254)	-
On net operating income	-	(590)	(169)	-

For the year ended December 31, 2015 (adjusted) (M\$) <sup>(a)</sup>	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	17,359	70,623	77,887	7	-	165,876
Intersegment sales	17,927	26,794	911	218	(45,850)	-
Excise taxes	-	(4,107)	(17,829)	-	-	(21,936)
<b>Revenues from sales</b>	<b>35,286</b>	<b>93,310</b>	<b>60,969</b>	<b>225</b>	<b>(45,850)</b>	<b>143,940</b>
Operating expenses	(21,287)	(86,639)	(58,151)	(865)	45,850	(121,092)
Depreciation, depletion and impairment of tangible assets and mineral interests	(9,074)	(1,022)	(720)	(27)	-	(10,843)
<b>Adjusted operating income</b>	<b>4,925</b>	<b>5,649</b>	<b>2,098</b>	<b>(667)</b>	<b>-</b>	<b>12,005</b>
Equity in net income (loss) of affiliates and other items	2,283	608	273	541	-	3,705
Tax on net operating income	(2,434)	(1,368)	(672)	164	-	(4,310)
<b>Adjusted net operating income</b>	<b>4,774</b>	<b>4,889</b>	<b>1,699</b>	<b>38</b>	<b>-</b>	<b>11,400</b>
Net cost of net debt						(702)
Non-controlling interests						(180)
<b>Adjusted net income</b>						<b>10,518</b>
<b>Adjusted fully-diluted earnings per share (\$)</b>						<b>4.51</b>

(a) Except for earnings per share.

For the year ended December 31, 2015 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Total expenditures	24,270	1,843	1,841	79	-	28,033
Total divestments	3,215	3,488	856	25	-	7,584
Cash flow from operating activities	11,182	6,432	2,323	9	-	19,946
<b>Balance sheet as of December 31, 2015</b>						
Property, plant and equipment, intangible assets, net	108,218	9,317	6,223	309	-	124,067
Investments & loans in equity affiliates	15,170	3,028	1,186	-	-	19,384
Other non-current assets	7,626	640	1,753	(441)	-	9,578
Working capital	1,928	1,828	997	(2,977)	-	1,776
Provisions and other non-current liabilities	(27,844)	(3,784)	(1,858)	(150)	-	(33,636)
Assets and liabilities classified as held for sale - Capital Employed	482	-	344	-	-	826
<b>Capital Employed (balance sheet)</b>	<b>105,580</b>	<b>11,029</b>	<b>8,645</b>	<b>(3,259)</b>	<b>-</b>	<b>121,995</b>
Less inventory valuation effect	-	(622)	(230)	-	-	(852)
<b>Capital Employed (Business segment information)</b>	<b>105,580</b>	<b>10,407</b>	<b>8,415</b>	<b>(3,259)</b>	<b>-</b>	<b>121,143</b>
<b>ROACE as a percentage</b>	<b>5%</b>	<b>41%</b>	<b>20%</b>	<b>-</b>	<b>-</b>	<b>9%</b>

For the year ended December 31, 2014 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	23,484	106,124	106,509	5	-	236,122
Intersegment sales	29,183	44,950	1,615	236	(75,984)	-
Excise taxes	-	(4,850)	(19,254)	-	-	(24,104)
<b>Revenues from sales</b>	<b>52,667</b>	<b>146,224</b>	<b>88,870</b>	<b>241</b>	<b>(75,984)</b>	<b>212,018</b>
Operating expenses	(26,235)	(145,014)	(86,931)	(1,092)	75,984	(183,288)
Depreciation, depletion and impairment of tangible assets and mineral interests	(15,938)	(2,901)	(781)	(36)	-	(19,656)
<b>Operating income</b>	<b>10,494</b>	<b>(1,691)</b>	<b>1,158</b>	<b>(887)</b>	<b>-</b>	<b>9,074</b>
Equity in net income (loss) of affiliates and other items	4,302	90	(140)	178	-	4,430
Tax on net operating income	(8,799)	391	(344)	(8)	-	(8,760)
<b>Net operating income</b>	<b>5,997</b>	<b>(1,210)</b>	<b>674</b>	<b>(717)</b>	<b>-</b>	<b>4,744</b>
Net cost of net debt						(494)
Non-controlling interests						(6)
<b>Net income</b>						<b>4,244</b>

For the year ended December 31, 2014 (adjustments) <sup>(a)</sup> (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	31	-	-	-	-	31
Intersegment sales	-	-	-	-	-	-
Excise taxes	-	-	-	-	-	-
<b>Revenues from sales</b>	<b>31</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>31</b>
Operating expenses	(164)	(2,980)	(551)	-	-	(3,695)
Depreciation, depletion and impairment of tangible assets and mineral interests	(6,529)	(1,450)	-	-	-	(7,979)
<b>Operating income<sup>(b)</sup></b>	<b>(6,662)</b>	<b>(4,430)</b>	<b>(551)</b>	<b>-</b>	<b>-</b>	<b>(11,643)</b>
Equity in net income (loss) of affiliates and other items	883	(282)	(203)	-	-	398
Tax on net operating income	1,272	1,013	174	-	-	2,459
<b>Net operating income<sup>(b)</sup></b>	<b>(4,507)</b>	<b>(3,699)</b>	<b>(580)</b>	<b>-</b>	<b>-</b>	<b>(8,786)</b>
Net cost of net debt						-
Non-controlling interests						193
<b>Net income</b>						<b>(8,593)</b>

(a) Adjustments include special items, inventory valuation effect and the effect of changes in fair value.

(b) Of which inventory valuation effect

On operating income	-	(2,944)	(525)	-	
On net operating income	-	(2,114)	(384)	-	

For the year ended December 31, 2014 (adjusted) (M\$) <sup>(a)</sup>	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Non-Group sales	23,453	106,124	106,509	5	-	236,091
Intersegment sales	29,183	44,950	1,615	236	(75,984)	-
Excise taxes	-	(4,850)	(19,254)	-	-	(24,104)
<b>Revenues from sales</b>	<b>52,636</b>	<b>146,224</b>	<b>88,870</b>	<b>241</b>	<b>(75,984)</b>	<b>211,987</b>
Operating expenses	(26,071)	(142,034)	(86,380)	(1,092)	75,984	(179,593)
Depreciation, depletion and impairment of tangible assets and mineral interests	(9,409)	(1,451)	(781)	(36)	-	(11,677)
<b>Adjusted operating income</b>	<b>17,156</b>	<b>2,739</b>	<b>1,709</b>	<b>(887)</b>	<b>-</b>	<b>20,717</b>
Equity in net income (loss) of affiliates and other items	3,419	372	63	178	-	4,032
Tax on net operating income	(10,071)	(622)	(518)	(8)	-	(11,219)
<b>Adjusted net operating income</b>	<b>10,504</b>	<b>2,489</b>	<b>1,254</b>	<b>(717)</b>	<b>-</b>	<b>13,530</b>
Net cost of net debt						(494)
Non-controlling interests						(199)
<b>Adjusted net income</b>						<b>12,837</b>
<b>Adjusted fully-diluted earnings per share (\$)</b>						<b>5.63</b>

(a) Except for earnings per share.

For the year ended December 31, 2014 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Intercompany	Total
Total expenditures	26,520	2,022	1,818	149	-	30,509
Total divestments	5,764	192	163	71	-	6,190
Cash flow from operating activities	16,666	6,302	2,721	(81)	-	25,608
<b>Balance sheet as of December 31, 2014</b>						
Property, plant and equipment, intangible assets, net	105,273	9,512	6,443	330	-	121,558
Investments & loans in equity affiliates	14,921	3,516	837	-	-	19,274
Other non-current assets	6,711	959	1,849	151	-	9,670
Working capital	2,015	4,041	2,141	(2,386)	-	5,811
Provisions and other non-current liabilities	(30,385)	(4,290)	(2,097)	(341)	-	(37,113)
Assets and liabilities classified as held for sale - Capital Employed	1,962	1,032	91	-	-	3,085
<b>Capital Employed (balance sheet)</b>	<b>100,497</b>	<b>14,770</b>	<b>9,264</b>	<b>(2,246)</b>	<b>-</b>	<b>122,285</b>
Less inventory valuation effect	-	(1,319)	(439)	(1)	-	(1,759)
<b>Capital Employed (Business segment information)</b>	<b>100,497</b>	<b>13,451</b>	<b>8,825</b>	<b>(2,247)</b>	<b>-</b>	<b>120,526</b>
<b>ROACE as a percentage</b>	<b>11%</b>	<b>15%</b>	<b>13%</b>	<b>-</b>	<b>-</b>	<b>11%</b>

## B) Reconciliation of the information by business segment with Consolidated Financial Statements

The table below presents the impact of adjustment items on the consolidated statement of income:

For the year ended December 31, 2016 (M\$)	Adjusted	Adjustments <sup>(a)</sup>	Consolidated statement of income
Sales	149,974	(231)	149,743
Excise taxes	(21,818)	-	(21,818)
Revenues from sales	128,156	(231)	127,925
Purchases, net of inventory variation	(83,916)	539	(83,377)
Other operating expenses	(23,832)	(470)	(24,302)
Exploration costs	(914)	(350)	(1,264)
Depreciation, depletion and impairment of tangible assets and mineral interests	(11,294)	(2,229)	(13,523)
Other income	964	335	1,299
Other expense	(537)	(490)	(1,027)
Financial interest on debt	(1,085)	(23)	(1,108)
Financial income and expense from cash & cash equivalents	4	-	4
Cost of net debt	(1,081)	(23)	(1,104)
Other financial income	971	-	971
Other financial expense	(636)	-	(636)
Equity in net income (loss) of affiliates	2,531	(317)	2,214
Income taxes	(1,965)	995	(970)
<b>Consolidated net income</b>	<b>8,447</b>	<b>(2,241)</b>	<b>6,206</b>
Group share	8,287	(2,091)	6,196
Non-controlling interests	160	(150)	10

(a) Adjustments include special items, inventory valuation effect and the effect of changes in fair value.

For the year ended December 31, 2015 (M\$)	Adjusted	Adjustments <sup>(a)</sup>	Consolidated statement of income
Sales	165,876	(519)	165,357
Excise taxes	(21,936)	-	(21,936)
Revenues from sales	143,940	(519)	143,421
Purchases, net of inventory variation	(95,558)	(1,113)	(96,671)
Other operating expenses	(23,984)	(361)	(24,345)
Exploration costs	(1,550)	(441)	(1,991)
Depreciation, depletion and impairment of tangible assets and mineral interests	(10,843)	(6,877)	(17,720)
Other income	1,468	2,138	3,606
Other expense	(405)	(1,172)	(1,577)
Financial interest on debt	(956)	(11)	(967)
Financial income and expense from cash & cash equivalents	94	-	94
Cost of net debt	(862)	(11)	(873)
Other financial income	882	-	882
Other financial expense	(654)	-	(654)
Equity in net income (loss) of affiliates	2,414	(53)	2,361
Income taxes	(4,150)	2,497	(1,653)
<b>Consolidated net income</b>	<b>10,698</b>	<b>(5,912)</b>	<b>4,786</b>
Group share	10,518	(5,431)	5,087
Non-controlling interests	180	(481)	(301)

(a) Adjustments include special items, inventory valuation effect and the effect of changes in fair value.

For the year ended December 31, 2014  
(M\$)

	Adjusted	Adjustments <sup>(a)</sup>	Consolidated statement of income
Sales	236,091	31	236,122
Excise taxes	(24,104)	-	(24,104)
Revenues from sales	211,987	31	212,018
Purchases, net of inventory variation	(149,506)	(3,469)	(152,975)
Other operating expenses	(28,123)	(226)	(28,349)
Exploration costs	(1,964)	-	(1,964)
Depreciation, depletion and impairment of tangible assets and mineral interests	(11,677)	(7,979)	(19,656)
Other income	1,272	1,305	2,577
Other expense	(700)	(254)	(954)
Financial interest on debt	(748)	-	(748)
Financial income and expense from cash & cash equivalents	108	-	108
Cost of net debt	(640)	-	(640)
Other financial income	821	-	821
Other financial expense	(676)	-	(676)
Equity in net income (loss) of affiliates	3,315	(653)	2,662
Income taxes	(11,073)	2,459	(8,614)
<b>Consolidated net income</b>	<b>13,036</b>	<b>(8,786)</b>	<b>4,250</b>
Group share	12,837	(8,593)	4,244
Non-controlling interests	199	(193)	6

(a) Adjustments include special items, inventory valuation effect and the effect of changes in fair value.

### C) Additional information on adjustment items

The main adjustment items for 2016 are the following:

- 1) The line "Gains (losses) on disposals of assets" includes the 2016 gains and losses on disposals, mainly, in the Upstream segment with the sales of the Group's interests in the FUKA and SIRGE gas pipelines and of the St. Fergus Gas Terminal in the United Kingdom.
- 2) The line "Asset impairment charges" amounting to \$(2,229) million in operating income and \$(2,097) million in net income Group share includes non-current assets impairment charges recorded in 2016. Impairment testing methodology and asset impairment charges recorded during the year are detailed in the paragraph D of Note 3.

- 3) "Other elements" amount to \$(1,123) million in operating income and \$(705) million in net income, Group share and mainly include, in the Upstream segment charges related to onerous contracts in the United States of America and charges related to the security situation in Yemen (\$549 million in operating income, \$(391) million in net income, Group share), the impact on the deferred tax position of the removal of the Petroleum Revenue Tax and the decrease of the Supplementary Charge Tax in the United Kingdom (\$200 million in net income, Group share) and, charges related to the cessation of the Group activities in Kurdistan (\$(350) million in operating income, \$(226) million in net income, Group share).

### Adjustments to operating income

For the year ended December 31, 2016  
(M\$)

	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Total
Inventory valuation effect	-	695	(43)	-	652
Effect of changes in fair value	(4)	-	-	-	(4)
Restructuring charges	(19)	-	(18)	-	(37)
Asset impairment charges	(2,089)	-	(140)	-	(2,229)
Other items	(899)	(68)	(156)	-	(1,123)
<b>Total</b>	<b>(3,011)</b>	<b>627</b>	<b>(357)</b>	<b>-</b>	<b>(2,741)</b>



**Adjustments to net income, Group share**

For the year ended December 31, 2016 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Total
Inventory valuation effect	-	498	(19)	-	479
Effect of changes in fair value	(3)	-	-	-	(3)
Restructuring charges	(4)	-	(28)	-	(32)
Asset impairment charges	(1,867)	(25)	(202)	(3)	(2,097)
Gains (losses) on disposals of assets	292	-	(25)	-	267
Other items	(478)	(88)	(139)	-	(705)
<b>Total</b>	<b>(2,060)</b>	<b>385</b>	<b>(413)</b>	<b>(3)</b>	<b>(2,091)</b>

**Adjustments to operating income**

For the year ended December 31, 2015 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Total
Inventory valuation effect	-	(859)	(254)	-	(1,113)
Effect of changes in fair value	(16)	-	-	-	(16)
Restructuring charges	(43)	-	(5)	-	(48)
Asset impairment charges	(6,783)	(70)	(24)	-	(6,877)
Other items	(1,024)	(176)	(57)	-	(1,257)
<b>Total</b>	<b>(7,866)</b>	<b>(1,105)</b>	<b>(340)</b>	<b>-</b>	<b>(9,311)</b>

**Adjustments to net income, Group share**

For the year ended December 31, 2015 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Total
Inventory valuation effect	-	(590)	(157)	-	(747)
Effect of changes in fair value	(9)	-	-	-	(9)
Restructuring charges	(10)	(52)	(10)	-	(72)
Asset impairment charges	(5,249)	(59)	(127)	(12)	(5,447)
Gains (losses) on disposals of assets	162	1,288	360	-	1,810
Other items	(516)	(257)	(193)	-	(966)
<b>Total</b>	<b>(5,622)</b>	<b>330</b>	<b>(127)</b>	<b>(12)</b>	<b>(5,431)</b>

**Adjustments to operating income**

For the year ended December 31, 2014 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Total
Inventory valuation effect	-	(2,944)	(525)	-	(3,469)
Effect of changes in fair value	31	-	-	-	31
Restructuring charges	-	-	-	-	-
Asset impairment charges	(6,529)	(1,450)	-	-	(7,979)
Other items	(164)	(36)	(26)	-	(226)
<b>Total</b>	<b>(6,662)</b>	<b>(4,430)</b>	<b>(551)</b>	<b>-</b>	<b>(11,643)</b>

**Adjustments to net income, Group share**

For the year ended December 31, 2014 (M\$)	Upstream	Refining & Chemicals	Marketing & Services	Corporate	Total
Inventory valuation effect	-	(2,114)	(339)	-	(2,453)
Effect of changes in fair value	25	-	-	-	25
Restructuring charges	-	(13)	(7)	-	(20)
Asset impairment charges	(5,514)	(1,409)	(140)	-	(7,063)
Gains (losses) on disposals of assets	1,314	(105)	-	-	1,209
Other items	(193)	(58)	(40)	-	(291)
<b>Total</b>	<b>(4,368)</b>	<b>(3,699)</b>	<b>(526)</b>	<b>-</b>	<b>(8,593)</b>

## D) Asset impairment

### Accounting principles

The recoverable amounts of intangible assets and property, plant and equipment are tested for impairment as soon as any indication of impairment exists. This test is performed at least annually for goodwill.

The recoverable amount is the higher of the fair value (less costs to sell) or its value in use.

Assets are grouped into cash-generating units (or CGUs) and tested. A CGU is a homogeneous group of assets that generates cash inflows that are largely independent of the cash inflows from other groups of assets.

The value in use of a CGU is determined by reference to the discounted expected future cash flows, based upon the management's

expectation of future economic and operating conditions.

When this value is less than the carrying amount of the CGU, an impairment loss is recorded. It is allocated first to goodwill with a corresponding amount in "Other expenses". Any further losses are then allocated to property, plant and mineral interests with a corresponding amount in "Depreciation, depletion and impairment of tangible assets and mineral interests" and to other intangible assets with a corresponding amount in "Other expenses".

Impairment losses recognized in prior periods can be reversed up to the original carrying amount, had the impairment loss not been recognized. Impairment losses recognized for goodwill cannot be reversed.

For the financial year 2016, asset impairments were recorded for an amount of \$2,229 million in operating income and \$2,097 million in net income, Group share. These impairments were qualified as adjustments items of the operating income and net income, Group share.

Impairments relate to certain cash-generating units (CGUs) for which indicators of impairment have been identified, due to changes in operating conditions or the economic environment of the activities concerned.

The principles applied are as follows:

- the future cash flows were determined using the assumptions included in the 2017 budget and in the long-term plan of the Group approved by the Group Executive Committee and the Board of Directors. These assumptions, including in particular future prices of products, operational costs, estimation of oil and gas reserves, future volumes produced and marketed, represent the best estimate of the Group management of all economic and technical conditions over the remaining life of the assets;
- the Group, notably relying on global energy demand from "World Energy Outlook" issued by IEA in 2016 and on its own supply assessments, sets the oil & gas prices scenarios based on assumptions about the evolution of core indicators of the Upstream segment (demand for oil & gas products in different markets, investment forecasts, decline in production fields, changes in oil & gas reserves and supply by area and by nature of oil & gas products), of the Downstream segment (changes in refining capacity and demand for petroleum products) and by integrating the climate issue (New Policies Scenario and 450ppm scenario of the IEA).

These price scenarios, first prepared within the Strategy and Climate Department, are also reviewed by the Group segments which bring their own expertise. They also integrate studies issued by international agencies, banks and independent consultants. They are then eventually approved by the Executive Committee and the Board of Directors.

At the end of 2016, the main scenario adopted by the Group is in line with the IEA's New Policies scenario: the scenario forecasts a reduction in supply under the combined effect of the decline in oil industry investments since 2015 and the setting-up of production

quotas by OPEC and a steady growth in demand for hydrocarbons, particularly in emerging countries.

In this context:

- for crude oil, the price level used for 2017 to determine the recoverable value of CGU in 2017 amounts to 50 dollars per barrel of Brent. This price rises progressively from 2018 to reach 80 dollars in 2020 and is gradually increasing beyond that date. These assumptions are broadly in line with the IEA's New Policies Scenario: "In the New Policies Scenario, balancing supply and demand requires an oil price approaching \$80/barrel in 2020 and further gradual increase thereafter",
- for gas, the Group estimates that due to new market balances that emerged in 2016, in particular a strong increase in supply, prices will appreciate more slowly than those of crude oil prices. Price level used in determining the recoverable value of concerned CGU for 2017 amounts to \$5 per million BTU for the NBP price (Europe). It reaches \$7 per million BTU in 2020, and will inflate beyond,
- the future operational costs were determined by taking into account the existing technologies, the fluctuation of prices for petroleum services in line with market developments and the internal cost reduction programs effectively implemented;
- the future cash flows are estimated over a period consistent with the life of the assets of the CGU. They are prepared post-tax and take into account specific risks related to the CGU's assets. They are discounted using a 7% post-tax discount rate, this rate being the weighted-average cost of capital estimated from historical market data. This rate was 7% in 2015 and 2014. The value in use calculated by discounting the above post-tax cash flows using a 7% post-tax discount rate is not materially different from the value in use calculated by discounting pre-tax cash flows using a pre-tax discount rate determined by an iterative computation from the post-tax value in use. These pre-tax discount rates range from 7% to 17% in 2016.

The CGUs for the Upstream segment are defined as oil and gas fields or groups of oil and gas fields with industrial assets enabling the production, treatment and evacuation of the oil and gas. For the year 2016, impairments of assets were recognized over CGUs of

the Upstream segment for an impact of \$2,089 million in operating income and \$1,867 million in net income, Group share. These impairments were mainly recognized on gas assets regarding the downward revision of gas price assumptions compared to the previous year. In particular, impairments concerned:

- gas assets in the United Kingdom for \$896 million in operating income and \$650 million in net income, Group share;
- gas assets related to the GLNG project in Australia for an amount of \$670 million in operating income and \$556 million in net income, Group share;
- gas assets related to the ALNG project in Angola for an amount of \$333 million in net income, Group share;
- assets in Kurdistan following the cessation of the Group's activities in this region, for an amount of \$200 million in operating income and \$129 million in net income, Group share;
- and other assets in Nigeria, Congo and Russia.

As for the sensitivity analysis:

- a decrease by one point in the discount rate would have a positive impact of approximately \$0.5 billion in operating income and in net income, Group share;
- an increase by one point in the discount rate would have an additional negative impact of approximately \$1.1 billion in operating income and approximately \$0.8 billion in net income, Group share;
- a variation of (10)% of the oil and gas prices over the long term plan would have an additional negative impact of approximately \$2.9 billion in operating income and \$2.3 billion in net income, Group share.

The most sensitive assets would be:

- the assets already impaired (impact of approximately \$1.2 billion in operating income and in net income, Group share), including GLNG in Australia and ALNG in Angola;
- other assets (impact of approximately \$1.7 billion in operating income and \$1.1 in net income, Group share), including in Congo and Kazakhstan.

The CGUs for the Refining & Chemicals segment are defined as legal entities with operational activities for refining and petrochemicals activities. Future cash flows are based on the gross contribution margin (calculated on the basis of net sales after purchases of crude oil and refined products, the effect of inventory valuation and variable costs). The other activities of the segment are global divisions, each division gathering a set of businesses or homogeneous products for strategic, commercial and industrial plans. Future cash flows are determined from the specific margins of these activities, unrelated to the price of oil. In year 2016, the Group recorded impairments on CGUs in the Refining and Chemicals segment for \$25 million in net income, Group share. These impairments mainly concern intangible assets. A variation of (5)% or +5% of the gross margin on variable costs under identical operating conditions or (1)% or +1% of the discount rate would have no impact on the operating profit or the net profit, Group share.

The CGUs of the Marketing & Services segment are subsidiaries or groups of subsidiaries organized by geographical area.

For year 2016, the Group recorded impairments on the CGUs of the Marketing & Services segment for an amount of \$140 million in operating income and \$202 million in net income, Group share. These impairments primarily relate to assets of SunPower due to the depressed economic environment of solar activity.

In 2015, the Group recognized impairments of assets in the Upstream, Refining & Chemicals and Marketing & Services segments for an impact of \$6,877 million in operating income and of \$5,447 income and net income, Group share. These impairments were qualified as adjustments items of the operating income and net income, Group share.

In 2014, the Group recognized impairments of assets in the Upstream, Refining & Chemicals and Marketing & Services segments for an impact of \$7,979 million in operating income and of \$7,063 million in net income, Group share. These impairments were qualified as adjustments items of the operating income and net income, Group share.

No reversal of impairment was accounted for in respect of the years 2014, 2015 and 2016.

#### 4) Segment Information by geographical area

(M\$)	France	Rest of Europe	North America	Africa	Rest of the world	Total
<b>For the year ended December 31, 2016</b>						
Non-Group sales <sup>(a)</sup>	33,472	71,551	15,383	15,294	14,043	149,743
Property, plant and equipment, intangible assets, net	5,361	20,647	19,154	45,032	37,139	127,333
Capital expenditures	1,835	3,842	2,825	6,859	5,169	20,530
<b>For the year ended December 31, 2015</b>						
Non-Group sales <sup>(a)</sup>	36,536	79,463	14,857	17,612	16,889	165,357
Property, plant and equipment, intangible assets, net	4,123	22,354	17,169	43,536	36,885	124,067
Capital expenditures	980	4,783	3,493	9,154	9,623	28,033
<b>For the year ended December 31, 2014</b>						
Non-Group sales <sup>(a)</sup>	51,471	114,747	23,766	23,281	22,857	236,122
Property, plant and equipment, intangible assets, net	4,350	25,137	16,064	41,405	34,602	121,558
Capital expenditures	1,266	5,880	3,658	9,798	9,907	30,509

(a) No customer amounts to 10% or more of Non-Group sales.

## 5) Main items related to operating activities

### Items related to the statement of income

#### 5.1) Net sales

##### Accounting policies

###### Sales of goods

Revenues from sales are recognized when the significant risks and rewards of ownership have been passed to the buyer and when the amount is recoverable and can be reasonably measured.

Revenues from sales of crude oil and natural gas are recorded upon transfer of title, according to the terms of the sales contracts.

Revenues from the production of crude oil and natural gas properties, in which the Group has an interest with other producers, are recognized based on actual volumes sold during the period.

Any difference between volumes sold and entitlement volumes, based on the Group net working interest, is recognized as “Crude oil and natural gas inventories” or “Other current assets” or “Other creditors and accrued liabilities”, as appropriate.

Quantities delivered that represent production royalties and taxes, when paid in cash, are included in oil and gas sales, except for the United States and Canada.

Certain transactions within the trading activities (contracts involving quantities that are purchased from third parties then resold to third parties) are shown at their net value in sales.

Exchanges of crude oil and petroleum products within normal trading activities do not generate any income and therefore these flows are shown at their net value in both the statement of income and the balance sheet.

###### Sales of services

Revenues from services are recognized when the services have been rendered.

Revenues from gas transport are recognized when services are rendered. These revenues are based on the quantities transported and measured according to procedures defined in each service contract.

Shipping revenues and expenses from time-charter activities are recognized on a pro rata basis over a period that commences upon the unloading of the previous voyage and terminates upon the unloading of the current voyage. Shipping revenue recognition starts only when a charter has been agreed to by both the Group and the customer.

###### Solar Farm Development Projects

SunPower develops and sells solar farm projects. This activity generally contains a property component (land ownership or an interest in land rights). The revenue associated with the development of these projects is recognized when the project-entities and land rights are irrevocably sold.

Revenues under contracts for construction of solar systems are recognized based on the progress of construction works, measured according to the percentage of costs incurred relative to total forecast costs.

###### Excise taxes

Sales include excise taxes collected by the Group within the course of its oil distribution operations. Excise taxes are deducted from sales in order to obtain the “Revenues from sales” indicator.

Excise taxes are rights or taxes which amount is calculated based on the quantity of oil and gas products put on the market. Excise taxes are determined by the states. They are paid directly to the customs and tax authorities and then invoiced to final customers by being included in the sales price.

The analysis of the criteria set by IAS 18 led the Group to determine that it was acting as principal in these transactions. On this basis, the sales presented include the amount of excise taxes invoiced to the customers.

#### 5.2) Operating expenses and research and development

##### Accounting policies

The Group applies IFRS 6 “Exploration for and Evaluation of Mineral Resources”. Oil and gas exploration and production properties and assets are accounted for in accordance with the Successful Efforts method.

Geological and geophysical costs, including seismic surveys for exploration purposes are expensed as incurred in exploration costs.

Costs of dry wells and wells that have not found proved reserves are charged to expense in exploration costs.

### 5.2.1) Operating expenses

For the year ended December 31,  
 (M\$)

	2016	2015	2014
Purchases, net of inventory variation <sup>(a)</sup> <sup>(b)</sup>	(83,377)	(96,671)	(152,975)
Exploration costs	(1,264)	(1,991)	(1,964)
Other operating expenses <sup>(c)</sup>	(24,302)	(24,345)	(28,349)
<i>of which non-current operating liabilities (allowances) reversals</i>	369	858	717
<i>of which current operating liabilities (allowances) reversals</i>	(58)	(86)	(147)
<b>Operating expenses</b>	<b>(108,943)</b>	<b>(123,007)</b>	<b>(183,288)</b>

(a) Includes taxes paid on oil and gas production in the Upstream segment, amongst others royalties.

(b) The Group values under/over lifting at market value.

(c) Principally composed of production and administrative costs (see in particular the payroll costs as detailed in Note 10 to the Consolidated Financial Statements "Payroll, staff and employee benefits obligations").

### 5.2.2) Research and development costs

#### Accounting policies

Research costs are charged to expense as incurred.

Development expenses are capitalized when the criteria of IAS38 are met.

Research and development costs incurred by the Group in 2016 and booked in operating expenses amount to \$1,050 million (\$980 million in 2015 and \$1,245 million in 2014), corresponding to 0.70% of the sales.

The staff dedicated in 2016 to these research and development activities are estimated at 4,939 people (4,248 in 2015 and 4,596 in 2014).

### 5.3) Amortization, depreciation and impairment of tangible assets and mineral interests

The amortization, depreciation and impairment of tangible assets and mineral interests are detailed as follows:

For the year ended December 31,  
 (M\$)

	2016	2015	2014
Depreciation and impairment of tangible assets	(12,615)	(15,727)	(15,988)
Amortization and impairment of mineral assets	(908)	(1,993)	(3,668)
<b>Total</b>	<b>(13,523)</b>	<b>(17,720)</b>	<b>(19,656)</b>

### Items related to balance sheet

#### 5.4) Working capital

##### 5.4.1) Inventories

#### Accounting policies

Inventories are measured in the Consolidated Financial Statements at the lower of historical cost or market value. Costs for petroleum and petrochemical products are determined according to the FIFO (First-In, First-Out) method and other inventories are measured using the weighted-average cost method. In addition stocks held for trading are measured at fair value less costs of sale.

##### Refining & Chemicals

Petroleum product inventories are mainly comprised of crude oil and refined products. Refined products principally consist of gasoline, distillate and fuel produced by the Group's refineries. The turnover of petroleum products does not exceed more than two months on average. Crude oil costs include raw material and receiving costs. Refining costs principally include crude oil costs,

production costs (energy, labor, depreciation of producing assets) and an allocation of production overheads (taxes, maintenance, insurance, etc.). Costs of chemical product inventories consist of raw material costs, direct labor costs and an allocation of production overheads. Start-up costs, general administrative costs and financing costs are excluded from the cost price of refined and chemicals products.

##### Marketing & Services

The costs of refined products include mainly raw materials costs, production costs (energy, labor, depreciation of producing assets) and an allocation of production overheads (taxes, maintenance, insurance, etc.). General administrative costs and financing costs are excluded from the cost price of refined products.

Products purchased from entities external to the Group are valued at their purchase cost plus primary costs of transport.

#### Carbon dioxide emission rights

In the absence of a current IFRS standard or interpretation on accounting for emission rights of carbon dioxide, the following principles are applied:

- emission rights are managed as a cost of production and as such are recognized in inventories:
  - emission rights allocated for free are booked in inventories with a nil carrying amount,
  - purchased emission rights are booked at acquisition cost,
  - sales or annual restorations of emission rights consist of decreases in inventories recognized based on a weighted average cost,
  - if the carrying amount of inventories at closing date is higher than the market value, an impairment loss is recorded.
- at each closing, a provision is recorded in order to materialize the obligation to surrender emission rights related to the emissions of the period. This provision is calculated based on estimated emissions of the period, valued at weighted average cost of the inventories at the end of the period. It is reversed when the emission rights are surrendered;

- if emission rights to be surrendered at the end of the compliance period are higher than emission rights recorded in inventories, the shortage is accounted for as a liability at market value;
- forward transactions are recognized at their fair market value in the balance sheet. Changes in the fair value of such forward transactions are recognized in the statement of income.

#### Energy savings certificates

In the absence of current IFRS standards or interpretations on accounting for energy savings certificates (ESC), the following principles are applied:

- if the obligations linked to the sales of energy are greater than the number of ESC's held then a liability is recorded. These liabilities are valued based on the price of the last transactions;
- in the event that the number of ESC's held exceeds the obligation at the balance sheet date this is accounted for as inventory;
- ESC inventories are valued at weighted average cost (acquisition cost for those ESC's acquired or cost incurred for those ESC's generated internally).

If the carrying value of the inventory of certificates at the balance sheet date is higher than the market value, an impairment loss is recorded.

#### As of December 31, 2016

(M\$)	Gross value	Valuation allowance	Net value
Crude oil and natural gas	2,215	(7)	2,208
Refined products	4,577	(30)	4,547
Chemicals products	877	(58)	819
Trading inventories	4,613	-	4,613
Other inventories	3,936	(876)	3,060
<b>Total</b>	<b>16,218</b>	<b>(971)</b>	<b>15,247</b>

#### As of December 31, 2015

(M\$)	Gross value	Valuation allowance	Net value
Crude oil and natural gas	1,788	(59)	1,729
Refined products	4,177	(130)	4,047
Chemicals products	989	(72)	917
Trading inventories	3,168	-	3,168
Other inventories	4,062	(807)	3,255
<b>Total</b>	<b>14,184</b>	<b>(1,068)</b>	<b>13,116</b>

#### As of December 31, 2014

(M\$)	Gross value	Valuation allowance	Net value
Crude oil and natural gas	2,697	(188)	2,509
Refined products	5,922	(422)	5,500
Chemicals products	1,119	(85)	1,034
Trading inventories	2,950	-	2,950
Other inventories	3,903	(700)	3,203
<b>Total</b>	<b>16,591</b>	<b>(1,395)</b>	<b>15,196</b>

Changes in the valuation allowance on inventories are as follows:

For the year ended December 31, (M\$)	Valuation allowance as of January 1,	Increase (net)	Currency translation adjustment and other variations	Valuation allowance as of December 31,
2016	(1,068)	41	56	(971)
2015	(1,395)	256	71	(1,068)
2014	(1,022)	(495)	122	(1,395)

#### 5.4.2) Accounts receivable and other current assets

As of December 31, 2016

(M\$)	Gross value	Valuation allowance	Net value
<b>Accounts receivable</b>	<b>12,809</b>	<b>(596)</b>	<b>12,213</b>
Recoverable taxes	3,180	-	3,180
Other operating receivables	10,618	(400)	10,218
Prepaid expenses	1,399	-	1,399
Other current assets	38	-	38
<b>Other current assets</b>	<b>15,235</b>	<b>(400)</b>	<b>14,835</b>

As of December 31, 2015

(M\$)	Gross value	Valuation allowance	Net value
<b>Accounts receivable</b>	<b>11,173</b>	<b>(544)</b>	<b>10,629</b>
Recoverable taxes	3,328	-	3,328
Other operating receivables	11,335	(426)	10,909
Prepaid expenses	1,554	-	1,554
Other current assets	52	-	52
<b>Other current assets</b>	<b>16,269</b>	<b>(426)</b>	<b>15,843</b>

As of December 31, 2014

(M\$)	Gross value	Valuation allowance	Net value
<b>Accounts receivable</b>	<b>16,306</b>	<b>(602)</b>	<b>15,704</b>
Recoverable taxes	3,242	-	3,242
Other operating receivables	11,159	(367)	10,792
Prepaid expenses	1,609	-	1,609
Other current assets	59	-	59
<b>Other current assets</b>	<b>16,069</b>	<b>(367)</b>	<b>15,702</b>

Changes in the valuation allowance on "Accounts receivable" and "Other current assets" are as follows:

For the year ended December 31, (M\$)	Valuation allowance as of January 1,	Increase (net)	Currency translation adjustments and other variations	Valuation allowance as of December 31,
<b>Accounts receivable</b>				
2016	(544)	(17)	(35)	(596)
2015	(602)	5	53	(544)
2014	(743)	46	95	(602)
<b>Other current assets</b>				
2016	(426)	33	(7)	(400)
2015	(367)	(79)	20	(426)
2014	(154)	(221)	8	(367)

As of December 31, 2016, the net portion of the overdue receivables included in “Accounts receivable” and “Other current assets” was \$3,525 million, of which \$1,273 million was due in less than 90 days, \$1,013 million was due between 90 days and 6 months, \$538 million was due between 6 and 12 months and \$701 million was due after 12 months.

As of December 31, 2015, the net portion of the overdue receivables included in “Accounts receivable” and “Other current assets” was \$3,159 million, of which \$1,313 million was due in less than

90 days, \$460 million was due between 90 days and 6 months, \$570 million was due between 6 and 12 months and \$816 million was due after 12 months.

As of December 31, 2014, the net portion of the overdue receivables included in “Accounts receivable” and “Other current assets” was \$3,049 million, of which \$1,382 million was due in less than 90 days, \$593 million was due between 90 days and 6 months, \$226 million was due between 6 and 12 months and \$848 million was due after 12 months.

### 5.4.3) Other creditors and accrued liabilities

As of December 31,  
(M\$)

	2016	2015	2014
Accruals and deferred income	424	342	469
Payable to States (including taxes and duties)	5,455	5,363	6,894
Payroll	1,225	1,265	1,343
Other operating liabilities	9,616	9,914	7,935
<b>Total</b>	<b>16,720</b>	<b>16,884</b>	<b>16,641</b>

As of December 31, 2016, the heading “Other operating liabilities” includes mainly the second quarterly interim dividend for the fiscal year 2016 for \$1,592 million, which was paid in January 2017 and the third quarterly interim dividend for the fiscal year 2016 for \$1,593 million, which will be paid in April 2017.

As of December 31, 2015, the heading “Other operating liabilities” included mainly the second quarterly interim dividend for the fiscal

year 2015 for \$1,560 million, which was paid in January 2016 and the third quarterly interim dividend for the fiscal year 2015 for \$1,584 million, which was paid in April 2016.

As of December 31, 2014, the heading “Other operating liabilities” included mainly the third quarterly interim dividend for the fiscal year 2014 for \$1,718 million. This interim dividend was paid in March 2015.

## Items related to the cash flow statement

### 5.5) Cash flow from operating activities

#### Accounting policies

The Consolidated Statement of Cash Flows prepared in currencies other than dollar has been translated into dollars using the exchange rate on the transaction date or the average exchange rate for the period. Currency translation differences arising from the translation of monetary assets and liabilities denominated in foreign

currency into dollars using the closing exchange rates are shown in the Consolidated Statement of Cash Flows under “Effect of exchange rates”. Therefore, the Consolidated Statement of Cash Flows will not agree with the figures derived from the consolidated balance sheet.

The following table gives additional information on cash paid or received in the cash flow from operating activities:

#### Detail of interest, taxes and dividends

For the year ended December 31,  
(M\$)

	2016	2015	2014
Interests paid	(1,028)	(862)	(789)
Interests received	90	113	119
Income tax paid <sup>(a)</sup>	(2,892)	(4,937)	(11,374)
Dividends received	1,702	2,309	2,992

(a) These amounts include taxes paid in kind under production-sharing contracts in Exploration & Production.



**Detail of changes in working capital:**

For the year ended December 31,

(M\$)	2016	2015	2014
Inventories	(2,475)	888	5,289
Accounts receivable	(1,916)	4,153	5,916
Other current assets	185	(726)	(1,605)
Accounts payable	2,546	(2,235)	(4,531)
Other creditors and accrued liabilities	541	(397)	(589)
<b>Net amount</b>	<b>(1,119)</b>	<b>1,683</b>	<b>4,480</b>

**Detail of provisions and deferred taxes**

As of December 31,

(M\$)	2016	2015	2014
Accruals	382	336	160
Deferred taxes	(1,941)	(2,899)	(2,140)
<b>Total</b>	<b>(1,559)</b>	<b>(2,563)</b>	<b>(1,980)</b>

**6) Other items from operating activities****6.1) Other income and other expense**

For the year ended December 31,

(M\$)	2016	2015	2014
Gains on disposal of assets	479	2,658	2,085
Foreign exchange gains	548	663	216
Other	272	285	276
<b>Other income</b>	<b>1,299</b>	<b>3,606</b>	<b>2,577</b>
Losses on disposal of assets	(216)	(199)	(106)
Foreign exchange losses	-	(102)	-
Amortization of other intangible assets (excl. mineral interests)	(344)	(332)	(254)
Other	(467)	(944)	(594)
<b>Other expense</b>	<b>(1,027)</b>	<b>(1,577)</b>	<b>(954)</b>

**Other income**

In 2016, gains on disposal of assets are mainly related to sales of assets in United-Kingdom in the Upstream segment.

In 2015, gains on disposal of assets mainly related to sales of assets in Nigeria in the Upstream segment, to sales of interests in Geosel and the Schwedt refinery in the Refining & Chemicals segment, to the sale of the Bostik adhesives activity, also in the Refining & Chemicals segment, and to the sale of 100% of Totalgaz in the Marketing & Services segment.

In 2014, gains on disposal of assets mainly related to sales of assets in the Upstream segment in Angola and the United-States and to sales of interests, also in the Upstream segment in: the company GTT (GazTransport et Technigaz), the Shah Deniz field and the South Caucasus pipeline.

**Other expense**

In 2016, the loss on disposals is mainly related to the sale of 20% of interests in Kharyaga in Russia. The heading "Other" mainly consists of the impairment of non-consolidated shares and loans granted to non-consolidated subsidiaries and equity affiliates for an amount of \$142 million and \$37 million of restructuring charges in the Refining & Chemicals and Marketing & Services segments.

In 2015, the loss on disposals mainly related to the sale of 20% of interests in fields in the United Kingdom. The heading "Other" mainly consists of the impairment of non-consolidated shares and loans granted to non-consolidated subsidiaries and equity affiliates for an amount of \$409 million, \$180 million of restructuring charges in the Upstream, Refining & Chemicals and Marketing & Services segments as well as \$162 million for expenses relating to a litigation in Qatar.

In 2014, the loss on disposals is mainly related to the sale of CCP Composites to Polynt Group. The heading "Other" mainly consists of the impairment of shares and loans of non-consolidated subsidiaries for an amount of \$88 million, \$43 million of restructuring charges as well as \$34 million for expenses relating to sales.

## 6.2) Other financial income and expense

As of December 31,  
(M\$)

	2016	2015	2014
Dividend income on non-consolidated subsidiaries	170	267	282
Capitalized financial expenses	477	364	348
Other	324	251	191
<b>Other financial income</b>	<b>971</b>	<b>882</b>	<b>821</b>
Accretion of asset retirement obligations	(523)	(513)	(543)
Other	(113)	(141)	(133)
<b>Other financial expense</b>	<b>(636)</b>	<b>(654)</b>	<b>(676)</b>

## 6.3) Other non-current assets

As of December 31, 2016

(M\$)	Gross value	Valuation allowance	Net value
Loans and advances <sup>(a)</sup>	3,334	(286)	3,048
Other	1,095	-	1,095
<b>Total</b>	<b>4,429</b>	<b>(286)</b>	<b>4,143</b>

As of December 31, 2015

(M\$)	Gross value	Valuation allowance	Net value
Loans and advances <sup>(a)</sup>	3,687	(280)	3,407
Other	948	-	948
<b>Total</b>	<b>4,635</b>	<b>(280)</b>	<b>4,355</b>

As of December 31, 2014

(M\$)	Gross value	Valuation allowance	Net value
Loans and advances <sup>(a)</sup>	3,998	(672)	3,326
Other	866	-	866
<b>Total</b>	<b>4,864</b>	<b>(672)</b>	<b>4,192</b>

(a) Excluding loans to equity affiliates.

Changes in the valuation allowance on loans and advances are detailed as follows:

For the year ended December 31, (M\$)	Valuation allowance as of January 1,	Increases	Decreases	Currency translation adjustment and other variations	Valuation allowance as of December 31,
2016	(280)	(15)	7	2	(286)
2015	(672)	(62)	393	61	(280)
2014	(498)	(63)	102	(213)	(672)

## 7) Intangible and tangible assets

### 7.1) Intangible assets

#### Accounting policies

##### Exploration costs

The Group applies IFRS 6 “Exploration for and Evaluation of Mineral Resources”. Oil and gas exploration and production properties and assets are accounted for in accordance with the Successful Efforts method.

Mineral interests are tested for impairment on a regular basis, property-by-property, based on the results of the exploratory activity and the management’s evaluation.

In the event of a discovery, the unproved mineral interests are transferred to proved mineral interests at their net book value as soon as proved reserves are booked.

Exploratory wells are tested for impairment on a well-by-well basis and accounted for as follows:

- costs of exploratory wells which result in proved reserves are capitalized and then depreciated using the unit-of-production method based on proved developed reserves;
- costs of exploratory wells are temporarily capitalized until a determination is made as to whether the well has found proved reserves if both of the following conditions are met:
  - the well has found a sufficient quantity of reserves to justify, if appropriate, its completion as a producing well, assuming that the required capital expenditures are made,
  - the Group is making sufficient progress assessing the reserves and the economic and operating viability of the project.
 This progress is evaluated on the basis of indicators such as

whether additional exploratory works are under way or firmly planned (wells, seismic or significant studies), whether costs are being incurred for development studies and whether the Group is waiting for governmental or other third-party authorization of a proposed project, or availability of capacity on an existing transport or processing facility.

Costs of exploratory wells not meeting these conditions are charged to exploration costs.

Proved mineral interests are depreciated using the unit-of-production method based on proved reserves. The corresponding expense is recorded as depreciation of tangible assets and mineral interests.

##### Goodwill and other intangible assets excluding mineral interests

Other intangible assets include goodwill, patents, trademarks, and lease rights.

Intangible assets are carried at cost, after deducting any accumulated amortization and accumulated impairment losses.

Guidance for calculating goodwill is presented in Note 1.1 paragraph B to the Consolidated Financial Statements. Goodwill is not amortized but is tested for impairment at least annually and as soon as there is any indication of impairment.

Intangible assets (excluding mineral interests) that have a finite useful life are amortized on a straight-line basis over three to twenty years depending on the useful life of the assets. The corresponding expense is recorded under other expense.

As of December 31, 2016 (M\$)	Cost	Amortization and impairment	Net
Goodwill	2,159	(1,002)	1,157
Proved mineral interests	13,347	(6,985)	6,362
Unproved mineral interests	11,582	(5,130)	6,452
Other intangible assets	4,182	(2,791)	1,391
<b>Total intangible assets</b>	<b>31,270</b>	<b>(15,908)</b>	<b>15,362</b>

As of December 31, 2015 (M\$)	Cost	Amortization and impairment	Net
Goodwill	1,597	(971)	626
Proved mineral interests	12,800	(6,436)	6,364
Unproved mineral interests	11,751	(5,082)	6,669
Other intangible assets	4,059	(3,169)	890
<b>Total intangible assets</b>	<b>30,207</b>	<b>(15,658)</b>	<b>14,549</b>

As of December 31, 2014 (M\$)	Cost	Amortization and impairment	Net
Goodwill	1,639	(1,020)	619
Proved mineral interests	12,215	(5,514)	6,701
Unproved mineral interests	10,673	(4,498)	6,175
Other intangible assets	4,387	(3,200)	1,187
<b>Total intangible assets</b>	<b>28,914</b>	<b>(14,232)</b>	<b>14,682</b>

Changes in net intangible assets are analyzed in the following table:

(M\$)	Net amount as of January 1,	Acquisitions	Disposals	Amortization and impairment	Currency translation adjustment	Other	Net amount as of December 31,
<b>2016</b>	<b>14,549</b>	<b>1,039</b>	<b>(117)</b>	<b>(1,252)</b>	<b>(187)</b>	<b>1,330</b>	<b>15,362</b>
2015	14,682	2,750	(343)	(2,324)	(200)	(16)	14,549
2014	18,395	1,000	(178)	(3,920)	(276)	(339)	14,682

In 2016, the heading “Amortization and impairment” includes the impact of exceptional asset impairments for an amount of \$543 million (see Note 3 paragraph D to the Consolidated Financial Statements).

In 2016, the heading “Other” principally corresponds to the effect of the entries in the consolidation scope (including SAFT Group and Lampiris) for \$1,394 million and to the reclassification of assets classified in accordance with IFRS 5 “Non-current assets held for sale and discontinued operations”.

In 2015, the heading “Amortization and impairment” included the accounting impact of exceptional asset impairments for an amount of \$1,482 million (see Note 3 paragraph D to the Consolidated Financial Statements).

In 2014, the heading “Amortization and impairment” included the accounting impact of exceptional asset impairments for an amount of \$3,177 million (see Note 3 paragraph D to the Consolidated Financial Statements).

In 2014, the heading “Other” mainly included mineral interests in Utica reclassified into acquisitions for \$(524) million, the recognition of mineral interests in Papua New Guinea for \$429 million, the reclassification of assets in accordance with IFRS 5 “Non-current assets held for sale and discontinued operations” for \$(561) million and the reversal of the reclassification under IFRS 5 as at December 31, 2013 for \$96 million corresponding to disposals.

A summary of changes in the carrying amount of goodwill by business segment for the year ended December 31, 2016 is as follows:

(M\$)	Net goodwill as of January 1, 2016	Increases	Impairments	Other	Net goodwill as of December 31, 2016
Upstream	-	102	-	(3)	99
Refining & Chemicals	470	42	-	(50)	462
Marketing & Services	129	620	(148)	(31)	570
Corporate	27	-	-	(1)	26
<b>Total</b>	<b>626</b>	<b>764</b>	<b>(148)</b>	<b>(85)</b>	<b>1,157</b>

In 2016, the increases are mainly related to the acquisitions of SAFT Group and Lampiris.

## 7.2) Property, plant and equipment

### Accounting policies

#### Exploration & Production Oil and Gas producing assets

Development costs incurred for the drilling of development wells and for the construction of production facilities are capitalized, together with borrowing costs incurred during the period of construction and the present value of estimated future costs of asset retirement obligations. The depletion rate is equal to the ratio of oil and gas production for the period to proved developed reserves (unit-of-production method). In the event that, due to the price effect on reserves evaluation, the unit-of-production method does not reflect properly the useful life of the asset, an alternative depreciation method is applied based on the reserves evaluated with the price of the previous year. With respect to phased development projects or projects subject to progressive well production start-up, the fixed assets' depreciable amount, excluding production or service wells, is adjusted to exclude the portion of development costs attributable to the undeveloped reserves of these projects. With respect to production sharing contracts, the unit-of-production method is based on the portion of production and reserves assigned to the Group taking into account estimates based on the contractual clauses regarding the reimbursement of exploration, development and production costs (cost oil/gas) as well as the sharing of hydrocarbon rights (profit oil/gas). Hydrocarbon transportation and processing assets are depreciated using the unit-of-production method based on throughput or by using the straight-line method whichever best reflects the duration of use of the economic life of the asset.

#### Other property, plant and equipment excluding Exploration & Production

Other property, plant and equipment are carried at cost, after deducting any accumulated depreciation and accumulated impairment losses. This cost includes borrowing costs directly attributable to the acquisition or production of a qualifying asset incurred until assets are placed in service. Borrowing costs are capitalized as follows:

- if the project benefits from a specific funding, the capitalization of borrowing costs is based on the borrowing rate;
- if the project is financed by all the Group's debt, the capitalization of borrowing costs is based on the weighted average borrowing cost for the period.

Routine maintenance and repairs are charged to expense as incurred. The costs of major turnarounds of refineries and large petrochemical units are capitalized as incurred and depreciated over the period of time between two consecutive major turnarounds.

Other property, plant and equipment are depreciated using the straight-line method over their useful lives, which are as follows:

Furniture, office equipment, machinery and tools	3-12 years
Transportation equipment	5-20 years
Storage tanks and related equipment	10-15 years
Specialized complex installations and pipelines	10-30 years
Buildings	10-50 years

As of December 31, 2016 (M\$)	Cost	Depreciation and impairment	Net
<b>Upstream properties</b>			
Proved properties	163,860	(100,959)	62,901
Unproved properties	1,996	-	1,996
Work in progress	33,860	(2,075)	31,785
<b>Subtotal</b>	<b>199,716</b>	<b>(103,034)</b>	<b>96,682</b>
<b>Other property, plant and equipment</b>			
Land	1,578	(567)	1,011
Machinery, plant and equipment (including transportation equipment)	28,620	(22,940)	5,680
Buildings	7,977	(4,979)	2,998
Work in progress	2,780	(10)	2,770
Other	8,296	(5,466)	2,830
<b>Subtotal</b>	<b>49,251</b>	<b>(33,962)</b>	<b>15,289</b>
<b>Total property, plant and equipment</b>	<b>248,967</b>	<b>(136,996)</b>	<b>111,971</b>

As of December 31, 2015 (M\$)	Cost	Depreciation and impairment	Net
<b>Upstream properties</b>			
Proved properties	153,530	(94,843)	58,687
Unproved properties	2,423	-	2,423
Work in progress	36,246	(2,284)	33,962
<b>Subtotal</b>	<b>192,199</b>	<b>(97,127)</b>	<b>95,072</b>
<b>Other property, plant and equipment</b>			
Land	1,551	(581)	970
Machinery, plant and equipment (including transportation equipment)	28,723	(22,975)	5,748
Buildings	7,655	(5,018)	2,637
Work in progress	2,705	(128)	2,577
Other	8,182	(5,668)	2,514
<b>Subtotal</b>	<b>48,816</b>	<b>(34,370)</b>	<b>14,446</b>
<b>Total property, plant and equipment</b>	<b>241,015</b>	<b>(131,497)</b>	<b>109,518</b>

As of December 31, 2014 (M\$)	Cost	Depreciation and impairment	Net
<b>Upstream properties</b>			
Proved properties	139,294	(86,326)	52,968
Unproved properties	2,153	-	2,153
Work in progress	38,698	(1,574)	37,124
<b>Subtotal</b>	<b>180,145</b>	<b>(87,900)</b>	<b>92,245</b>
<b>Other property, plant and equipment</b>			
Land	1,683	(613)	1,070
Machinery, plant and equipment (including transportation equipment)	30,966	(24,874)	6,092
Buildings	8,141	(5,291)	2,850
Work in progress	2,367	(324)	2,043
Other	8,673	(6,097)	2,576
<b>Subtotal</b>	<b>51,830</b>	<b>(37,199)</b>	<b>14,631</b>
<b>Total property, plant and equipment</b>	<b>231,975</b>	<b>(125,099)</b>	<b>106,876</b>

Changes in net property, plant and equipment are analyzed in the following table:

(M\$)	Net amount as of January 1,	Acquisitions	Disposals	Depreciation and impairment	Currency translation adjustment	Other	Net amount as of December 31,
<b>2016</b>	<b>109,518</b>	<b>17,067</b>	<b>(1,869)</b>	<b>(13,171)</b>	<b>(1,057)</b>	<b>1,483</b>	<b>111,971</b>
2015	106,876	22,382	(1,842)	(17,010)	(3,449)	2,561	109,518
2014	104,480	25,320	(2,211)	(16,939)	(4,438)	664	106,876

In 2016, the heading “Disposals” mainly includes the impact of sales in the Upstream segment (sale of interests in the FUKA and SIRGE gas pipelines, and the St. Fergus gas terminal in the United Kingdom, and sale of a 20% stake in Kharyaga, Russia.).

In 2016, the heading “Depreciation and impairment” includes the impact of impairments of assets recognized for an amount of \$1,780 million (see Note 3 paragraph D to the Consolidated Financial Statements).

In 2016, the heading “Other” principally corresponds to the effect of the entries in the consolidation scope (including SAFT Group and Lampiris) for \$751 million, to the reclassification of assets in accordance with IFRS 5 “Non-current assets held for sale and discontinued operations” for \$(365) million and the reversal of the reclassification under IFRS 5 as at December 31, 2015 for \$627 million corresponding to disposals.

In 2015, the heading “Disposals” mainly included the impact of sales in the Upstream segment (sale of 4 blocks in Nigeria, West of Shetland fields in United Kingdom and a part of Fort Hills in Canada).

In 2015, the heading “Depreciation and impairment” included the impact of impairments of assets recognized for an amount of \$5,544 million (see Note 3 paragraph D to the Consolidated Financial Statements).

In 2015, the heading “Other” principally corresponded to the increase of the asset for site restitution for an amount of \$956 million and the reclassification of assets classified in accordance with IFRS 5 “Non-current assets held for sale and discontinued operations” for \$1,128 million, primarily related to the Usan field in Nigeria.

In 2014, the heading “Disposals” mainly included the impact of sales in the Upstream segment (sale of Block 15/06 in Angola and the Shah Deniz field in Azerbaijan).

In 2014, the heading “Depreciation and impairment” included the impact of impairments of assets recognized for an amount of \$4,802 million (see Note 3 paragraph D to the Consolidated Financial Statements).

In 2014, the heading “Other” principally corresponded to the increase of the asset for site restitution for an amount of \$1,366 million. It also includes \$(466) million related to the reclassification of assets classified in accordance with IFRS 5 “Non-current assets held for sale and discontinued operations” primarily related to the sales of Total Coal South Africa and Bostik.

Property, plant and equipment presented above include the following amounts for facilities and equipment under finance leases:

<b>As of December 31, 2016</b> (M\$)	<b>Cost</b>	<b>Depreciation and impairment</b>	<b>Net</b>
Machinery, plant and equipment	426	(391)	35
Buildings	109	(38)	71
Other	179	(41)	138
<b>Total</b>	<b>714</b>	<b>(470)</b>	<b>244</b>

<b>As of December 31, 2015</b> (M\$)	<b>Cost</b>	<b>Depreciation and impairment</b>	<b>Net</b>
Machinery, plant and equipment	426	(384)	42
Buildings	95	(38)	57
Other	175	(31)	144
<b>Total</b>	<b>696</b>	<b>(453)</b>	<b>243</b>

<b>As of December 31, 2014</b> (M\$)	<b>Cost</b>	<b>Depreciation and impairment</b>	<b>Net</b>
Machinery, plant and equipment	520	(443)	77
Buildings	72	(45)	27
Other	245	(29)	216
<b>Total</b>	<b>837</b>	<b>(517)</b>	<b>320</b>

## 8) Equity affiliates, other investments and related parties

### 8.1) Equity affiliates: investments and loans

#### Accounting principles

Under the equity method, the investment in the associate or joint venture is initially recognized at acquisition cost and subsequently adjusted to recognize the Group’s share of the net income and other comprehensive income of the associate or joint venture.

In equity affiliates, goodwill is included in investment book value.

In cases where the group holds less than 20% of the voting rights in another entity, the determination of whether the Group exercises

significant influence is also based on other facts and circumstances: representation on the Board of Directors or an equivalent governing body of the entity, participation in policy-making processes, including participation in decisions relating to dividends or other distributions, significant transactions between the investor and the entity, exchange of management personnel, or provision of essential technical information.

The contribution of equity affiliates in the consolidated balance sheet, consolidated statement of income and consolidated statement of comprehensive income is presented below:

**Equity value**

**As of December 31,**

(M\$)	2016	2015	2014
Total Associates	11,819	11,255	11,632
Total Joint ventures	4,039	3,751	3,016
<b>Total</b>	<b>15,858</b>	<b>15,006</b>	<b>14,648</b>
Loans	4,718	4,378	4,626
<b>Total</b>	<b>20,576</b>	<b>19,384</b>	<b>19,274</b>

**Equity share in profit/(loss)**

**As of December 31,**

(M\$)	2016	2015	2014
Total Associates	1,530	2,004	2,786
Total Joint ventures	684	357	(124)
<b>Total</b>	<b>2,214</b>	<b>2,361</b>	<b>2,662</b>

**Other comprehensive income**

**As of December 31,**

(M\$)	2016	2015	2014
Total Associates	847	139	(1,532)
Total Joint ventures	88	(19)	(6)
<b>Total</b>	<b>935</b>	<b>120</b>	<b>(1,538)</b>

**A) Information related to associates**

Information (100% gross) related to significant associates is as follows:

**Upstream**

(M\$)	Novatek <sup>(a)</sup>			Liquefaction entities			PetroCedeño		
	2016	2015	2014	2016	2015	2014	2016	2015	2014
Non current assets	13,981	9,768	9,551	31,044	33,294	33,909	5,515	6,916	6,458
Current assets	2,409	2,237	1,648	5,790	7,427	9,007	4,166	3,437	10,033
<b>Total Assets</b>	<b>16,390</b>	<b>12,005</b>	<b>11,199</b>	<b>36,834</b>	<b>40,721</b>	<b>42,916</b>	<b>9,681</b>	<b>10,353</b>	<b>16,491</b>
Shareholder's equity	11,015	6,745	7,135	22,886	25,941	25,090	5,515	5,538	5,597
Non current liabilities	3,574	3,014	3,352	10,839	9,373	10,876	10	10	274
Current liabilities	1,801	2,246	712	3,109	5,407	6,950	4,156	4,805	10,620
<b>Total Liabilities</b>	<b>16,390</b>	<b>12,005</b>	<b>11,199</b>	<b>36,834</b>	<b>40,721</b>	<b>42,916</b>	<b>9,681</b>	<b>10,353</b>	<b>16,491</b>
Revenue from sales	7,779	7,130	9,222	15,557	22,731	39,502	1,398	1,840	3,644
<b>Net income</b>	<b>3,137</b>	<b>1,755</b>	<b>2,759</b>	<b>1,472</b>	<b>7,720</b>	<b>14,269</b>	<b>277</b>	<b>399</b>	<b>343</b>
<b>Other comprehensive income</b>	<b>1,651</b>	<b>(1,682)</b>	<b>(5,431)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
% owned	18.90%	18.90%	18.24%				30.32%	30.32%	30.32%
Revaluation identifiable assets on equity affiliates	1,811	1,580	1,944	-	-	-	-	-	-
Equity value	3,893	2,855	3,245	3,755	4,183	4,130	1,672	1,679	1,697
Equity share in profit/(loss)	494	229	193	147	978	2,125	84	121	104
Equity other comprehensive income	808	(135)	(1,844)	23	156	200	-	-	-
Dividends paid to the Group	111	102	126	479	1,072	1,687	91	139	99

(a) Information includes estimates at the date of TOTAL's financial statements.



Novatek, listed in Moscow and London, is the 2<sup>nd</sup> largest producer of natural gas in Russia. The Group share of Novatek's market value amounted to \$7,450 million as at December 31, 2016. Novatek is consolidated by the equity method. TOTAL considers, in fact, that it exercises significant influence particularly via its representation on the Board of Directors of Novatek and its interest in the major project of Yamal LNG.

The Group is not aware of significant restrictions limiting the ability of OAO Novatek to transfer funds to its shareholder, be it under the form of dividends, repayment of advances or loans made.

The Group's interests in associates operating liquefaction plants are combined. The amounts include investments in: Nigeria LNG (15.00%), Angola LNG (13.60%), Yemen LNG (39.62%), Qatargas (10.00%), Qatar Liquefied Gas Company Limited II – Train B (16.70%), Oman LNG (5.54%), and Abu Dhabi Gas Lc (5.00%).

PetroCedeño produces and upgrades extra-heavy crude oil in Venezuela.

## Refining & Chemicals

(M\$)	Saudi Aramco Total Refining & Petrochemicals			Qatar		
	2016	2015	2014	2016	2015	2014
Non current assets	12,056	12,536	12,654	4,152	2,530	3,020
Current assets	1,531	960	1,250	1,404	968	1,385
<b>Total Assets</b>	<b>13,587</b>	<b>13,496</b>	<b>13,904</b>	<b>5,556</b>	<b>3,498</b>	<b>4,405</b>
Shareholder's equity	2,302	2,011	1,672	3,393	2,803	2,930
Non current liabilities	9,466	9,873	9,584	1,349	356	409
Current liabilities	1,819	1,612	2,648	814	339	1,066
<b>Total Liabilities</b>	<b>13,587</b>	<b>13,496</b>	<b>13,904</b>	<b>5,556</b>	<b>3,498</b>	<b>4,405</b>
Revenue from sales	7,134	8,032	7,061	4,665	1,823	1,817
<b>Net income</b>	<b>289</b>	<b>339</b>	<b>(113)</b>	<b>615</b>	<b>631</b>	<b>875</b>
<b>Other comprehensive income</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>(11)</b>	<b>2</b>	<b>-</b>
% owned	37.50%	37.50%	37.50%			
Revaluation identifiable assets on equity affiliates	-	-	-	-	-	-
Equity value	863	754	627	832	818	850
Equity share in profit/(loss)	108	127	(42)	211	208	312
Equity other comprehensive income	22	77	89	6	28	25
Dividends paid to the Group	-	-	-	292	248	261

Saudi Aramco Total Refining & Petrochemicals is an entity including a refinery in Jubail, Saudi Arabia, with a capacity of 400,000 barrels/day with integrated petrochemical units.

The Group's interests in associates of the Refining & Chemicals segment, operating steam crackers and polyethylene lines in Qatar have been combined: Qatar Petrochemical Company Ltd. (20.00%), Qatofin (49.09%), Laffan Refinery (10.00%) and Laffan Refinery II (10.00%).

## B) Information related to joint ventures

The information (100% gross) related to significant joint ventures is as follows:

(M\$)	Liquefaction entities (Upstream)			Hanwha Total Petrochemicals (Refining & Chemicals)		
	2016	2015	2014	2016	2015	2014
Non current assets	47,014	35,341	23,326	3,454	3,543	3,754
Current assets excluding cash and cash equivalents	922	455	731	1,506	1,501	1,972
Cash and cash equivalents	703	501	516	473	240	149
<b>Total Assets</b>	<b>48,639</b>	<b>36,297</b>	<b>24,573</b>	<b>5,433</b>	<b>5,284</b>	<b>5,875</b>
Shareholder's equity	2,961	1,840	1,198	2,947	2,609	2,323
Other non current liabilities	327	349	225	120	107	126
Non current financial debts	43,980	32,996	21,596	1,105	1,388	1,793
Other current liabilities	1,371	1,112	1,269	764	713	705
Current financial debts	-	-	285	497	467	928
<b>Total Liabilities</b>	<b>48,639</b>	<b>36,297</b>	<b>24,573</b>	<b>5,433</b>	<b>5,284</b>	<b>5,875</b>
Revenue from sales	52	32	5	7,057	7,307	8,366
Depreciation and amortization	(12)	(14)	(5)	(259)	(247)	(223)
Interest income	5	10	2	-	-	1
Interest expense	(7)	(10)	(1)	(3)	(64)	(45)
Income taxes	(29)	(81)	50	(338)	(192)	(114)
<b>Net income</b>	<b>449</b>	<b>279</b>	<b>36</b>	<b>930</b>	<b>514</b>	<b>79</b>
<b>Other comprehensive income</b>	<b>166</b>	<b>61</b>	<b>-</b>	<b>(79)</b>	<b>(186)</b>	<b>(94)</b>
% owned				50.00%	50.00%	50.00%
Revaluation identifiable assets on equity affiliates	905	965	874	-	-	-
Equity value	1,555	1,355	1,130	1,474	1,305	1,161
Equity share in profit/(loss)	88	55	10	465	257	40
Equity other comprehensive income	50	18	(26)	22	(75)	(24)
Dividends paid to the Group	-	-	-	256	20	-

The Group's interests in joint ventures operating liquefaction plants have been combined. The amounts include investments in Yamal LNG in Russia (20.02% direct holding) and Ichthys LNG in Australia (30.00%).

Hanwha Total Petrochemicals is a South Korean company that operates a petrochemical complex in Daesan, South Korea (condensate separator, steam cracker, styrene, paraxylene, polyolefins).

Off balance sheet commitments relating to joint ventures are disclosed in Note 13 of the Consolidated Financial Statements.

In Group share, the main aggregated financial items in equity consolidated affiliates which have not been presented individually are as follows:

As of December 31, (M\$)	2016		2015		2014	
	Associates	Joint ventures	Associates	Joint ventures	Associates	Joint ventures
Non Current assets	3,047	1,971	3,491	2,005	3,502	1,456
Current assets	1,365	825	1,440	860	1,478	1,283
<b>Total Assets</b>	<b>4,412</b>	<b>2,796</b>	<b>4,931</b>	<b>2,865</b>	<b>4,980</b>	<b>2,739</b>
Shareholder's equity	804	1,010	966	1,091	1,083	725
Non current liabilities	2,369	985	2,612	951	2,348	877
Current liabilities	1,239	801	1,353	823	1,549	1,137
<b>Total Liabilities</b>	<b>4,412</b>	<b>2,796</b>	<b>4,931</b>	<b>2,865</b>	<b>4,980</b>	<b>2,739</b>

For the year ended December 31, (M\$)	2016		2015		2014	
	Associates	Joint ventures	Associates	Joint ventures	Associates	Joint ventures
Revenues from sales	2,603	3,181	2,661	3,362	4,124	4,473
<b>Net income</b>	<b>486</b>	<b>131</b>	<b>341</b>	<b>45</b>	<b>95</b>	<b>(175)</b>
Share of other comprehensive income items	(12)	16	13	38	(2)	44
Equity value	804	1,010	966	1,091	1,083	725
Dividends paid to the Group	308	30	442	22	470	43

## 8.2) Other investments

### Accounting policies

These assets are classified as financial assets available for sale and therefore measured at their fair value. For listed securities, this fair value is equal to the market price. For unlisted securities, if the fair value is not reliably determinable, the securities are recorded at their

historical value. Changes in fair value are recorded in other comprehensive income. If there is any evidence of a significant or long-lasting impairment loss, a loss is recorded in the statement of income. This impairment is irreversible.

As of December 31, 2016 (M\$)	Carrying amount	Unrealized gain (loss)	Balance sheet value
Areva	17	-	17
Other publicly traded equity securities	8	29	37
<b>Total publicly traded equity securities<sup>(a)</sup></b>	<b>25</b>	<b>29</b>	<b>54</b>
BBPP	62	-	62
BTC Limited	121	-	121
DUNKERQUE LNG SAS	133	-	133
Other equity securities (unit value below \$50 million)	763	-	763
<b>Total other equity securities<sup>(a)</sup></b>	<b>1,079</b>	<b>-</b>	<b>1,079</b>
<b>Other investments</b>	<b>1,104</b>	<b>29</b>	<b>1,133</b>

As of December 31, 2015 (M\$)	Carrying amount	Unrealized gain (loss)	Balance sheet value
Areva	22	-	22
Other publicly traded equity securities	9	28	37
<b>Total publicly traded equity securities<sup>(a)</sup></b>	<b>31</b>	<b>28</b>	<b>59</b>
BBPP	62	-	62
BTC Limited	121	-	121
DUNKERQUE LNG SAS	116	-	116
Other equity securities (unit value below \$50 million)	883	-	883
<b>Total other equity securities<sup>(a)</sup></b>	<b>1,182</b>	<b>-</b>	<b>1,182</b>
<b>Other investments</b>	<b>1,213</b>	<b>28</b>	<b>1,241</b>

As of December 31, 2014 (M\$)	Carrying amount	Unrealized gain (loss)	Balance sheet value
Areva	44	(4)	40
Other publicly traded equity securities	21	23	44
<b>Total publicly traded equity securities (a)</b>	<b>65</b>	<b>19</b>	<b>84</b>
BBPP	62	-	62
BTC Limited	132	-	132
DUNKERQUE LNG SAS	100	-	100
Other equity securities (unit value below \$50 million)	1,021	-	1,021
<b>Total other equity securities (a)</b>	<b>1,315</b>	<b>-</b>	<b>1,315</b>
<b>Other investments</b>	<b>1,380</b>	<b>19</b>	<b>1,399</b>

(a) Including cumulative impairments of \$1,633 million in 2016, \$949 million in 2015 and \$856 million in 2014.

### 8.3) Related parties

The main transactions and receivable and payable balances with related parties (principally non-consolidated subsidiaries and equity consolidated affiliates) are detailed as follows:

As of December 31, (M\$)	2016	2015	2014
<b>Balance sheet</b>			
<i>Receivables</i>			
Debtors and other debtors	492	533	697
Loans (excl. loans to equity affiliates)	65	71	155
<i>Payables</i>			
Creditors and other creditors	897	835	1,199
Debts	6	10	14
<b>For the year ended December 31, (M\$)</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
<b>Statement of income</b>			
Sales	2,270	3,062	4,308
Purchases	4,882	6,999	9,890
Financial expense	-	-	-
Financial income	6	6	16

### 8.4) Compensation for the administration and management bodies

The aggregate amount of direct and indirect compensation accounted by the French and foreign affiliates of the Company, for all executive officers of TOTAL as of December 31, 2016 and for the members of the Board of Directors who are employees of the Group, is detailed below.

The main Group executive officers include the members of the Executive Committee and the four directors of the corporate functions members of the Group Performance Management Committee (Communication, Legal, Health, Safety and Environment, Strategy & Climate) and the Group Treasurer.

For the year ended December 31, (M\$)	2016	2015	2014
Number of people	14	14	31
Direct or indirect compensation	13.4	12.8	28.3
Pension expenses (a)	6.1	3.9	6.8
Share-based payments expense (IFRS 2) (b)	5.3	3.5	9.0

(a) The benefits provided for executive officers and certain members of the Board of Directors, employees and former employees of the Group, include severance to be paid on retirement, supplementary pension schemes and insurance plans, which represent \$104.7 million provisioned as of December 31, 2016 (against \$96.7 million as of December 31, 2015 and \$233.7 million as of December 31, 2014).

The change in the pension expenses in 2016 relates to a scope effect: entry in the scope of an employee whose pension expense should be accrued according to the career's length.

(b) Share-based payments expense computed for the executive officers and the members of the Board of Directors who are employees of the Group and based on the principles of IFRS 2 "Share-based payments" described in Note 9.

The compensation allocated to members of the Board of Directors for directors' fees totaled \$1.22 million in 2016 (against \$1.34 million in 2015 and \$1.78 million in 2014).

## 9) Shareholders' equity and share-based payments

### 9.1) Shareholders' equity

#### Number of TOTAL shares

The Company's common shares, par value €2.50, as of December 31, 2016 are the only category of shares. Shares may be held in either bearer or registered form.

Double voting rights are granted to holders of shares that are fully-paid and held in the name of the same shareholder for at least two years, with due consideration for the total portion of the share capital represented. Double voting rights are also assigned to restricted shares in the event of an increase in share capital by incorporation of reserves, profits or premiums based on shares already held that are entitled to double voting rights.

Pursuant to the Company's bylaws (Statutes), no shareholder may cast a vote at a Shareholders' Meeting, either by himself or through an agent, representing more than 10% of the total voting rights for the Company's shares. This limit applies to the aggregated amount of voting rights held directly, indirectly or through voting proxies. However, in the case of double voting rights, this limit may be extended to 20%.

These restrictions no longer apply if any individual or entity, acting alone or in concert, acquires at least two-thirds of the total share capital of the Company, directly or indirectly, following a public tender offer for all of the Company's shares.

The authorized share capital amounts to 3,449,682,749 shares as of December 31, 2016 compared to 3,467,448,093 shares as of December 31, 2015 and 3,416,388,282 as of December 31, 2014. As of December 31, 2016, the share capital of TOTAL S.A. amounted to €6,075,914,655.

#### Share cancellation

In 2016, TOTAL S.A. reduced the Company's capital through the cancellation of shares.

At the meeting held on December 15, 2016, and pursuant to the authorization of the Extraordinary Shareholders' Meeting of May 11, 2012, the Board of Directors of TOTAL S.A. decided to cancel 100,331,268 treasury shares that TOTAL S.A. had previously bought back off-market from four of its 100% indirectly controlled subsidiaries.

Following this transaction the Group affiliates no longer hold treasury shares.

This buyback of shares has no impact on the Consolidated Financial Statements of TOTAL S.A., the fully-diluted weighted-average shares and the earnings per share.

TOTAL S.A. did not cancel any shares in 2014 and 2015.

#### Variation of the share capital

<b>As of December 31, 2013</b>	<b>2,377,678,160</b>
Shares issued in connection with: Capital increase as part of the global free share plan intended for the Group employees	666,575
Exercise of TOTAL share subscription options	6,922,790
<b>As of December 31, 2014</b>	<b>2,385,267,525</b>
Shares issued in connection with: Capital increase reserved for employees	10,479,410
Capital increase within stock dividend (2014 remainder and first interim dividend for 2015)	42,841,342
Exercise of TOTAL share subscription options	1,469,606
<b>As of December 31, 2015<sup>(a)</sup></b>	<b>2,440,057,883</b>
Shares issued in connection with: Capital increase within stock dividend (second interim dividend for 2015, third interim dividend for 2015, 2015 remainder and first interim dividend for 2016)	88,401,329
Exercise of TOTAL share subscription options	2,237,918
Cancellation of treasury shares	(100,331,268)
<b>As of December 31, 2016<sup>(b)</sup></b>	<b>2,430,365,862</b>

(a) Including 113,967,758 treasury shares deducted from consolidated shareholders' equity.  
 (a) Including 10,587,822 treasury shares deducted from consolidated shareholders' equity.

#### Capital increase reserved for Group employees

The Combined General Meeting of May 24, 2016, delegated to the Board of Directors in its twenty-third resolution, the authority to carry out, a capital increase, in one or more occasions within a maximum period of twenty-six months, reserved to members of a company or group savings plan of the Company.

Pursuant to this delegation, the Board of Directors, during its meeting on July 27, 2016, decided to proceed with a capital

increase reserved for employees and retirees of the Company that included a classic offering and a leveraged offering depending on the employees' choice, within the limit of 18 million shares with immediate dividend rights. All powers have been delegated to the Chairman and Chief Executive Officer to determine the opening and closing of the subscription period and the subscription price. This capital increase, opened in 2017, is expected to be completed before the General Meeting of 2017.

## Treasury shares

### Accounting policies

Treasury shares of the parent company held by its subsidiaries or itself are deducted from consolidated shareholders' equity. Gains or losses on sales of treasury shares are excluded from the determination of net income and are recognized in shareholders' equity.

### TOTAL shares held by TOTAL S.A.

As of December 31,	2016	2015	2014
Number of treasury shares	10,587,822	13,636,490	9,030,145
Percentage of share capital	0.44%	0.56%	0.38%
Shares allocated to TOTAL share grant plans for Group employees	10,555,887	13,603,525	8,946,930
Shares intended to be allocated to new TOTAL share purchase option plans or to new share grant plans	31,935	32,965	83,215

### TOTAL shares held by Group subsidiaries

As of December 31,	2016	2015	2014
Number of shares held by Group subsidiaries	-	100,331,268	100,331,268
Percentage of share capital	-	4.11%	4.21%
Shares held by a consolidated subsidiary, Total Nucléaire, 100% indirectly controlled by TOTAL S.A.	-	2,023,672	2,023,672
Shares held by subsidiaries of Elf Aquitaine (Financière Valorgest, Sogapar and Fingestval), 100% indirectly controlled by TOTAL S.A.	-	98,307,596	98,307,596

### Paid-in surplus

In accordance with French law, the paid-in surplus corresponds to premiums related to shares, contributions or mergers of the parent company which can be capitalized or used to offset losses if the legal reserve has reached its minimum required level. The amount of the paid-in surplus may also be distributed subject to taxation except in cases of a refund of shareholder contributions to.

As of December 31, 2016, paid-in surplus relating to TOTAL S.A. amounted to €28,961 million (€30,265 million as of December 31, 2015 and €28,319 million as of December 31, 2014).

### Reserves

Under French law, 5% of net income must be transferred to the legal reserve until the legal reserve reaches 10% of the nominal

value of the share capital. This reserve cannot be distributed to the shareholders other than upon liquidation but can be used to offset losses.

If wholly distributed, the unrestricted reserves of the parent company would be taxed for an approximate amount of \$569 million as of December 31, 2016 (\$630 million as of December 31, 2015 and \$755 million as of December 31, 2014) with regards to additional corporation tax to be applied on regulatory reserves so that they become distributable.

Furthermore, the additional tax to corporate income tax of 3%, due on dividends distributed by French companies or foreign organizations subject to corporate income in France, established by the second corrective finance act for 2012 would be payable for an amount of \$621 million as of December 31, 2016, (\$450 million as of December 31, 2015 and \$553 million as of December 31, 2014).

### Earnings per share

#### Accounting policies

Earnings per share is calculated by dividing net income (Group share) by the weighted-average number of common shares outstanding during the period, excluding TOTAL shares held by TOTAL S.A. (Treasury shares) and TOTAL shares held by the Group subsidiaries which are deducted from consolidated shareholders' equity.

Diluted earnings per share is calculated by dividing net income (Group share) by the fully-diluted weighted-average number of common shares outstanding during the period. Treasury shares held by the parent company, TOTAL S.A., and TOTAL shares held by the Group subsidiaries are deducted from consolidated shareholders' equity. These shares are not considered outstanding

for purposes of this calculation which also takes into account the dilutive effect of stock options, share grants and capital increases with a subscription period closing after the end of the fiscal year.

The weighted-average number of fully-diluted shares is calculated in accordance with the treasury stock method provided for by IAS 33. The proceeds, which would be recovered in the event of an exercise of rights related to dilutive instruments, are presumed

to be a share buyback at the average market price over the period. The number of shares thereby obtained leads to a reduction in the total number of shares that would result from the exercise of rights.

In compliance with IAS 33, earnings per share and diluted earnings per share are based on the net income after deduction of the remuneration due to the holders of deeply subordinated notes.

The variation of both weighted-average number of shares and weighted-average number of diluted shares respectively used in the calculation of earnings per share and fully-diluted earnings per share is detailed as follows:

	2016	2015	2014
<b>Number of shares as of January 1,</b>	<b>2,440,057,883</b>	<b>2,385,267,525</b>	<b>2,377,678,160</b>
<i>Number of shares issued during the year (pro rated)</i>			
Exercise of TOTAL share subscription options	538,621	662,351	3,768,183
Exercise of TOTAL share purchase options	-	-	-
TOTAL performance shares	1,524,172	103,131	2,121,605
Global free TOTAL share plan <sup>(a)</sup>	-	-	333,637
Capital increase reserved for employees	-	6,986,273	-
Capital increase within stock dividend	51,029,237	13,343,379	-
Buyback of treasury shares on December 15, 2016	4,180,470	-	-
Cancellation of treasury shares on December 15, 2016	(4,180,470)	-	-
TOTAL shares held by TOTAL S.A. or by its subsidiaries and deducted from shareholders' equity	(113,967,758)	(111,324,719)	(111,042,073)
<b>Weighted-average number of shares</b>	<b>2,379,182,155</b>	<b>2,295,037,940</b>	<b>2,272,859,512</b>
<i>Dilutive effect</i>			
TOTAL share subscription and purchase options	630,474	1,168,644	2,119,759
TOTAL performance shares	9,058,264	7,647,690	3,578,225
Global free TOTAL share plan <sup>(a)</sup>	-	-	353,054
Capital increase reserved for employees	843,043	581,268	2,093,601
<b>Weighted-average number of diluted shares</b>	<b>2,389,713,936</b>	<b>2,304,435,542</b>	<b>2,281,004,151</b>

(a) The Board of Directors approved on May 21, 2010 the implementation and conditions of a global free share plan intended for the Group employees.

## Earnings per share in euros

The earnings per share in euros, obtained from the earnings per share in dollars, converted by using the average exchange rate euro/dollar, is €2.28 per share for 2016 closing (€1.96 for 2015 closing). The fully-diluted earnings per share calculated by using the same method is €2.27 per share for 2016 closing (€1.95 for 2015 closing).

## Dividend

For the fiscal year 2016, TOTAL S.A. already paid two quarterly interim dividends:

- payment of the first interim dividend for the fiscal year 2016 of €0.61 per share, decided by the Board of Directors on September 21, 2016 has been done in cash or in shares on October 14, 2016 (the ex-dividend date was September 27, 2016). The number of shares issued in lieu of the cash dividend was based on the dividend amount divided by €38.00 per share, equal to 90% of the average Euronext Paris opening price of the shares for the 20 trading days preceding the Board of the Directors meeting on September 21, 2016 reduced by the amount of the first interim dividend. On October 14, 2016, 25,329,951 shares have been issued at a price of 38.00 € per share;

- payment of the second interim dividend for the fiscal year 2016 of €0.61 per share, decided by the Board of Directors on December 15, 2016 has been done in cash or in shares on January 12, 2017 (the ex-dividend date was December 21, 2016). The number of shares issued in lieu of the cash dividend was based on the dividend amount divided by €41.87 per share, equal to 95% of the average Euronext Paris opening price of the shares for the 20 trading days preceding the Board of Directors meeting, reduced by the amount of the second interim dividend. On January 12, 2017, 23,206,171 shares have been issued at a price of €41.87 per share.

The Board of Directors, during its October 27, 2016 meeting, decided to set the third quarterly interim dividend for the fiscal year 2016 at €0.61 per share. This interim dividend will be paid on April 6, 2017 (the ex-dividend date will be March 20, 2017).

A resolution will be submitted at the Shareholders' Meeting on May 26, 2017 to pay a dividend of €2.45 per share for the 2016 fiscal year, as a balance of €0.62 per share to be distributed after deducting the three quarterly interim dividends of €0.61 per share that will have already been paid.

### Issuance of perpetual subordinated notes

In 2016, the Group issued three tranches of perpetual subordinated notes in euros through TOTAL S.A.:

- deeply subordinated note 3.875% perpetual maturity callable after 6 years (€1,750 million);
- deeply subordinated note 2.708% perpetual maturity callable after 6.6 years (€1,000 million);
- deeply subordinated note 3.369% perpetual maturity callable after 10 years (€1,500 million).

In 2015, the Group issued two tranches of perpetual subordinated notes in EUR through TOTAL S.A.:

- deeply subordinated note 2.250% perpetual maturity callable after 6 years (€2,500 million);

- deeply subordinated note 2.625% perpetual maturity callable after 10 years (€2,500 million).

Based on their characteristics (mainly no mandatory repayment and no obligation to pay a coupon except in the event of a dividend distribution) and in compliance with IAS 32 standard “Financial instruments - presentation”, these notes were recorded in equity.

As of December 31, 2016, the amount of the perpetual deeply subordinated note booked in the Group shareholders’ equity is \$10,327 million. The coupons attributable to the holders of these securities are booked in deduction of the Group shareholders’ equity for an amount of \$203 million for fiscal year 2016 closing. The tax saving due to these coupons is booked in the statement of income.

### Other comprehensive income

Detail of other comprehensive income showing both items potentially reclassifiable and those not potentially reclassifiable from equity to net income is presented in the table below:

#### For the year ended December 31,

(M\$)	2016	2015	2014
Actuarial gains and losses	(371)	557	(1,526)
Tax effect	55	(278)	580
Currency translation adjustment generated by the parent company	(1,548)	(7,268)	(9,039)
<b>Sub-total items not potentially reclassifiable to profit &amp; loss</b>	<b>(1,864)</b>	<b>(6,989)</b>	<b>(9,985)</b>
<b>Currency translation adjustment</b>	<b>(1,098)</b>	<b>2,456</b>	<b>4,245</b>
– Unrealized gain/(loss) of the period	(543)	3,032	4,413
– Less gain/(loss) included in net income	555	576	168
<b>Available for sale financial assets</b>	<b>4</b>	<b>9</b>	<b>(29)</b>
– Unrealized gain/(loss) of the period	4	10	(39)
– Less gain/(loss) included in net income	-	1	(10)
<b>Cash flow hedge</b>	<b>239</b>	<b>(185)</b>	<b>97</b>
– Unrealized gain/(loss) of the period	186	(390)	(198)
– Less gain/(loss) included in net income	(53)	(205)	(295)
<b>Share of other comprehensive income of equity affiliates, net amount</b>	<b>935</b>	<b>120</b>	<b>(1,538)</b>
– Unrealized gain/(loss) of the period	933	118	(1,538)
– Less gain/(loss) included in net income	(2)	(2)	-
<b>Other</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>Tax effect</b>	<b>(76)</b>	<b>53</b>	<b>(18)</b>
<b>Sub-total items potentially reclassifiable to profit &amp; loss</b>	<b>5</b>	<b>2,454</b>	<b>2,760</b>
<b>Total other comprehensive income, net amount</b>	<b>(1,859)</b>	<b>(4,535)</b>	<b>(7,225)</b>



The currency translation adjustment by currency is detailed in the following table:

#### As of December 31, 2016

(M\$)	Total	Euro	Pound sterling	Ruble	Other currencies
Currency translation adjustment generated by the parent company	(1,548)	(1,548)	-	-	-
Currency translation adjustment	(1,098)	(184)	(887)	7	(34)
Currency translation adjustment of equity affiliates	890	223	54	643	(30)
<b>Total currency translation adjustment recognized in comprehensive income</b>	<b>(1,756)</b>	<b>(1,509)</b>	<b>(833)</b>	<b>650</b>	<b>(64)</b>

#### As of December 31, 2015

(M\$)	Total	Euro	Pound sterling	Ruble	Other currencies
Currency translation adjustment generated by the parent company	(7,268)	(7,268)	-	-	-
Currency translation adjustment	2,456	3,318	(267)	(3)	(592)
Currency translation adjustment of equity affiliates	87	903	16	(718)	(114)
<b>Total currency translation adjustment recognized in comprehensive income</b>	<b>(4,725)</b>	<b>(3,047)</b>	<b>(251)</b>	<b>(721)</b>	<b>(706)</b>

#### As of December 31, 2014

(M\$)	Total	Euro	Pound sterling	Ruble	Other currencies
Currency translation adjustment generated by the parent company	(9,039)	(9,039)	-	-	-
Currency translation adjustment	4,245	5,474	(372)	(22)	(835)
Currency translation adjustment of equity affiliates	(1,521)	1,127	21	(2,586)	(83)
<b>Total currency translation adjustment recognized in comprehensive income</b>	<b>(6,315)</b>	<b>(2,438)</b>	<b>(351)</b>	<b>(2,608)</b>	<b>(918)</b>

Tax effects relating to each component of other comprehensive income are as follows:

For the year ended December 31, (M\$)	2016			2015			2014		
	Pre-tax amount	Tax effect	Net amount	Pre-tax amount	Tax effect	Net amount	Pre-tax amount	Tax effect	Net amount
Actuarial gains and losses	(371)	55	(316)	557	(278)	279	(1,526)	580	(946)
Currency translation adjustment generated by the parent company	(1,548)	-	(1,548)	(7,268)	-	(7,268)	(9,039)	-	(9,039)
<b>Sub-total items not potentially reclassifiable to profit &amp; loss</b>	<b>(1,919)</b>	<b>55</b>	<b>(1,864)</b>	<b>(6,711)</b>	<b>(278)</b>	<b>(6,989)</b>	<b>(10,565)</b>	<b>580</b>	<b>(9,985)</b>
Currency translation adjustment	(1,098)	-	(1,098)	2,456	-	2,456	4,245	-	4,245
Available for sale financial assets	4	-	4	9	(5)	4	(29)	15	(14)
Cash flow hedge	239	(76)	163	(185)	58	(127)	97	(33)	64
Share of other comprehensive income of equity affiliates, net amount	935	-	935	120	-	120	(1,538)	-	(1,538)
Other	1	-	1	1	-	1	3	-	3
<b>Sub-total items potentially reclassifiable to profit &amp; loss</b>	<b>81</b>	<b>(76)</b>	<b>5</b>	<b>2,401</b>	<b>53</b>	<b>2,454</b>	<b>2,778</b>	<b>(18)</b>	<b>2,760</b>
<b>Total other comprehensive income</b>	<b>(1,838)</b>	<b>(21)</b>	<b>(1,859)</b>	<b>(4,310)</b>	<b>(225)</b>	<b>(4,535)</b>	<b>(7,787)</b>	<b>562</b>	<b>(7,225)</b>

#### Non-controlling interests

As of December 31, 2016, no subsidiary has non-controlling interests that would have a material effect on the Group financial statements.

## 9.2) Share-based payments

### Accounting policies

The Group may grant employees stock options, create employee share purchase plans and offer its employees the opportunity to subscribe to reserved capital increases. These employee benefits are recognized as expenses with a corresponding credit to shareholders' equity.

The expense is equal to the fair value of the instruments granted. The expense is recognized on a straight-line basis over the period in which the advantages are acquired.

The fair value of the options is calculated using the Black-Scholes model at the grant date.

For restricted share plans, the fair value is calculated using the market price at the grant date after deducting the expected distribution rate during the vesting period. The number of allocated equity instruments can be revised during the vesting period in cases of non compliance with performance conditions, with the exception of those related to the market, or according to the rate of turnover of the beneficiaries.

The cost of employee-reserved capital increases is immediately expensed.

The cost of the capital increase reserved for employees consists of the cost related to the discount on all the shares subscribed using both the classic and the leveraged schemes, and the opportunity gain for the shares subscribed using the leveraged scheme. This opportunity gain corresponds to the benefit of subscribing to the leveraged offer, rather than reproducing the same economic profile through the purchase of options in the market for individual investors.

The global cost is reduced to take into account the non transferability of the shares that could be subscribed by the employees over a period of five years. The valuation method of non transferability of the shares is based on a strategy cost in two steps consisting, first, in a five years forward sale of the nontransferable shares, and second, in purchasing the same number of shares in cash with a loan financing reimbursable "in fine".

### A) TOTAL share subscription option plans

	2006 Plan	2007 Plan	2008 Plan	2009 Plan	2010 Plan	2011 Plan	Total	Weighted average exercise price (in euros)
Date of the Shareholders' Meeting	05/14/2004	05/11/2007	05/11/2007	05/11/2007	05/21/2010	05/21/2010		
Date of the award <sup>(a)</sup>	07/18/2006	07/17/2007	10/09/2008	09/15/2009	09/14/2010	09/14/2011		
Strike price	50.60	60.10	42.90	39.90	38.20	33.00		
Expiry date	07/18/2014	07/17/2015	10/09/2016	09/15/2017	09/14/2018	09/14/2019		
<b>Number of options<sup>(b)</sup></b>								
<b>Existing options as of January 1, 2014</b>	<b>5,620,626</b>	<b>5,847,965</b>	<b>4,219,198</b>	<b>3,989,378</b>	<b>4,537,852</b>	<b>1,141,094</b>	<b>25,356,113</b>	<b>46.82</b>
Granted	-	-	-	-	-	-	-	-
Cancelled <sup>(b)</sup>	(1,797,912)	-	-	-	-	-	(1,797,912)	50.60
Exercised	(3,822,714)	-	(1,003,314)	(978,109)	(836,634)	(282,019)	(6,922,790)	45.76
<b>Existing options as of January 1, 2015</b>	<b>-</b>	<b>5,847,965</b>	<b>3,215,884</b>	<b>3,011,269</b>	<b>3,701,218</b>	<b>859,075</b>	<b>16,635,411</b>	<b>46.85</b>
Granted	-	-	-	-	-	-	-	-
Cancelled <sup>(b)</sup>	-	(5,847,965)	-	-	-	-	(5,847,965)	60.10
Exercised	-	-	(654,382)	(300,486)	(377,972)	(136,766)	(1,469,606)	40.16
<b>Existing options as of January 1, 2016</b>	<b>-</b>	<b>-</b>	<b>2,561,502</b>	<b>2,710,783</b>	<b>3,323,246</b>	<b>722,309</b>	<b>9,317,840</b>	<b>39.58</b>
Granted	-	-	-	-	-	-	-	-
Cancelled <sup>(b)</sup>	-	-	(1,794,304)	-	-	-	(1,794,304)	42.90
Exercised	-	-	(767,198)	(931,730)	(443,009)	(95,981)	(2,237,918)	40.30
<b>Existing options as of December 31, 2016</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1,779,053</b>	<b>2,880,237</b>	<b>626,328</b>	<b>5,285,618</b>	<b>38.16</b>

(a) The grant date is the date of the Board meeting awarding the share subscription options, except for the grant of October 9, 2008, decided by the Board on September 9, 2008.

(b) Out of the options canceled in 2014, 2015 and 2016, 1,797,912 options that were not exercised expired on July 18, 2014 due to the expiry of the 2006 plan, 5,847,965 options that were not exercised expired on July 17, 2015 due to the expiry of the 2007 plan, and 1,794,304 options that were not exercised expired on October 9, 2016 due to the expiry of the 2008 plan.

Options are exercisable, subject to a continuous employment condition, after a 2-year period from the date of the Board meeting awarding the options and expire eight years after this date.

The underlying shares may not be transferred during four years from the date of grant. For the 2007 to 2011 Plans, the 4-year

transfer restriction period does not apply to employees of non-French subsidiaries as of the date of the grant, who may transfer the underlying shares after a 2-year period from the date of the grant.

Since the 2011 Plan, no new TOTAL share subscription option plan or TOTAL share purchase plan was decided.

## B) TOTAL performance share grants

	2012 Plan	2013 Plan	2014 Plan	2015 Plan	2016 Plan	Total
Date of the Shareholders' Meeting	05/13/2011	05/13/2011	05/16/2014	05/16/2014	05/24/2016	
Date of the award	07/26/2012	07/25/2013	07/29/2014	07/28/2015	07/27/2016	
Date of the final award (end of the vesting period)	07/27/2014	07/26/2016	07/30/2017	07/29/2018	07/28/2019	
Transfer authorized as from	07/27/2016	07/26/2018	07/30/2019	07/29/2020	07/29/2021	
Grant date IFRS 2 fair value	€31.41	€32.64	€44.66	€35.90	€35.37	
<b>Number of performance shares</b>						
<b>Outstanding as of January 1, 2014</b>	<b>4,278,410</b>	<b>4,460,390</b>	-	-	-	<b>8,738,800</b>
Notified	-	-	4,486,300	-	-	4,486,300
Cancelled	(43,320)	(22,360)	(11,270)	-	-	(76,950)
Finally granted	(4,235,090)	(3,570)	-	-	-	(4,238,660)
<b>Outstanding as of January 1, 2015</b>	-	<b>4,434,460</b>	<b>4,475,030</b>	-	-	<b>8,909,490</b>
Notified	-	-	-	4,761,935	-	4,761,935
Cancelled	-	(28,230)	(22,630)	(1,430)	-	(52,290)
Finally granted	-	(55,400)	(49,940)	-	-	(105,340)
<b>Outstanding as of January 1, 2016</b>	-	<b>4,350,830</b>	<b>4,402,460</b>	<b>4,760,505</b>	-	<b>13,513,795</b>
Notified	-	-	-	-	5,639,400	5,639,400
Cancelled	-	(1,303,732)	(37,100)	(29,170)	(1,730)	(1,371,732)
Finally granted	-	(3,047,098)	(860)	(600)	(110)	(3,048,668)
<b>Outstanding as of December 31, 2016</b>	-	-	<b>4,364,500</b>	<b>4,730,735</b>	<b>5,637,560</b>	<b>14,732,795</b>

The performance shares, which are bought back by the Company on the market, are finally granted to their beneficiaries after a 3-year vesting period for the 2013 Plan and following Plans, and a 2-year vesting period for the previous Plans, from the date of the grant.

The final grant is subject to a continued employment condition and one performance condition for the 2013 and 2014 Plans and two performance conditions for the 2015 and 2016 Plans. Moreover, the transfer of the performance shares finally granted will not be permitted until the end of a 2-year holding period from the date of the final grant.

### 2016 Plan

The Board of Directors decided on July 27, 2016 to proceed with Total performance share grants in favor of certain employees and executive directors of the Company or companies of the Group, subject to the fulfillment of the presence conditions and of the two performance conditions.

The presence condition applies to all shares.

The performance conditions, each of them respectively representing 50% of the final grant rate, are as follows:

- the Group ranking relative to those of its peers (ExxonMobil, Royal Dutch Shell, BP and Chevron) according to the Total Shareholder Return (TSR) criteria, which is evaluated annually

using the average of closing prices over one quarter, in USD, at the beginning and at the end of each three-year period (Q4 year N/Q4 year N-3). The dividend is considered as being reinvested on the closing price basis, on the ex-dividend date;

- the Group ranking relative to those of its peers (ExxonMobil, Royal Dutch Shell, BP and Chevron), which is evaluated annually using the yearly variation in net cash flow per share, in USD, as released by companies.

Depending on TOTAL S.A.'s ranking, a grant rate is determined each year, for both criterion:

- 1<sup>st</sup> place: 180% of the grant;
- 2<sup>nd</sup> place: 130% of the grant;
- 3<sup>rd</sup> place: 80% of the grant;
- 4<sup>th</sup> and 5<sup>th</sup> places: 0% of the grant.

For both conditions, the average of the three "attribution rates" (on each of the three financial years on which the performance conditions are based), will be expressed in percentage and capped at 100%.

The performance conditions apply for all shares granted to senior executives. The first 150 shares granted to non-senior executive are not subject to the performance conditions, but all shares beyond this threshold are.

### C) SunPower plans

SunPower has four stock incentive plans: the 1996 Stock Plan ("1996 Plan"), the Third Amended and Restated 2005 SunPower Corporation Stock Incentive Plan ("2005 Plan"), the PowerLight Corporation Common Stock Option and Common Stock Purchase Plan ("PowerLight Plan") and the SunPower Corporation 2015 Omnibus Incentive Plan ("2015 Plan"). The PowerLight Plan was assumed by SunPower by way of the acquisition of PowerLight in fiscal year 2007. Under the terms of all plans, SunPower may issue incentive or non-statutory stock options or stock purchase rights to directors, employees and consultants to purchase common stock. The 2015 Plan, which subsequently replaced the 2005 Plan, was adopted by the SunPower's Board of Directors in February 2015, and was approved by shareholders in June 2015. The 2015 Plan allows for the grant of options, as well as grant of stock appreciation rights, restricted stock grants, restricted stock units and other equity rights. The 2015 Plan also allows for tax withholding obligations related to stock option exercises or restricted stock awards to be satisfied through the retention of shares otherwise released upon vesting.

The 2015 Plan includes an automatic annual increase mechanism equal to the lower of 3% of the outstanding shares of all classes of the SunPower's common stock measured on the last day of the immediately preceding fiscal year, 6.0 million shares, or such other number of shares a determined by SunPower's Board of Directors. Subsequent to the adoption of the 2015 Plan, no new awards are being granted under the 2005 Plan, the 1996 Plan, or the PowerLight

The following table summarizes SunPower's stock option activities:

Plan. Outstanding awards granted under these plans continue to be governed by their respective terms. As of January 1, 2017, approximately 7.0 million shares were available for grant under the 2015 Plan.

Incentive stock options, non-statutory stock options, and stock appreciation rights may be granted at no less than the fair value of the common stock on the date of grant. The options and rights become exercisable when and as determined by SunPower's Board of Directors, although these terms generally do not exceed ten years for stock options. Under the 1996 and 2005 Plans, the options typically vest over five years with a one-year cliff and monthly vesting thereafter. Under the PowerLight Plan, the options typically vest over five years with yearly cliff vesting. SunPower has not granted stock options since fiscal year 2008, and accordingly all outstanding options are fully vested. Under the 2005 and 2015 plans, the restricted stock grants and restricted stock units typically vest in three equal installments annually over three years.

The majority of shares issued are net of the minimum statutory withholding requirements that SunPower pays on behalf of its employees. During fiscal year 2016, 2015 and 2014, SunPower withheld 1,039,027 shares, 1,380,891 shares and 1,738,625 shares, respectively, to satisfy the employees' tax obligations. SunPower pays such withholding requirements in cash to the appropriate taxing authorities. Shares withheld are treated as common stock repurchases for accounting and disclosure purposes and reduce the number of shares outstanding upon vesting.

#### Outstanding Stock Options

	Shares (in thousands)	Weighted-Average Exercise Price Per Share (in dollars)	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands dollars)
Outstanding and exercisable as of January 1, 2017	134	56.21	1.41	2

The intrinsic value of options exercised in fiscal year 2016 was nil, versus \$1.0 million and \$2.4 million respectively in 2015 and 2014. There were no stock options granted in fiscal years 2016, 2015 and 2014.

The aggregate intrinsic value in the preceding table represents the total pre-tax intrinsic value, based on SunPower's closing stock price of \$6.61 at January 1, 2017 which would have been received by the option holders had all option holders exercised their options as of that date. The total number of in-the-money options exercisable was 0.3 thousand shares as of January 1, 2017.

The following table summarizes SunPower's restricted stock activities:

<b>Restricted Stock Awards and Units</b>		
	<b>Shares (in thousands)</b>	<b>Weighted-Average Grant Date Fair Value Per Share (in dollars)<sup>(a)</sup></b>
<b>Outstanding as of December 29, 2013</b>	<b>9,592</b>	<b>12.26</b>
Granted	2,187	31.8
Vested <sup>(b)</sup>	(4,432)	11.61
Forfeited	(792)	15.00
<b>Outstanding as of December 28, 2014</b>	<b>6,555</b>	<b>18.88</b>
Granted	2,695	29.77
Vested <sup>(b)</sup>	(3,560)	15.31
Forfeited	(627)	22.99
<b>Outstanding as of January 3, 2016</b>	<b>5,063</b>	<b>26.68</b>
Granted	4,978	18.81
Vested <sup>(b)</sup>	(2,837)	23.47
Forfeited	(1,057)	26.30
<b>Outstanding as of January 1, 2017</b>	<b>6,147</b>	<b>21.85</b>

(a) SunPower estimates the fair value of the restricted stock unit awards as the stock price on the grant date.

(b) Restricted stock awards and units vested include shares withheld on behalf of employees to satisfy the minimum statutory tax withholding requirements.

#### D) Share-based payment expense

Share-based payment expense before tax was broken down as follows:

**As of December 31,  
(M\$)**

	<b>2016</b>	<b>2015</b>	<b>2014</b>
Total restricted shares plans	113	71	114
SunPower plans	28	78	80
Capital increase reserved for employees	-	30	-
<b>Total</b>	<b>141</b>	<b>179</b>	<b>194</b>

In 2014, 2015 and 2016, no new TOTAL share subscription option plan has been decided.

During the year 2015, the main assumptions used for the valuation of the cost of the capital increase reserved for employees were the following:

**For the year ended December 31,**

**2015**

Date of the Board of Directors meeting that decided the issue	July 29, 2014
Subscription price (€) <sup>(a)</sup>	37.50
Share price at the reference date (€) <sup>(b)</sup>	44.65
Number of shares (in millions)	10.50
Risk free interest rate (%) <sup>(c)</sup>	0.01
Employees loan financing rate (%) <sup>(d)</sup>	6.32
Non transferability cost (% of the reference's share price)	23.0
Expenses (\$ million)	30.0

(a) Average of the closing TOTAL share prices during the twenty trading days prior to the subscription period, after deduction of a 20% discount.

(b) Share price on March 13, 2015, date on which the Chief Executive Officer set the subscription period.

(c) Zero coupon euro swap rate at 5 years.

(d) The employees' loan financing rate is based on a 5 year consumer's credit rate.

## 10) Payroll, staff and employee benefits obligations

### 10.1. Employee benefits obligations

#### Accounting policies

In accordance with the laws and practices of each country, the Group participates in employee benefit plans offering retirement, death and disability, healthcare and special termination benefits. These plans provide benefits based on various factors such as length of service, salaries, and contributions made to the governmental bodies responsible for the payment of benefits.

These plans can be either defined contribution or defined benefit pension plans and may be entirely or partially funded with investments made in various non-Group instruments such as mutual funds, insurance contracts, and other instruments.

For defined contribution plans, expenses correspond to the contributions paid.

Defined benefit obligations are determined according to the Projected Unit Method. Actuarial gains and losses may arise from differences between actuarial valuation and projected commitments (depending on new calculations or assumptions) and between projected and actual return of plan assets. Such gains and losses are recognized in the statement of comprehensive income, with no possibility to subsequently recycle them to the income statement.

The past service cost is recorded immediately in the statement of income, whether vested or unvested.

The net periodic pension cost is recognized under "Other operating expenses".

Liabilities for employee benefits obligations consist of the following:

As of December 31,  
(M\$)

	2016	2015	2014
Pension benefits liabilities	2,948	2,926	3,751
Other benefits liabilities	648	627	757
Restructuring reserves (early retirement plans)	150	221	250
<b>Total</b>	<b>3,746</b>	<b>3,774</b>	<b>4,758</b>
Net liabilities relating to assets held for sale	145	3	208

#### Description of plans and risk management

The Group operates, for the benefit of its current and former employees, both defined benefit plans and defined contribution plans.

The Group recognized a charge of \$157 million for defined contribution plans in 2016 (\$159 million in 2015 and \$157 million in 2014).

The Group's main defined benefit pension plans are located in France, the United Kingdom, the United States, Belgium and Germany. Their main characteristics, depending on the country-specific regulatory environment, are the following:

- the benefits are usually based on the final salary and seniority;
- they are usually funded (pension fund or insurer);
- they are usually closed to new employees who benefit from defined contribution pension plans;
- they are paid in annuity or in lump sum.

The pension benefits include also termination indemnities and early retirement benefits. The other benefits are employer contributions to post-employment medical care.

In order to manage the inherent risks, the Group has implemented a dedicated governance framework to ensure the supervision of the different plans. These governance rules provide for:

- the Group's representation in key governance bodies or monitoring committees;
- the principles of the funding policy;
- the general investment policy, including for most plans the establishment of a monitoring committee to define and follow the investment strategy and performance and to ensure the principles in respect of investment allocation are respected;
- a procedure to approve the establishment of new plans or the amendment of existing plans;
- principles of administration, communication and reporting.

## Change in benefit obligations and plan assets

The fair value of the defined benefit obligation and plan assets in the Consolidated Financial Statements is detailed as follows:

As of December 31, (M\$)	Pension benefits			Other benefits		
	2016	2015	2014	2016	2015	2014
<b>Change in benefit obligation</b>						
Benefit obligation at beginning of year	12,473	14,297	14,310	627	845	788
Current service cost	251	271	281	13	17	16
Interest cost	373	402	560	21	22	31
Past service cost	(92)	(35)	(84)	-	-	(4)
Settlements	-	(58)	1	-	-	-
Plan participants' contributions	8	8	11	-	-	-
Benefits paid	(651)	(653)	(694)	(30)	(32)	(38)
Actuarial losses (gains)	762	(533)	1,281	37	(71)	127
Foreign currency translation and other	(960)	(1,226)	(1,369)	(20)	(154)	(75)
<b>Benefit obligation at year-end</b>	<b>12,164</b>	<b>12,473</b>	<b>14,297</b>	<b>648</b>	<b>627</b>	<b>845</b>
<i>of which plans entirely or partially funded</i>	11,376	11,742	13,448	-	-	-
<i>of which plans not funded</i>	788	731	849	648	627	845
<b>Change in fair value of plan assets</b>						
Fair value of plan assets at beginning of year	(9,627)	(10,498)	(11,293)	-	-	-
Interest income	(307)	(318)	(463)	-	-	-
Actuarial losses (gains)	(428)	48	111	-	-	-
Settlements	-	44	-	-	-	-
Plan participants' contributions	(8)	(8)	(11)	-	-	-
Employer contributions	(130)	(311)	(384)	-	-	-
Benefits paid	538	553	563	-	-	-
Foreign currency translation and other	839	863	979	-	-	-
<b>Fair value of plan assets at year-end</b>	<b>(9,123)</b>	<b>(9,627)</b>	<b>(10,498)</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Unfunded status</b>	<b>3,041</b>	<b>2,846</b>	<b>3,799</b>	<b>648</b>	<b>627</b>	<b>845</b>
Asset ceiling	26	27	34	-	-	-
<b>Net recognized amount</b>	<b>3,067</b>	<b>2,873</b>	<b>3,833</b>	<b>648</b>	<b>627</b>	<b>845</b>
Pension benefits and other benefits liabilities	2,948	2,926	3,751	648	627	757
Other non-current assets	(26)	(56)	(38)	-	-	-
Net benefit liabilities relating to assets held for sale	145	3	120	-	-	88

As of December 31, 2016, the contribution from the main geographical areas for the net pension liability in the balance sheet is: 59% for the euro area, 19% for the United Kingdom and 15% for the United States.

The amounts recognized in the consolidated income statement and the consolidated statement of comprehensive income for defined benefit plans are detailed as follows:

For the year ended December 31, (M\$)	Pension benefits			Other benefits		
	2016	2015	2014	2016	2015	2014
Current service cost	251	271	281	13	17	16
Past service cost	(92)	(35)	(84)	-	-	(4)
Settlements	-	(14)	1	-	-	-
Net interest cost	66	84	97	21	22	31
<b>Benefit amounts recognized on Profit &amp; Loss</b>	<b>225</b>	<b>306</b>	<b>295</b>	<b>34</b>	<b>39</b>	<b>43</b>
Actuarial (Gains)/Losses						
– Effect of changes in demographic assumptions	(56)	(41)	178	(7)	(10)	18
– Effect of changes in financial assumptions	1,008	(384)	1,295	48	(27)	129
– Effect of experience adjustments	(190)	(108)	(192)	(4)	(34)	(20)
– Actual return on plan assets (excluding interest income)	(421)	48	111	-	-	-
Effect of asset ceiling	(7)	(1)	7	-	-	-
<b>Benefit amounts recognized on Equity</b>	<b>334</b>	<b>(486)</b>	<b>1,399</b>	<b>37</b>	<b>(71)</b>	<b>127</b>
<b>Total benefit amounts recognized on other comprehensive income</b>	<b>559</b>	<b>(180)</b>	<b>1,694</b>	<b>71</b>	<b>(32)</b>	<b>170</b>

### Expected future cash out flow

The average duration of accrued benefits is approximately 15 years for defined pension benefits and 18 years for other benefits. The Group expects to pay contributions of \$151 million in respect of funded pension plans in 2017.

Estimated future benefits either financed from plan assets or directly paid by the employer are detailed as follows:

Estimated future payments (M\$)	Pension benefits	Other benefits
2017	639	28
2018	709	28
2019	597	27
2020	608	27
2021	609	26
2022-2026	3,145	130

### Type of assets

Asset allocation As of December 31,	Pension benefits		
	2016	2015	2014
Equity securities	27%	28%	29%
Debt securities	42%	42%	43%
Monetary	2%	4%	3%
Annuity contracts	21%	21%	21%
Real estate	8%	5%	4%

Investments on equity and debt markets are quoted on active markets.



## Main actuarial assumptions and sensitivity analysis

### Assumptions used to determine benefits obligations

As of December 31,	Pension benefits			Other benefits		
	2016	2015	2014	2016	2015	2014
Discount rate (weighted average for all regions)	<b>2.60%</b>	<b>3.25%</b>	<b>3.06%</b>	<b>2.51%</b>	<b>3.00%</b>	<b>3.12%</b>
<i>of which Euro zone</i>	1.69%	2.18%	1.95%	1.85%	2.42%	2.22%
<i>of which United States</i>	4.00%	4.25%	4.00%	4.00%	4.25%	4.00%
<i>of which United Kingdom</i>	2.75%	3.75%	3.75%	-	-	-
Inflation rate (weighted average for all regions)	<b>2.41%</b>	<b>2.43%</b>	<b>2.44%</b>	-	-	-
<i>of which Euro zone</i>	1.50%	1.75%	1.75%	-	-	-
<i>of which United States</i>	2.50%	2.50%	2.50%	-	-	-
<i>of which United Kingdom</i>	3.50%	3.25%	3.25%	-	-	-

The discount rate retained is determined by reference to the high quality rates for AA-rated corporate bonds for a duration equivalent to that of the obligations. It derives from a benchmark per monetary area of different market data at the closing date.

Sensitivity to inflation in respect of defined benefit pension plans is not material in the United States.

A 0.5% increase or decrease in discount rates – all other things being equal – would have the following approximate impact on the benefit obligation:

(M\$)	0.5% Increase	0.5% Decrease
Benefit obligation as of December 31, 2016	(853)	977

A 0.5% increase or decrease in inflation rates – all other things being equal – would have the following approximate impact on the benefit obligation:

(M\$)	0.5% Increase	0.5% Decrease
Benefit obligation as of December 31, 2016	667	(568)

## 10.2) Payroll and staff

For the year ended December 31,	2016	2015	2014
<b>Personnel expenses (M\$)</b>			
Wages and salaries (including social charges)	8,238	8,088	9,690
<b>Group employees at December 31,</b>			
<i>France</i>			
Management	12,057	11,000	11,477
Other	19,567	19,219	21,120
<i>International</i>			
Management	17,186	16,624	17,794
Other	53,358	49,176	49,916
<b>Total</b>	<b>102,168</b>	<b>96,019</b>	<b>100,307</b>

The number of employees includes only employees of fully consolidated subsidiaries.

## 11) Income taxes

### Accounting policies

Income taxes disclosed in the statement of income include the current tax expenses (or income) and the deferred tax expenses (or income).

The expense (or income) of current tax is the estimated amount of the tax due for the taxable income of the period.

The Group uses the method whereby deferred income taxes are recorded based on the temporary differences between the carrying amounts of assets and liabilities recorded in the balance sheet and their tax bases, and on carry-forwards of unused tax losses and tax credits.

Deferred tax assets and liabilities are measured using the tax rates that have been enacted or substantially enacted at the balance sheet date. The tax rates used depend on the timing of reversals of temporary differences, tax losses and other tax credits. The effect of a change in tax rate is recognized either in the consolidated statement of income or in shareholders' equity depending on the item it relates to.

Deferred tax resulting from temporary differences between the carrying amounts of equity-method investments and their tax bases are recognized. The deferred tax calculation is based on the expected future tax effect (dividend distribution rate or tax rate on capital gains).

Income taxes are detailed as follows:

#### For the year ended December 31, (M\$)

	2016	2015	2014
Current income taxes	(2,911)	(4,552)	(10,904)
Deferred income taxes	1,941	2,899	2,290
<b>Total income taxes</b>	<b>(970)</b>	<b>(1,653)</b>	<b>(8,614)</b>

Before netting deferred tax assets and liabilities by fiscal entity, the components of deferred tax balances are as follows:

#### As of December 31, (M\$)

	2016	2015	2014
Net operating losses and tax carry forwards	5,077	4,849	5,213
Employee benefits	1,258	1,260	1,770
Other temporary non-deductible provisions	5,876	6,481	6,258
Differences in depreciations	(14,208)	(15,932)	(18,129)
Other temporary tax deductions	(2,126)	(1,795)	(2,542)
Valuation allowance	(2,569)	(3,241)	(3,301)
<b>Net deferred tax liability</b>	<b>(6,692)</b>	<b>(8,378)</b>	<b>(10,731)</b>

The reserves of TOTAL subsidiaries that would be taxable if distributed but for which no distribution is planned, and for which no deferred tax liability has therefore been recognized, totaled \$10,220 million as of December 31, 2016.

The impairment of deferred tax assets in the table above for \$2,569 million as of December 31, 2016, relates notably to France for an amount of \$523 million, to Congo for an amount of \$503 million, to Australia for an amount of \$399 million, to Canada for an amount of \$341 million and to Belgium for an amount of \$251 million.

After netting deferred tax assets and liabilities by fiscal entity, deferred taxes are presented on the balance sheet as follows:

#### As of December 31, (M\$)

	2016	2015	2014
Deferred tax assets, non-current	4,368	3,982	4,079
Deferred tax liabilities, non-current	(11,060)	(12,360)	(14,810)
<b>Net amount</b>	<b>(6,692)</b>	<b>(8,378)</b>	<b>(10,731)</b>

The net deferred tax variation in the balance sheet is analyzed as follows:

As of December 31,  
 (M\$)

	2016	2015	2014
<b>Opening balance</b>	<b>(8,378)</b>	<b>(10,731)</b>	<b>(14,012)</b>
Deferred tax on income	1,941	2,899	2,290
Deferred tax on shareholders' equity <sup>(a)</sup>	(21)	(225)	562
Changes in scope of consolidation <sup>(b)</sup>	(370)	(552)	356
Currency translation adjustment	136	231	73
<b>Closing balance</b>	<b>(6,692)</b>	<b>(8,378)</b>	<b>(10,731)</b>

(a) This amount includes mainly deferred taxes on actuarial gains and losses, current income taxes and deferred taxes for changes in fair value of listed securities classified as financial assets available for sale, as well as deferred taxes related to the cash flow hedge (see Note 9 to the Consolidated Financial Statements).

(b) Changes in scope of consolidation include, as of December 31, 2016 the impact of reclassifications in assets and liabilities classified as held for sale for \$(106) million and the acquisition of SAFT for \$(151) million.

### Reconciliation between provision for income taxes and pre-tax income:

For the year ended December 31,  
 (M\$)

	2016	2015	2014
Consolidated net income	6,206	4,786	4,250
Provision for income taxes	970	1,653	8,614
<b>Pre-tax income</b>	<b>7,176</b>	<b>6,439</b>	<b>12,864</b>
French statutory tax rate	34.43%	38.00%	38.00%
<b>Theoretical tax charge</b>	<b>(2,471)</b>	<b>(2,447)</b>	<b>(4,888)</b>
Difference between French and foreign income tax rates	5	(6)	(4,256)
Tax effect of equity in income (loss) of affiliates	761	897	1,012
Permanent differences	(76)	(371)	833
Adjustments on prior years income taxes	54	100	33
Adjustments on deferred tax related to changes in tax rates	234	483	(1)
Changes in valuation allowance of deferred tax assets	523	(309)	(1,347)
<b>Net provision for income taxes</b>	<b>(970)</b>	<b>(1,653)</b>	<b>(8,614)</b>

The French statutory tax rate includes the standard corporate tax rate (33.33%) and additional applicable taxes that bring the overall tax rate to 34.43% (versus 38% in 2015 and 38% in 2014).

Permanent differences are mainly due to impairment of goodwill and to dividends from non-consolidated companies as well as the specific taxation rules applicable to certain activities.

### Net operating losses and carried forward tax credits

Deferred tax assets related to carried forward tax credits on net operating losses expire in the following years:

As of December 31,  
 (M\$)

	2016		2015		2014	
	Basis	Tax	Basis	Tax	Basis	Tax
2015	-	-	-	-	443	218
2016	-	-	396	193	306	151
2017	636	265	617	248	623	229
2018	582	237	489	182	424	143
2019 <sup>(a)</sup>	148	71	15	3	3,313	899
2020 <sup>(b)</sup>	15	4	3,289	948	-	-
2021 and after	4,775	1,283	-	-	-	-
Unlimited	9,753	3,217	9,656	3,275	9,906	3,573
<b>Total</b>	<b>15,909</b>	<b>5,077</b>	<b>14,462</b>	<b>4,849</b>	<b>15,015</b>	<b>5,213</b>

(a) Net operating losses and carried forward tax credits in 2019 and after for 2014.

(b) Net operating losses and carried forward tax credits in 2020 and after for 2015.

As of December 31, 2016 the schedule of the net operating losses and the carried forward tax credits for the main countries is as follows:

As of December 31, 2016 (M\$)	Tax				
	Canada	France	Australia	United Kingdom	United States
2017	-	-	-	-	-
2018	-	-	-	-	-
2019	-	-	-	-	-
2020	-	-	-	-	-
2021 and after	752	-	-	-	296
Unlimited	237	803	748	572	166
<b>Total</b>	<b>989</b>	<b>803</b>	<b>748</b>	<b>572</b>	<b>462</b>

The Group has unused tax losses for which deferred tax has not been recognized for an amount of \$961 million as of December 31, 2016, mainly in the Upstream segment when the affiliate or the field concerned is in its exploration phase. The net operating losses created during this exploration phase will be useable only if a final investment and development decision is made. Accordingly, the time limit for the utilization of these net operating losses is not known.

## 12) Provisions and other non-current liabilities

### 12.1) Provisions and other non-current liabilities

#### Accounting policies

A provision is recognized when the Group has a present obligation (legal or constructive) as a result of a past event for which it is probable that an outflow of resources will be required and when a reliable estimate can be made regarding the amount of the obligation. The amount of the liability corresponds to the best possible estimate.

Provisions and non-current liabilities are comprised of liabilities for which the amount and the timing are uncertain. They arise from environmental risks, legal and tax risks, litigation and other risks.

As of December 31, (M\$)	2016	2015	2014
Litigations and accrued penalty claims	1,123	1,120	1,040
Provisions for environmental contingencies	938	909	994
Asset retirement obligations	12,665	13,314	13,121
Other non-current provisions	1,455	1,357	1,528
<i>of which restructuring activities (Refining &amp; Chemicals and Marketing &amp; Services)</i>	184	223	241
<i>of which financial risks related to non-consolidated and equity consolidated affiliates</i>	63	216	228
<i>of which contingency reserve regarding guarantees granted in relation to solar panels (SunPower)</i>	168	166	155
Other non-current liabilities	665	802	862
<b>Total</b>	<b>16,846</b>	<b>17,502</b>	<b>17,545</b>

In 2016, litigation reserves amount to \$1,123 million of which \$959 million is in the Upstream, notably in Angola and Nigeria.

In 2016, other non-current liabilities mainly include debts (whose maturity is more than one year) related to fixed assets acquisitions.

In 2015, litigation reserves amounted to \$1,120 million of which \$895 million was in the Upstream, notably in Angola and Nigeria.

In 2015, other non-current liabilities mainly include debts (whose maturity is more than one year) related to fixed assets acquisitions.

In 2014, litigation reserves amounted to \$1,040 million of which \$861 million was in the Upstream, notably in Angola and Nigeria.

In 2014, other non-current liabilities mainly included debts (whose maturity is more than one year) related to fixed assets acquisitions. This heading was mainly composed of a \$32 million debt related to the acquisition of an interest in the liquids-rich area of the Utica shale play.

## Changes in provisions and other non-current liabilities

Changes in provisions and other non-current liabilities are as follows:

(M\$)	As of January 1,	Allowances	Reversals	Currency translation adjustment	Other	As of December 31,
<b>2016</b>	<b>17,502</b>	<b>1,569</b>	<b>(1,268)</b>	<b>(484)</b>	<b>(473)</b>	<b>16,846</b>
<i>of which asset retirement obligations (accretion for allowances)</i>		523	(502)			
<i>of which environmental contingencies (Marketing &amp; Services, Refining &amp; Chemicals)</i>		29	(82)			
<i>of which restructuring of activities</i>		25	(68)			
<b>2015</b>	<b>17,545</b>	<b>1,280</b>	<b>(1,236)</b>	<b>(958)</b>	<b>871</b>	<b>17,502</b>
<i>of which asset retirement obligations (accretion for allowances)</i>		513	(566)			
<i>of which environmental contingencies (Marketing &amp; Services, Refining &amp; Chemicals)</i>		105	(95)			
<i>of which restructuring of activities</i>		134	(60)			
<b>2014</b>	<b>17,517</b>	<b>1,463</b>	<b>(1,029)</b>	<b>(1,228)</b>	<b>822</b>	<b>17,545</b>
<i>of which asset retirement obligations (accretion for allowances)</i>		543	(440)			
<i>of which environmental contingencies (Marketing &amp; Services, Refining &amp; Chemicals)</i>		69	(98)			
<i>of which restructuring of activities</i>		38	(80)			

## Changes in the asset retirement obligation

### Accounting policies

Asset retirement obligations, which result from a legal or constructive obligation, are recognized based on a reasonable estimate in the period in which the obligation arises.

The associated asset retirement costs are capitalized as part of the carrying amount of the underlying asset and depreciated over the useful life of this asset.

An entity is required to measure changes in the liability for an asset retirement obligation due to the passage of time (accretion) by applying a risk-free discount rate to the amount of the liability. Given the long term nature of expenditures related to our asset retirement obligations, the rate is determined by reference to the high quality rates for AA-rated Corporate bonds on the USD area for a long-term horizon. The increase of the provision due to the passage of time is recognized as "Other financial expense".

The discount rate used in 2016 for the valuation of asset retirement obligation is 4.5% as in 2015 and 2014 (the expenses are estimated at current currency values with an inflation rate of 2%). A decrease of 0.5% of this rate would increase the asset retirement obligation by \$918 million, with a corresponding impact in tangible

assets, and with a negative impact of approximately \$94 million on the following years net income. Conversely, an increase of 0.5% would have a nearly symmetrical impact compared to the effect of the decrease of 0.5%.

Changes in the asset retirement obligation are as follows:

(M\$)	As of January 1,	Accretion	Revision in estimates	New obligations	Spending on existing obligations	Currency translation adjustment	Other	As of December 31,
<b>2016</b>	<b>13,314</b>	<b>523</b>	<b>(558)</b>	<b>375</b>	<b>(502)</b>	<b>(395)</b>	<b>(92)</b>	<b>12,665</b>
2015	13,121	513	685	271	(566)	(676)	(34)	13,314
2014	12,808	543	1,007	359	(440)	(902)	(254)	13,121

## 12.2) Other risks and contingent liabilities

TOTAL is not currently aware of any exceptional event, dispute, risks or contingent liabilities that could have a material impact on the assets and liabilities, results, financial position or operations of the Group.

### Alitalia

In the Marketing & Services segment, a civil proceeding was initiated in Italy, in 2013, against TOTAL S.A. and its subsidiary Total Aviazione Italia Srl before the competent Italian civil court. The plaintiff claims against TOTAL S.A., its subsidiary and other third parties, damages that it estimates to be nearly €908 million. This proceeding follows practices that had been condemned by the Italian competition authority in 2006. The parties have exchanged preliminary findings. The existence and the assessment of the alleged damages in this procedure involving multiple defendants remain contested.

### Blue Rapid and the Russian Olympic Committee – Russian regions and Interneft

Blue Rapid, a Panamanian company, and the Russian Olympic Committee filed a claim for damages with the Paris Commercial Court against Elf Aquitaine, alleging a so-called non-completion by a former subsidiary of Elf Aquitaine of a contract related to an exploration and production project in Russia negotiated in the early 1990s. Elf Aquitaine believed this claim to be unfounded and opposed it. On January 12, 2009, the Commercial Court of Paris rejected Blue Rapid's claim against Elf Aquitaine and found that the Russian Olympic Committee did not have standing in the matter. On June 30, 2011, the Court of Appeal of Paris dismissed as inadmissible the claim of Blue Rapid and the Russian Olympic Committee against Elf Aquitaine, notably on the grounds of the contract having lapsed. The judgment of the Court of Appeal of Paris is now final and binding following two decisions issued on February 18, 2016 by the French Supreme Court to put an end to this proceeding.

In connection with the same facts, and fifteen years after the aforementioned exploration and production contract was rendered null and void ("caduc"), a Russian company, which was held not to

be the contracting party to the contract, and two regions of the Russian Federation that were not even parties to the contract, launched an arbitration procedure against the aforementioned former subsidiary of Elf Aquitaine that was liquidated in 2005, claiming alleged damages of \$22.4 billion. For the same reasons as those successfully adjudicated by Elf Aquitaine against Blue Rapid and the Russian Olympic Committee, the Group considers this claim to be unfounded as a matter of law and fact.

The Group has lodged a criminal complaint to denounce the fraudulent claim of which the Group believes it is a victim and, has taken and reserved its rights to take other actions and measures to defend its interests.

### FERC

The Office of Enforcement of the U.S. Federal Energy Regulatory Commission (FERC) began in 2015 an investigation in connection with the natural gas trading activities in the United States of Total Gas & Power North America, Inc. (TGPNA), a U.S. subsidiary of the Group. The investigation covered transactions made by TGPNA between June 2009 and June 2012 on the natural gas market. TGPNA received a Notice of Alleged Violations from FERC on September 21, 2015. On April 28, 2016, FERC issued an order to show cause to TGPNA and two of its former employees, and to TOTAL S.A. and Total Gas & Power Ltd., regarding the same facts. A class action has been launched to seek damages from these three companies.

TGPNA has cooperated in the investigation with the U.S. authorities and contests the claims brought against it.

### Yemen

Due to the security conditions in the vicinity of Balhaf, Yemen LNG, in which the Group holds a stake of 39.62%, stopped its commercial production and export of LNG in April 2015, when it declared *force majeure* to its various stakeholders. The plant is in a preservation mode.

## 13) Commitments and lease contracts

### 13.1) Commitments and contingencies

As of December 31, 2016

(M\$)

	Total	Maturity and installments		
		Less than 1 year	Between 1 and 5 years	More than 5 years
Non-current debt obligations net of hedging instruments ( <i>Note 15</i> )	41,848	-	18,449	23,399
Current portion of non-current debt obligations net of hedging instruments ( <i>Note 15</i> )	4,614	4,614	-	-
Finance lease obligations ( <i>Note 13.2</i> )	319	8	103	208
Asset retirement obligations ( <i>Note 12</i> )	12,665	685	2,269	9,711
<b>Contractual obligations recorded in the balance sheet</b>	<b>59,446</b>	<b>5,307</b>	<b>20,821</b>	<b>33,318</b>
Operating lease obligations ( <i>Note 13.2</i> )	6,478	1,582	2,953	1,943
Purchase obligations	105,208	10,898	20,570	73,740
<b>Contractual obligations not recorded in the balance sheet</b>	<b>111,686</b>	<b>12,480</b>	<b>23,523</b>	<b>75,683</b>
<b>Total of contractual obligations</b>	<b>171,132</b>	<b>17,787</b>	<b>44,344</b>	<b>109,001</b>
Guarantees given for excise taxes	1,887	1,740	58	89
Guarantees given against borrowings	14,666	215	664	13,787
Indemnities related to sales of businesses	375	158	59	158
Guarantees of current liabilities	391	89	99	203
Guarantees to customers/suppliers	3,997	1,038	225	2,734
Letters of credit	1,457	1,215	81	161
Other operating commitments	3,592	1,319	409	1,864
<b>Total of other commitments given</b>	<b>26,365</b>	<b>5,774</b>	<b>1,595</b>	<b>18,996</b>
Mortgages and liens received	77	20	19	38
Sales obligations	82,756	7,331	21,356	54,069
Other commitments received	6,799	3,133	1,124	2,542
<b>Total of commitments received</b>	<b>89,632</b>	<b>10,484</b>	<b>22,499</b>	<b>56,649</b>
<i>Of which commitments given relating to joint ventures</i>	<i>48,257</i>	<i>61</i>	<i>3,211</i>	<i>44,985</i>
<i>Of which commitments given relating to associates</i>	<i>21,959</i>	<i>603</i>	<i>3,265</i>	<i>18,091</i>

## As of December 31, 2015

(M\$)

## Maturity and installments

	Total	Less than 1 year	Between 1 and 5 years	More than 5 years
Non-current debt obligations net of hedging instruments (Note 15)	42,950	-	19,448	23,502
Current portion of non-current debt obligations net of hedging instruments (Note 15)	4,518	4,518	-	-
Finance lease obligations (Note 13.2)	336	41	81	214
Asset retirement obligations (Note 12)	13,314	707	2,117	10,490
<b>Contractual obligations recorded in the balance sheet</b>	<b>61,118</b>	<b>5,266</b>	<b>21,646</b>	<b>34,206</b>
Operating lease obligations (Note 13.2)	5,973	1,430	2,825	1,718
Purchase obligations	123,968	14,728	24,612	84,628
<b>Contractual obligations not recorded in the balance sheet</b>	<b>129,941</b>	<b>16,158</b>	<b>27,437</b>	<b>86,346</b>
<b>Total of contractual obligations</b>	<b>191,059</b>	<b>21,424</b>	<b>49,083</b>	<b>120,552</b>
Guarantees given for excise taxes	2,982	2,604	57	321
Guarantees given against borrowings	12,872	3,553	547	8,772
Indemnities related to sales of businesses	371	109	103	159
Guarantees of current liabilities	501	102	229	170
Guarantees to customers/suppliers	4,405	1,364	194	2,847
Letters of credit	1,081	785	45	251
Other operating commitments	3,655	1,586	248	1,821
<b>Total of other commitments given</b>	<b>25,867</b>	<b>10,103</b>	<b>1,423</b>	<b>14,341</b>
Mortgages and liens received	359	23	7	329
Sales obligations	72,278	7,889	24,589	39,800
Other commitments received	7,158	2,602	1,601	2,955
<b>Total of commitments received</b>	<b>79,795</b>	<b>10,514</b>	<b>26,197</b>	<b>43,084</b>
<i>Of which commitments given relating to joint ventures</i>	<i>46,178</i>	<i>544</i>	<i>2,925</i>	<i>42,709</i>

## As of December 31, 2014

(M\$)

## Maturity and installments

	Total	Less than 1 year	Between 1 and 5 years	More than 5 years
Non-current debt obligations net of hedging instruments (Note 15)	43,844	-	18,458	25,386
Current portion of non-current debt obligations net of hedging instruments (Note 15)	4,411	4,411	-	-
Finance lease obligations (Note 13.2)	358	40	98	220
Asset retirement obligations (Note 12)	13,121	651	2,430	10,040
<b>Contractual obligations recorded in the balance sheet</b>	<b>61,734</b>	<b>5,102</b>	<b>20,986</b>	<b>35,646</b>
Operating lease obligations (Note 13.2)	5,620	1,218	2,727	1,675
Purchase obligations	160,837	19,987	33,908	106,942
<b>Contractual obligations not recorded in the balance sheet</b>	<b>166,457</b>	<b>21,205</b>	<b>36,635</b>	<b>108,617</b>
<b>Total of contractual obligations</b>	<b>228,191</b>	<b>26,307</b>	<b>57,621</b>	<b>144,263</b>
Guarantees given for excise taxes	2,382	1,855	91	436
Guarantees given against borrowings	10,192	140	3,784	6,268
Indemnities related to sales of businesses	396	121	110	165
Guarantees of current liabilities	635	144	165	326
Guarantees to customers/suppliers	5,599	2,564	168	2,867
Letters of credit	1,552	1,138	3	411
Other operating commitments	4,762	1,455	2,700	607
<b>Total of other commitments given</b>	<b>25,518</b>	<b>7,417</b>	<b>7,021</b>	<b>11,080</b>
Mortgages and liens received	418	17	4	397
Sales obligations	110,949	9,287	33,629	68,033
Other commitments received	7,081	3,321	1,388	2,372
<b>Total of commitments received</b>	<b>118,448</b>	<b>12,625</b>	<b>35,021</b>	<b>70,802</b>
<i>Of which commitments given relating to joint ventures</i>	<i>57,439</i>	<i>298</i>	<i>1,915</i>	<i>55,226</i>



## A) Contractual obligations

### Debt obligations

“Non-current debt obligations” are included in the items “Non-current financial debt” and “Non-current financial assets” of the consolidated balance sheet. It includes the non-current portion of swaps hedging bonds, and excludes non-current finance lease obligations of \$311 million.

The current portion of non-current debt is included in the items “Current borrowings”, “Current financial assets” and “Other current financial liabilities” of the consolidated balance sheet. It includes the current portion of swaps hedging bonds, and excludes the current portion of finance lease obligations of \$8 million.

The information regarding contractual obligations linked to indebtedness is presented in Note 15 to the Consolidated Financial Statements.

### Lease contracts

The information regarding operating and finance leases is presented in Note 13 to the Consolidated Financial Statements.

### Asset retirement obligations

This item represents the discounted present value of Upstream asset retirement obligations, primarily asset removal costs at the completion date. The information regarding contractual obligations linked to asset retirement obligations is presented in Note 12 to the Consolidated Financial Statements.

### Purchase obligations

Purchase obligations are obligations under contractual agreements to purchase goods or services, including capital projects. These obligations are enforceable and legally binding on the Company and specify all significant terms, including the amount and the timing of the payments.

These obligations mainly include: unconditional hydrocarbon purchase contracts (except where an active, highly-liquid market exists and when the hydrocarbons are expected to be re-sold shortly after purchase), reservation of transport capacities in pipelines, unconditional exploration works and development works in the Upstream segment, and contracts for capital investment projects in the Refining & Chemicals segment.

## B) Other commitments given

### Guarantees given for excise taxes

These consist of guarantees given by the Group to customs authorities in order to guarantee the payments of taxes and excise duties on the importation of oil and gas products, mostly in France.

### Guarantees given against borrowings

The Group guarantees bank debt and finance lease obligations of certain non-consolidated subsidiaries and equity affiliates. Maturity dates vary, and guarantees will terminate on payment and/or cancellation of the obligation. A payment would be triggered by failure of the guaranteed party to fulfill its obligation covered by the guarantee, and no assets are held as collateral for these guarantees. As of December 31, 2016, the maturities of these guarantees are up to 2043.

As of December 31, 2016, the guarantees provided by TOTAL S.A. in connection with the financing of the Ichthys LNG project amounted to \$7,800 million.

Guarantees given against borrowings also include the guarantee given in 2008 by TOTAL S.A. in connection with the financing of the Yemen LNG project for an amount of \$551 million and the guarantee given in 2016 by TOTAL S.A. in connection with the financing of the Yamal LNG project for an amount of \$3,147 million.

In 2015, TOTAL S.A. has confirmed and extended guarantees for TOTAL Refining SAUDI ARABIA SAS shareholders' advances for an amount of \$1,013 million. As of December 31, 2016, the guarantees amount to \$1,230 million.

### Indemnities related to sales of businesses

In the ordinary course of business, the Group executes contracts involving standard indemnities for the oil industry and indemnities specific to transactions such as sales of businesses. These indemnities might include claims against any of the following: environmental, tax and shareholder matters, intellectual property rights, governmental regulations and employment-related matters, dealer, supplier, and other commercial contractual relationships. Performance under these indemnities would generally be triggered by a breach of terms of the contract or by a third party claim. The Group regularly evaluates the probability of having to incur costs associated with these indemnities.

### Other guarantees given

#### Non-consolidated subsidiaries

The Group also guarantees the current liabilities of certain non-consolidated subsidiaries. Performance under these guarantees would be triggered by a financial default of the entity.

#### Operating agreements

As part of normal ongoing business operations and consistent with generally accepted and recognized industry practices, the Group enters into numerous agreements with other parties. These commitments are often entered into for commercial purposes, for regulatory purposes or for other operating agreements.

## C) Commitments received

### Sales obligations

These amounts represent binding obligations under contractual agreements to sell goods, including in particular unconditional hydrocarbon sales contracts (except where an active, highly-liquid market exists and when the volumes are expected to be re-sold shortly after purchase).

## 13.2) Lease contracts

### Accounting principles

A finance lease transfers substantially all the risks and rewards incidental to ownership from the lessor to the lessee. These contracts are capitalized as assets at fair value or, if lower, at the present value of the minimum lease payments according to the contract. A corresponding financial debt is recognized as a financial liability. These assets are depreciated over the corresponding useful life used by the Group.

Leases that are not finance leases as defined above are recorded as operating leases.

Certain arrangements do not take the legal form of a lease but convey the right to use an asset or a group of assets in return for fixed payments. Such arrangements are accounted for as leases and are analyzed to determine whether they should be classified as operating leases or as finance leases.

The Group leases real estate, retail stations, ships, and other equipment (see Note 7 to the Consolidated Financial Statements).

The future minimum lease payments on operating and finance leases to which the Group is committed are as follows:

#### For the year ended December 31, 2016

(M\$)	Operating leases	Finance leases
2017	1,582	24
2018	1,054	26
2019	777	44
2020	687	27
2021	435	25
2022 and beyond	1,943	247
<b>Total minimum payments</b>	<b>6,478</b>	<b>393</b>
Less financial expenses		(74)
<b>Nominal value of contracts</b>		<b>319</b>
Less current portion of finance lease contracts		(8)
<b>Outstanding liability of finance lease contracts</b>		<b>311</b>

#### For the year ended December 31, 2015

(M\$)	Operating leases	Finance leases
2016	1,430	57
2017	1,049	23
2018	784	23
2019	550	23
2020	442	23
2021 and beyond	1,718	242
<b>Total minimum payments</b>	<b>5,973</b>	<b>391</b>
Less financial expenses		(55)
<b>Nominal value of contracts</b>		<b>336</b>
Less current portion of finance lease contracts		(41)
<b>Outstanding liability of finance lease contracts</b>		<b>295</b>

**For the year ended December 31, 2014**

(M\$)	Operating leases	Finance leases
2015	1,218	61
2016	978	58
2017	768	19
2018	590	19
2019	391	19
2020 and beyond	1,675	260
<b>Total minimum payments</b>	<b>5,620</b>	<b>436</b>
Less financial expenses		(78)
<b>Nominal value of contracts</b>		<b>358</b>
Less current portion of finance lease contracts		(40)
<b>Outstanding liability of finance lease contracts</b>		<b>318</b>

Net rental expense incurred under operating leases for the year ended December 31, 2016 is \$1,629 million (against \$1,282 million in 2015 and \$1,091 million in 2014).

## 14) Financial assets and liabilities analysis per instrument class and strategy

The financial assets and liabilities disclosed in the balance sheet are detailed as follows:

As of December 31, 2016 (M\$)	Financial instruments related to financing and operational activities							Other financial instruments	Total	Fair value
	Amortized cost	Fair value						Amortized cost		
		Available for sale <sup>(a)</sup>	Held for trading	Financial debt <sup>(b)</sup>	Hedging of financial debt	Cash flow hedge	Net investment hedge and other			
<b>Assets/(Liabilities)</b>										
Equity affiliates: loans	4,718	-	-	-	-	-	-	-	4,718	4,718
Other investments	-	1,133	-	-	-	-	-	-	1,133	1,133
Non-current financial assets	-	-	63	-	716	129	-	-	908	908
Other non-current assets	3,048	-	-	-	-	-	-	-	3,048	3,048
Accounts receivable, net <sup>(c)</sup>	-	-	-	-	-	-	12,213	-	12,213	12,213
Other operating receivables	-	-	2,425	-	-	4	-	7,789	10,218	10,218
Current financial assets	4,413	-	94	-	41	-	-	-	4,548	4,548
Cash and cash equivalents	-	-	-	-	-	-	24,597	-	24,597	24,597
<b>Total financial assets</b>	<b>12,179</b>	<b>1,133</b>	<b>2,582</b>	<b>-</b>	<b>757</b>	<b>133</b>	<b>-</b>	<b>44,599</b>	<b>61,383</b>	<b>61,383</b>
<b>Total non-financial assets</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>169,595</b>	<b>-</b>
<b>Total assets</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>230,978</b>	<b>-</b>
Non-current financial debt	(11,188)	-	(5)	(28,223)	(3,007)	(644)	-	-	(43,067)	(44,168)
Accounts payable <sup>(c)</sup>	-	-	-	-	-	-	(23,227)	-	(23,227)	(23,227)
Other operating liabilities	-	-	(2,001)	-	-	(107)	(7,508)	-	(9,616)	(9,616)
Current borrowings	(9,700)	-	-	(4,220)	-	-	-	-	(13,920)	(13,920)
Other current financial liabilities	-	-	(115)	-	(212)	-	-	-	(327)	(327)
<b>Total financial liabilities</b>	<b>(20,888)</b>	<b>-</b>	<b>(2,121)</b>	<b>(32,443)</b>	<b>(3,219)</b>	<b>(751)</b>	<b>-</b>	<b>(30,735)</b>	<b>(90,157)</b>	<b>(91,258)</b>
<b>Total non-financial liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(140,821)</b>	<b>-</b>
<b>Total liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(230,978)</b>	<b>-</b>

(a) Financial assets available for sale are measured at their fair value except for unlisted securities (see Note 8 to the Consolidated Financial Statements).

(b) The financial debt is adjusted to the hedged risks value (currency and interest rate) as part of hedge accounting (see Note 15 to the Consolidated Financial Statements).

(c) The impact of offsetting on accounts receivable, net is \$(1,828) million and \$+1,828 million on accounts payable.

As of December 31, 2015  
(M\$)

	Financial instruments related to financing and operational activities							Other financial instruments	Total	Fair value
	Amortized cost	Fair value					Amortized cost			
		Available for sale <sup>(a)</sup>	Held for trading	Financial debt <sup>(b)</sup>	Hedging of financial debt	Cash flow hedge				
<b>Assets/(Liabilities)</b>										
Equity affiliates: loans	4,378	-	-	-	-	-	-	-	4,378	4,378
Other investments	-	1,241	-	-	-	-	-	-	1,241	1,241
Non-current financial assets	-	-	-	-	1,075	144	-	-	1,219	1,219
Other non-current assets	3,407	-	-	-	-	-	-	-	3,407	3,407
Accounts receivable, net <sup>(c)</sup>	-	-	-	-	-	-	10,629	-	10,629	10,629
Other operating receivables	-	-	3,379	-	-	9	-	7,521	10,909	10,909
Current financial assets	5,858	-	112	-	220	-	-	-	6,190	6,190
Cash and cash equivalents	-	-	-	-	-	-	-	23,269	23,269	23,269
<b>Total financial assets</b>	<b>13,643</b>	<b>1,241</b>	<b>3,491</b>	<b>-</b>	<b>1,295</b>	<b>153</b>	<b>-</b>	<b>41,419</b>	<b>61,242</b>	<b>61,242</b>
<b>Total non-financial assets</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>163,242</b>	<b>-</b>
<b>Total assets</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>224,484</b>	<b>-</b>
Non-current financial debt	(7,810)	-	-	(33,762)	(2,891)	(1)	-	-	(44,464)	(45,294)
Accounts payable <sup>(c)</sup>	-	-	-	-	-	-	(20,928)	-	(20,928)	(20,928)
Other operating liabilities	-	-	(1,609)	-	-	(103)	-	(8,202)	(9,914)	(9,914)
Current borrowings	(8,230)	-	-	(4,258)	-	-	-	-	(12,488)	(12,488)
Other current financial liabilities	-	-	(44)	-	(127)	-	-	-	(171)	(171)
<b>Total financial liabilities</b>	<b>(16,040)</b>	<b>-</b>	<b>(1,653)</b>	<b>(38,020)</b>	<b>(3,018)</b>	<b>(104)</b>	<b>-</b>	<b>(29,130)</b>	<b>(87,965)</b>	<b>(88,795)</b>
<b>Total non-financial liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(136,519)</b>	<b>-</b>
<b>Total liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(224,484)</b>	<b>-</b>

(a) Financial assets available for sale are measured at their fair value except for unlisted securities (see Note 8 to the Consolidated Financial Statements).

(b) The financial debt is adjusted to the hedged risks value (currency and interest rate) as part of hedge accounting (see Note 15 to the Consolidated Financial Statements).

(c) The impact of offsetting on accounts receivable, net is \$(1,044) million and \$+1,044 million on accounts payable.

As of December 31, 2014  
(M\$)

	Financial instruments related to financing and operational activities							Other financial instruments	Total	Fair value
	Amortized cost	Fair value					Amortized cost			
		Available for sale <sup>(a)</sup>	Held for trading	Financial debt <sup>(b)</sup>	Hedging of financial debt	Cash flow hedge				
<b>Assets/(Liabilities)</b>										
Equity affiliates: loans	4,626	-	-	-	-	-	-	-	4,626	4,626
Other investments	-	1,399	-	-	-	-	-	-	1,399	1,399
Non-current financial assets	-	-	-	-	1,084	235	-	-	1,319	1,319
Other non-current assets	3,326	-	-	-	-	-	-	-	3,326	3,326
Accounts receivable, net <sup>(c)</sup>	-	-	-	-	-	-	-	15,704	15,704	15,704
Other operating receivables	-	-	2,502	-	-	7	-	8,283	10,792	10,792
Current financial assets	469	-	364	-	460	-	-	-	1,293	1,293
Cash and cash equivalents	-	-	-	-	-	-	-	25,181	25,181	25,181
<b>Total financial assets</b>	<b>8,421</b>	<b>1,399</b>	<b>2,866</b>	<b>-</b>	<b>1,544</b>	<b>242</b>	<b>-</b>	<b>49,168</b>	<b>63,640</b>	<b>63,640</b>
<b>Total non-financial assets</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>166,158</b>	<b>-</b>
<b>Total assets</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>229,798</b>	<b>-</b>
Non-current financial debt	(7,179)	-	-	(37,355)	(944)	(3)	-	-	(45,481)	(46,472)
Accounts payable <sup>(c)</sup>	-	-	-	-	-	-	-	(24,150)	(24,150)	(24,150)
Other operating liabilities	-	-	(1,073)	-	-	(4)	-	(6,858)	(7,935)	(7,935)
Current borrowings	(6,241)	-	-	(4,701)	-	-	-	-	(10,942)	(10,942)
Other current financial liabilities	-	-	(47)	-	(133)	-	-	-	(180)	(180)
<b>Total financial liabilities</b>	<b>(13,420)</b>	<b>-</b>	<b>(1,120)</b>	<b>(42,056)</b>	<b>(1,077)</b>	<b>(7)</b>	<b>-</b>	<b>(31,008)</b>	<b>(88,688)</b>	<b>(89,679)</b>
<b>Total non-financial liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(141,110)</b>	<b>-</b>
<b>Total liabilities</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>(229,798)</b>	<b>-</b>

(a) Financial assets available for sale are measured at their fair value except for unlisted securities (see Note 8 to the Consolidated Financial Statements).

(b) The financial debt is adjusted to the hedged risks value (currency and interest rate) as part of hedge accounting (see Note 15 to the Consolidated Financial Statements).

(c) The impact of offsetting on accounts receivable, net is \$(1,970) million and \$+1,970 million on accounts payable.

## 15) Financial structure and financial costs

### 15.1) Financial debt and related financial instruments

#### A) Non-current financial debt and related financial instruments

As of December 31, 2016

(M\$)	Secured	Unsecured	Total
<b>(Assets)/Liabilities</b>			
Non-current financial debt	572	42,495	43,067
<i>of which hedging instruments of non-current financial debt (liabilities)</i>	-	3,651	3,651
Non-current financial assets	-	(908)	(908)
<i>of which hedging instruments of non-current financial debt (assets)</i>	-	(845)	(845)
<b>Non-current financial debt and related financial instruments</b>	<b>572</b>	<b>41,587</b>	<b>42,159</b>
Bonds after fair value hedge	-	29,147	29,147
Fixed rate bonds and bonds after cash flow hedge	-	10,315	10,315
Other floating rate debt	76	1,291	1,367
Other fixed rate debt	185	892	1,077
Financial lease obligations	311	-	311
Non-current instruments held for trading	-	(58)	(58)
<b>Non-current financial debt and related financial instruments</b>	<b>572</b>	<b>41,587</b>	<b>42,159</b>

As of December 31, 2015

(M\$)	Secured	Unsecured	Total
<b>(Assets)/Liabilities</b>			
Non-current financial debt	655	43,809	44,464
<i>of which hedging instruments of non-current financial debt (liabilities)</i>	-	2,891	2,891
Non-current financial assets	-	(1,219)	(1,219)
<i>of which hedging instruments of non-current financial debt (assets)</i>	-	(1,219)	(1,219)
<b>Non-current financial debt and related financial instruments</b>	<b>655</b>	<b>42,590</b>	<b>43,245</b>
Bonds after fair value hedge	-	34,435	34,435
Fixed rate bonds and bonds after cash flow hedge	-	6,494	6,494
Other floating rate debt	34	1,110	1,144
Other fixed rate debt	326	551	877
Financial lease obligations	295	-	295
Non-current instruments held for trading	-	-	-
<b>Non-current financial debt and related financial instruments</b>	<b>655</b>	<b>42,590</b>	<b>43,245</b>

As of December 31, 2014

(M\$)	Secured	Unsecured	Total
<b>(Assets)/Liabilities</b>			
Non-current financial debt	798	44,683	45,481
<i>of which hedging instruments of non-current financial debt (liabilities)</i>	-	944	944
Non-current financial assets	-	(1,319)	(1,319)
<i>of which hedging instruments of non-current financial debt (assets)</i>	-	(1,319)	(1,319)
<b>Non-current financial debt and related financial instruments</b>	<b>798</b>	<b>43,364</b>	<b>44,162</b>
Bonds after fair value hedge	-	36,558	36,558
Fixed rate bonds and bonds after cash flow hedge	-	6,155	6,155
Other floating rate debt	265	395	660
Other fixed rate debt	215	256	471
Financial lease obligations	318	-	318
Non-current instruments held for trading	-	-	-
<b>Non-current financial debt and related financial instruments</b>	<b>798</b>	<b>43,364</b>	<b>44,162</b>

The fair value of bonds, as of December 31, 2016, after taking into account currency and interest rates swaps, is detailed as follows:

Bonds after fair value hedge	Currency of issuance	Fair value after hedging as of December 31, 2016	Fair value after hedging as of December 31, 2015	Fair value after hedging as of December 31, 2014	Range of current maturities	Range of initial current rate before hedging instruments
(M\$)						
Bond	USD	11,036	13,754	16,385	2017-2024	1.000%-3.750%
Bond	USD	1,385	2,385	2,385	2018-2020	USLIBOR 3 months + 0.03% – USLIBOR 3 months + 0.75%
Bond	CHF	1,441	1,910	2,161	2018-2027	0.510%-3.135%
Bond	NZD	251	251	251	2019-2020	4.750%-5.000%
Bond	AUD	1,211	1,360	1,689	2017-2025	3.750%-4.875%
Bond	EUR	10,958	11,365	12,127	2017-2044	0.250%-4.875%
Bond	EUR	1,638	1,638	1,638	2020	EURIBOR 3 months + 0.30% – EURIBOR 3 months + 0.31%
Bond	CAD	289	289	288	2017-2020	2.000%-2.375%
Bond	GBP	2,215	2,225	1,662	2017-2022	2.250%-4.250%
Bond	GBP	469	469	468	2019	GBLIB3M + 0.30%
Bond	NOK	355	566	566	2017-2018	2.250%-2.500%
Bond	HKD	392	394	213	2019-2026	2.920%-4.180%
Bond	SEK		95	95		
Current portion (less than one year)		(4,391)	(4,164)	(4,068)		
<b>Total Principal Financing Entities<sup>(a) + (b) + (c)</sup></b>		<b>27,249</b>	<b>32,537</b>	<b>35,860</b>		
TOTAL S.A. <sup>(d)</sup>		1,200	1,200		2022	0.500%
Other Consolidated Subsidiaries		698	698	698		
<b>Total bonds after fair value hedge</b>		<b>29,147</b>	<b>34,435</b>	<b>36,558</b>		
<b>Bonds after cash flow hedge and fixed rate bonds</b>						
(M\$)						
Bond	EUR	5,248	2,077	1,986	2019-2026	1.365%-5.125%
Bond	USD	4,250	3,750	3,750	2020-2023	2.750%-4.450%
Bond	CNY	153	164	172	2018	3.750%
Current portion (less than one year)						
<b>Total Principal Financing Entities<sup>(a) + (b) + (c)</sup></b>		<b>9,651</b>	<b>5,991</b>	<b>5,908</b>		
Other Consolidated Subsidiaries		664	503	247		
<b>Total bonds after cash flow hedge and fixed rate bonds</b>		<b>10,315</b>	<b>6,494</b>	<b>6,155</b>		

All debt securities issued through the following subsidiaries are fully and unconditionally guaranteed by TOTAL S.A. as to payment of principal, premium, if any, interest and any other amounts due:

(a) TOTAL CAPITAL is a wholly-owned subsidiary of TOTAL S.A. It acts as a financing vehicle for the Group.

(b) TOTAL CAPITAL CANADA Ltd. is a wholly-owned subsidiary of TOTAL S.A. It acts as a financing vehicle for the activities of the Group in Canada.

(c) TOTAL CAPITAL INTERNATIONAL is a wholly-owned subsidiary of TOTAL S.A. It acts as a financing vehicle for the Group.

(d) Debt financing of \$1.2 billion through a structure combining the issue of cash-settled convertible bonds with the purchase of cash-settled call options to hedge TOTAL's exposure to the exercise of the conversion rights under the bonds.

### Loan repayment schedule (excluding current portion)

As of December 31, 2016 (M\$)	Non-current financial debt	Of which hedging instruments of non-current financial debt (liabilities)	Non-current financial assets	Of which hedging instruments of non-current financial debt (assets)	Non-current financial debt - net of hedging instruments	%
2018	4,572	249	(252)	(235)	4,320	10%
2019	5,812	327	(110)	(104)	5,702	14%
2020	4,956	564	(4)	-	4,952	12%
2021	3,609	237	(31)	(7)	3,578	8%
2022 and beyond	24,118	2,274	(511)	(499)	23,607	56%
<b>Total</b>	<b>43,067</b>	<b>3,651</b>	<b>(908)</b>	<b>(845)</b>	<b>42,159</b>	<b>100%</b>

As of December 31, 2015 (M\$)	Non-current financial debt	Of which hedging instruments of non-current financial debt (liabilities)	Non-current financial assets	Of which hedging instruments of non-current financial debt (assets)	Non-current financial debt - net of hedging instruments	%
2017	4,729	213	(127)	(127)	4,602	11%
2018	4,803	218	(383)	(383)	4,420	10%
2019	5,716	124	(174)	(174)	5,542	13%
2020	4,965	434	-	-	4,965	11%
2021 and beyond	24,251	1,902	(535)	(535)	23,716	55%
<b>Total</b>	<b>44,464</b>	<b>2,891</b>	<b>(1,219)</b>	<b>(1,219)</b>	<b>43,245</b>	<b>100%</b>

As of December 31, 2014 (M\$)	Non-current financial debt	Of which hedging instruments of non-current financial debt (liabilities)	Non-current financial assets	Of which hedging instruments of non-current financial debt (assets)	Non-current financial debt - net of hedging instruments	%
2016	4,987	73	(194)	(194)	4,793	11%
2017	4,689	132	(142)	(142)	4,547	10%
2018	4,784	108	(333)	(333)	4,451	10%
2019	4,973	62	(208)	(208)	4,765	11%
2020 and beyond	26,048	569	(442)	(442)	25,606	58%
<b>Total</b>	<b>45,481</b>	<b>944</b>	<b>(1,319)</b>	<b>(1,319)</b>	<b>44,162</b>	<b>100%</b>

### Analysis by currency and interest rate

These analyses take into account interest rate and foreign currency swaps to hedge non-current financial debt.

As of December 31, (M\$)	2016	%	2015	%	2014	%
U.S. dollar	39,963	95%	40,337	93%	41,369	94%
Euro	977	2%	1,681	4%	2,428	5%
Norwegian krone	928	2%	907	2%	-	0%
Other currencies	291	1%	320	1%	365	1%
<b>Total</b>	<b>42,159</b>	<b>100%</b>	<b>43,245</b>	<b>100%</b>	<b>44,162</b>	<b>100%</b>

As of December 31, (M\$)	2016	%	2015	%	2014	%
Fixed rate	11,703	28%	7,666	18%	6,944	16%
Floating rate	30,456	72%	35,579	82%	37,218	84%
<b>Total</b>	<b>42,159</b>	<b>100%</b>	<b>43,245</b>	<b>100%</b>	<b>44,162</b>	<b>100%</b>



## B) Current financial assets and liabilities

Current borrowings consist mainly of commercial paper or treasury bills or drawings on bank loans. These instruments bear interest at rates that are close to market rates.

As of December 31,  
 (M\$)

(Assets)/Liabilities	2016	2015	2014
Current financial debt <sup>(a)</sup>	9,469	7,836	6,164
Current portion of non-current financial debt	4,451	4,652	4,778
<b>Current borrowings (Note 14)</b>	<b>13,920</b>	<b>12,488</b>	<b>10,942</b>
Current portion of hedging instruments of debt (liabilities)	212	127	133
Other current financial instruments (liabilities)	115	44	47
<b>Other current financial liabilities (Note 14)</b>	<b>327</b>	<b>171</b>	<b>180</b>
Current deposits beyond three months	(4,413)	(5,858)	(469)
Current portion of hedging instruments of debt (assets)	(41)	(220)	(460)
Other current financial instruments (assets)	(94)	(112)	(364)
<b>Current financial assets (Note 14)</b>	<b>(4,548)</b>	<b>(6,190)</b>	<b>(1,293)</b>
<b>Current borrowings and related financial assets and liabilities, net</b>	<b>9,699</b>	<b>6,469</b>	<b>9,829</b>

(a) As of December 31, 2016, December 31, 2015 and December 31, 2014, the current financial debt includes a commercial paper program in Total Capital Canada Ltd. Total Capital Canada Ltd. is a wholly-owned subsidiary of TOTAL S.A. It acts as a financing vehicle for the activities of the Group in Canada. Its debt securities are fully and unconditionally guaranteed by TOTAL S.A. as to payment of principal, premium, if any, interest and any other amounts due.

## C) Cash flow from (used in) financing activities

Changes in non-current financial debt are detailed in the following table as a net value:

For the year ended December 31,  
 (M\$)

	2016	2015	2014
Issuance of non-current debt	4,096	4,468	15,874
Repayment of non-current debt	(520)	(302)	(88)
<b>Net amount</b>	<b>3,576</b>	<b>4,166</b>	<b>15,786</b>

## D) Cash and cash equivalents

### Accounting policies

Cash and cash equivalents are comprised of cash on hand and highly liquid short-term investments that are easily convertible into known amounts of cash and are subject to insignificant risks of changes in value.

Investments with maturity greater than three months and less than twelve months are shown under “Current financial assets”.

Changes in current financial assets and liabilities are included in the financing activities section of the Consolidated Statement of Cash Flows.

Cash and cash equivalents are detailed as follows:

For the year ended December 31,  
 (M\$)

	2016	2015	2014
Cash	12,129	12,291	13,874
Cash equivalents	12,468	10,978	11,307
<b>Total</b>	<b>24,597</b>	<b>23,269</b>	<b>25,181</b>

Cash equivalents are mainly composed of deposits less than three months deposited in government institutions or deposit banks selected in accordance with strict criteria.

As of December 31, 2016, the cash and cash equivalents include \$1,272 million subject to restrictions particularly due to a regulatory framework or due to the fact they are owned by affiliates located in countries with exchange controls.

## E) Net-debt-to-equity ratio

For its internal and external communication needs, the Group calculates a debt ratio by dividing its net financial debt by equity. Adjusted shareholders' equity for the year ended December 31, 2016 is calculated after payment of a 2016 dividend of €2.45 per share, subject to approval by the Shareholders' Meeting on May 26, 2017.

The net-debt-to-equity ratio is calculated as follows:

As of December 31,  
(M\$)

(Assets)/Liabilities	2016	2015	2014
Current borrowings	13,920	12,488	10,942
Other current financial liabilities	327	171	180
Current financial assets	(4,548)	(6,190)	(1,293)
Net financial assets and liabilities held for sale or exchange	(140)	141	(56)
Non-current financial debt	43,067	44,464	45,481
Non-current financial assets	(908)	(1,219)	(1,319)
Cash and cash equivalents	(24,597)	(23,269)	(25,181)
<b>Net financial debt</b>	<b>27,121</b>	<b>26,586</b>	<b>28,754</b>
Shareholders' equity – Group share	98,680	92,494	90,330
Distribution of the income based on existing shares at the closing date	(1,581)	(1,545)	(1,686)
Non-controlling interests	2,894	2,915	3,201
<b>Adjusted shareholders' equity</b>	<b>99,993</b>	<b>93,864</b>	<b>91,845</b>
<b>Net-debt-to-equity ratio</b>	<b>27.1%</b>	<b>28.3%</b>	<b>31.3%</b>

## 15.2) Fair value of financial instruments (excluding commodity contracts)

### Accounting policies

The Group uses derivative instruments to manage its exposure to risks of changes in interest rates, foreign exchange rates and commodity prices. Changes in fair value of derivative instruments are recognized in the statement of income or in other comprehensive income and are recognized in the balance sheet in the accounts corresponding to their nature, according to the risk management strategy. The derivative instruments used by the Group are the following:

#### Cash management

Financial instruments used for cash management purposes are part of a hedging strategy of currency and interest rate risks within global limits set by the Group and are considered to be used for transactions (held for trading). Changes in fair value are systematically recorded in the statement of income. The balance sheet value of those instruments is included in "Current financial assets" or "Other current financial liabilities".

#### Long-term financing

When an external long-term financing is set up, specifically to finance subsidiaries, and when this financing involves currency and interest rate derivatives, these instruments are qualified as:

- 1) Fair value hedge of the interest rate risk on the external debt and of the currency risk of the loans to subsidiaries. Changes in fair value of derivatives are recognized in the statement of income as are changes in fair value of underlying financial debts and loans to subsidiaries.

The fair value of those hedging instruments of long-term financing is included in assets under "Non-current financial assets" or in liabilities under "Non-current financial debt" for the non-current portion. The current portion (less than one year) is accounted for in "Current financial assets" or "Other current financial liabilities".

In case of the anticipated termination of derivative instruments accounted for as fair value hedges, the amount paid or received is recognized in the statement of income and:

- if this termination is due to an early cancellation of the hedged items, the adjustment previously recorded as revaluation of those hedged items is also recognized in the statement of income;
- if the hedged items remain in the balance sheet, the adjustment previously recorded as a revaluation of those hedged items is spread over the remaining life of those items.

- 2) Cash flow hedge of the currency risk of the external debt. Changes in fair value are recorded in Other comprehensive Income for the effective portion of the hedging and in the statement of income for the ineffective portion of the hedging. Amounts recorded in equity are transferred to the income statement when the hedged transaction affects profit or loss.

The fair value of those hedging instruments of long-term financing is included in assets under "Non-current financial assets" or in liabilities under "Non-current financial debt" for the non-current portion. The current portion (less than one year) is accounted for in "Current financial assets" or "Other current financial liabilities".

If the hedging instrument expires, is sold or terminated by anticipation, gains or losses previously recognized in equity remain in equity. Amounts are reclassified to the income statement only when the hedged transaction affects profit or loss.

#### Foreign subsidiaries' equity hedge

Certain financial instruments hedge against risks related to the equity of foreign subsidiaries whose functional currency is not the euro (mainly the dollar). These instruments qualify as "net investment

hedges” and changes in fair value are recorded in other comprehensive income for the effective portion of the hedging and in the statement of income for the ineffective portion of the hedging. Gains or losses on hedging instruments previously recorded in equity, are reclassified to the statement of income in the same period as the total or partial disposal of the foreign activity.

The fair value of these instruments is recorded under “Current financial assets” or “Other current financial liabilities”.

**Commitments to purchase shares held by non-controlling interests (put options written on minority interests)**

Put options granted to non-controlling-interest shareholders are initially recognized as financial liabilities at the present value of the exercise price of the options with a corresponding reduction in shareholders’ equity. The financial liability is subsequently measured at fair value at each balance sheet date in accordance with contractual clauses and any variation is recorded in the statement of income (cost of debt).

**A) Impact on the statement of income per nature of financial instruments**

**Assets and liabilities from financing activities**

The impact on the statement of income of financing assets and liabilities is detailed as follows:

The impact on the statement of income mainly includes:

- financial income on cash, cash equivalents, and current financial assets (notably current deposits beyond three months) classified as “Loans and receivables”;
- financial expense of long term subsidiaries financing, associated hedging instruments (excluding ineffective portion of the hedge detailed below) and financial expense of short term financing classified as “Financing liabilities and associated hedging instruments”;

- ineffective portion of bond hedging; and
- financial income, financial expense and fair value of derivative instruments used for cash management purposes classified as “Assets and liabilities held for trading”.

Financial derivative instruments used for cash management purposes (interest rate and foreign exchange) are considered to be held for trading. Based on practical documentation issues, the Group did not elect to set up hedge accounting for such instruments. The impact on income of the derivatives is offset by the impact of loans and current liabilities they are related to. Therefore these transactions taken as a whole do not have a significant impact on the Consolidated Financial Statements.

**For the year ended December 31, (M\$)**

	2016	2015	2014
Loans and receivables	82	121	135
Financing liabilities and associated hedging instruments	(1,111)	(965)	(750)
Fair value hedge (ineffective portion)	3	(1)	2
Assets and liabilities held for trading	(78)	(28)	(27)
<b>Impact on the cost of net debt</b>	<b>(1,104)</b>	<b>(873)</b>	<b>(640)</b>

**B) Impact of the hedging strategies**

**Fair value hedge**

The impact on the statement of income of the bond hedging instruments which is recorded in the item “Financial interest on debt” in the consolidated statement of income is detailed as follows:

**For the year ended December 31, (M\$)**

	2016	2015	2014
Revaluation at market value of bonds	693	2,133	443
Swap hedging of bonds	(690)	(2,134)	(441)
<b>Ineffective portion of the fair value hedge</b>	<b>3</b>	<b>(1)</b>	<b>2</b>

The ineffective portion is not representative of the Group’s performance considering the Group’s objective to hold swaps to maturity. The current portion of the swaps valuation is not subject to active management.

### Net investment hedge

These instruments are recorded directly in other comprehensive income under “Currency translation adjustments”. The variations of the period are detailed in the table below:

For the year ended December 31, (M\$)	As of January 1,	Variations	As of December 31,
<b>2016</b>	<b>(674)</b>	<b>16</b>	<b>(658)</b>
2015	(511)	(163)	(674)
2014	(367)	(144)	(511)

As of December 31, 2016, 2015 and 2014 the Group had no open forward contracts under these hedging instruments.

### Cash flow hedge

The impact on the statement of income and other comprehensive income of the hedging instruments qualified as cash flow hedges is detailed as follows:

For the year ended December 31, (M\$)	2016	2015	2014
Profit (Loss) recorded in equity during the period	308	(185)	97
Amount reclassified from equity to the income statement during the period	(52)	(205)	(295)

As of December 31, 2016, 2015 and 2014, the ineffective portion of these financial instruments is nil.

### C) Maturity of derivative instruments

The maturity of the notional amounts of derivative instruments, excluding the commodity contracts, is detailed in the following table:

For the year ended December 31, 2016 (M\$)	Fair value	Notional value 2017	Fair value	Notional value schedule					
				2018 and after	2018	2019	2020	2021	2022 and after
<b>Assets/(Liabilities)</b>									
<b>Fair value hedge</b>									
Swaps hedging fixed-rates bonds (assets)	41	2,213	716	7,618	-	-	-	-	-
Swaps hedging fixed-rates bonds (liabilities)	(212)	2,175	(3,007)	20,549	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>(171)</b>	<b>4,388</b>	<b>(2,291)</b>	<b>28,167</b>	<b>4,097</b>	<b>3,172</b>	<b>3,346</b>	<b>1,945</b>	<b>15,607</b>
<b>Cash flow hedge</b>									
Swaps hedging fixed-rates bonds (assets)	-	-	129	3,457	-	-	-	-	-
Swaps hedging fixed-rates bonds (liabilities)	-	-	(644)	5,679	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>-</b>	<b>-</b>	<b>(515)</b>	<b>9,136</b>	<b>-</b>	<b>969</b>	<b>-</b>	<b>-</b>	<b>8,167</b>
Forward exchange contracts related to operational activities (assets)	3	30	1	13	-	-	-	-	-
Forward exchange contracts related to operational activities (liabilities)	(26)	296	(5)	80	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>(23)</b>	<b>326</b>	<b>(4)</b>	<b>93</b>	<b>93</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Held for trading</b>									
Other interest rate swaps (assets)	7	16,582	35	1,859	-	-	-	-	-
Other interest rate swaps (liabilities)	(5)	24,642	(4)	603	-	-	-	-	-
<b>Total other interest rate swaps</b>	<b>2</b>	<b>41,224</b>	<b>31</b>	<b>2,462</b>	<b>1,291</b>	<b>-</b>	<b>-</b>	<b>1,000</b>	<b>171</b>
Currency swaps and forward exchange contracts (assets)	87	6,714	28	578	-	-	-	-	-
Currency swaps and forward exchange contracts (liabilities)	(110)	3,803	(1)	6	-	-	-	-	-
<b>Total currency swaps and forward exchange contracts</b>	<b>(23)</b>	<b>10,517</b>	<b>27</b>	<b>584</b>	<b>322</b>	<b>137</b>	<b>80</b>	<b>43</b>	<b>2</b>

Notional amounts set the levels of commitment and are indicative nor of a contingent gain or loss neither of a related debt.

For the year ended December 31, 2015 (M\$)	Fair value	Notional value 2016	Fair value	Notional value schedule					
				2017 and after	2017	2018	2019	2020	2021 and after
<b>Assets/(Liabilities)</b>									
<b>Fair value hedge</b>									
Swaps hedging fixed-rates bonds (assets)	220	2,709	1,075	11,701	-	-	-	-	-
Swaps hedging fixed-rates bonds (liabilities)	(127)	579	(2,891)	21,835	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>93</b>	<b>3,288</b>	<b>(1,816)</b>	<b>33,536</b>	<b>4,410</b>	<b>4,129</b>	<b>3,190</b>	<b>3,346</b>	<b>18,461</b>
<b>Cash flow hedge</b>									
Swaps hedging fixed-rates bonds (assets)	-	-	144	2,221	-	-	-	-	-
Swaps hedging fixed-rates bonds (liabilities)	-	-	(1)	36	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>-</b>	<b>-</b>	<b>143</b>	<b>2,257</b>	<b>-</b>	<b>-</b>	<b>969</b>	<b>-</b>	<b>1,288</b>
Forward exchange contracts related to operational activities (assets)	9	145	-	-	-	-	-	-	-
Forward exchange contracts related to operational activities (liabilities)	(61)	497	(42)	376	-	-	-	-	-
<b>Total forward exchange contracts related to operational activities</b>	<b>(52)</b>	<b>642</b>	<b>(42)</b>	<b>376</b>	<b>296</b>	<b>80</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Held for trading</b>									
Other interest rate swaps (assets)	7	17,220	1	90	-	-	-	-	-
Other interest rate swaps (liabilities)	(9)	26,914	-	59	-	-	-	-	-
<b>Total other interest rate swaps</b>	<b>(2)</b>	<b>44,134</b>	<b>1</b>	<b>149</b>	<b>82</b>	<b>67</b>	<b>-</b>	<b>-</b>	<b>-</b>
Currency swaps and forward exchange contracts (assets)	82	5,476	22	627	-	-	-	-	-
Currency swaps and forward exchange contracts (liabilities)	(35)	3,970	-	33	-	-	-	-	-
<b>Total currency swaps and forward exchange contracts</b>	<b>47</b>	<b>9,446</b>	<b>22</b>	<b>660</b>	<b>290</b>	<b>226</b>	<b>58</b>	<b>41</b>	<b>45</b>

Notional amounts set the levels of commitment and are indicative nor of a contingent gain or loss neither of a related debt.

For the year ended December 31, 2014 (M\$)	Fair value	Notional value 2015	Fair value	Notional value schedule					
				2016 and after	2016	2017	2018	2019	2020 and after
<b>Assets/(Liabilities)</b>									
<b>Fair value hedge</b>									
Swaps hedging fixed-rates bonds (assets)	460	4,163	1,084	14,946	-	-	-	-	-
Swaps hedging fixed-rates bonds (liabilities)	(133)	1,004	(944)	21,546	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>327</b>	<b>5,167</b>	<b>140</b>	<b>36,492</b>	<b>3,505</b>	<b>4,490</b>	<b>5,018</b>	<b>3,255</b>	<b>20,224</b>
<b>Cash flow hedge</b>									
Swaps hedging fixed-rates bonds (assets)	-	-	235	2,221	-	-	-	-	-
Swaps hedging fixed-rates bonds (liabilities)	-	-	(3)	247	-	-	-	-	-
<b>Total swaps hedging fixed-rates bonds</b>	<b>-</b>	<b>-</b>	<b>232</b>	<b>2,468</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>969</b>	<b>1,499</b>
Forward exchange contracts related to operational activities (assets)	7	146	-	-	-	-	-	-	-
Forward exchange contracts related to operational activities (liabilities)	(4)	45	-	-	-	-	-	-	-
<b>Total forward exchange contracts related to operational activities</b>	<b>3</b>	<b>191</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Held for trading</b>									
Other interest rate swaps (assets)	8	14,359	2	178	-	-	-	-	-
Other interest rate swaps (liabilities)	(8)	11,361	-	82	-	-	-	-	-
<b>Total other interest rate swaps</b>	<b>-</b>	<b>25,720</b>	<b>2</b>	<b>260</b>	<b>109</b>	<b>83</b>	<b>68</b>	<b>-</b>	<b>-</b>
Currency swaps and forward exchange contracts (assets)	330	14,256	24	328	-	-	-	-	-
Currency swaps and forward exchange contracts (liabilities)	(33)	1,850	(6)	120	-	-	-	-	-
<b>Total currency swaps and forward exchange contracts</b>	<b>297</b>	<b>16,106</b>	<b>18</b>	<b>448</b>	<b>308</b>	<b>89</b>	<b>45</b>	<b>1</b>	<b>5</b>

Notional amounts set the levels of commitment and are indicative nor of a contingent gain or loss neither of a related debt.

## D) Fair value hierarchy

### Accounting policies

Fair values are estimated for the majority of the Group's financial instruments, with the exception of publicly traded equity securities and marketable securities for which the market price is used.

Estimations of fair value, which are based on principles such as discounting future cash flows to present value, must be weighted by the fact that the value of a financial instrument at a given time may be influenced by the market environment (liquidity especially), and also the fact that subsequent changes in interest rates and exchange rates are not taken into account.

As a consequence, the use of different estimates, methodologies and assumptions could have a material effect on the estimated fair value amounts.

The methods used are as follows:

### Financial debts, swaps

The market value of swaps and of bonds that are hedged by those swaps has been determined on an individual basis by discounting future cash flows with the zero coupon interest rate curves existing at year-end.

### Other financial instruments

The fair value of the interest rate swaps and of FRA's (Forward Rate Agreements) are calculated by discounting future cash flows on the basis of zero coupon interest rate curves existing at year-end after adjustment for interest accrued but unpaid. Forward exchange contracts and currency swaps are valued on the basis of a comparison of the negotiated forward rates with the rates in effect on the financial markets at year-end for similar maturities.

Exchange options are valued based on the Garman-Kohlhagen model including market quotations at year-end.

The fair value hierarchy for financial instruments, excluding commodity contracts, is as follows:

As of December 31, 2016 (M\$)	Quoted prices in active markets for identical assets (level 1)	Prices based on observable data (level 2)	Prices based on non observable data (level 3)	Total
Fair value hedge instruments	-	(2,462)	-	(2,462)
Cash flow hedge instruments	-	(542)	-	(542)
Assets and liabilities held for trading	-	37	-	37
Assets available for sale	54	-	-	54
<b>Total</b>	<b>54</b>	<b>(2,967)</b>	<b>-</b>	<b>(2,913)</b>
As of December 31, 2015 (M\$)	Quoted prices in active markets for identical assets (level 1)	Prices based on observable data (level 2)	Prices based on non observable data (level 3)	Total
Fair value hedge instruments	-	(1,723)	-	(1,723)
Cash flow hedge instruments	-	49	-	49
Assets and liabilities held for trading	-	68	-	68
Assets available for sale	59	-	-	59
<b>Total</b>	<b>59</b>	<b>(1,606)</b>	<b>-</b>	<b>(1,547)</b>
As of December 31, 2014 (M\$)	Quoted prices in active markets for identical assets (level 1)	Prices based on observable data (level 2)	Prices based on non observable data (level 3)	Total
Fair value hedge instruments	-	467	-	467
Cash flow hedge instruments	-	235	-	235
Assets and liabilities held for trading	-	317	-	317
Assets available for sale	84	-	-	84
<b>Total</b>	<b>84</b>	<b>1,019</b>	<b>-</b>	<b>1,103</b>

## 15.3) Financial risks management

### Financial markets related risks

As part of its financing and cash management activities, the Group uses derivative instruments to manage its exposure to changes in interest rates and foreign exchange rates. These instruments are mainly interest rate and currency swaps. The Group may also occasionally use futures contracts and options. These operations and their accounting treatment are detailed in Notes 14, 15.1 and 15.2 to the Consolidated Financial Statements.

Risks relative to cash management operations and to interest rate and foreign exchange financial instruments are managed according to rules set by the Group's senior management, which provide for regular pooling of available cash balances, open positions and management of the financial instruments by the Treasury Department. Excess cash of the Group is deposited mainly in government institutions, deposit banks, or major companies through deposits, reverse repurchase agreements and purchase of commercial paper. Liquidity positions and the management of financial instruments are centralized by the Treasury Department, where they are managed by a team specialized in foreign exchange and interest rate market transactions.

The Cash Monitoring-Management Unit within the Treasury Department monitors limits and positions per bank on a daily basis and results of the Front Office. This unit also prepares marked-to-market valuations of used financial instruments and, when necessary, performs sensitivity analysis.

### Counterparty risk

The Group has established standards for market transactions under which bank counterparties must be approved in advance, based on an assessment of the counterparty's financial soundness (multi-criteria analysis including a review of market prices and of the Credit Default Swap (CDS), its ratings with Standard & Poor's and Moody's, which must be of high quality, and its overall financial condition).

An overall authorized credit limit is set for each bank and is allotted among the subsidiaries and the Group's central treasury entities according to their needs.

To reduce the market value risk on its commitments, in particular for swaps set as part of bonds issuance, the Treasury Department has concluded margin call contracts with significant counterparties.

### Short-term interest rate exposure and cash

Cash balances, which are primarily composed of euros and dollars, are managed according to the guidelines established by the Group's senior management (to maintain an adequate level of liquidity, optimize revenue from investments considering existing interest rate yield curves, and minimize the cost of borrowing) over a less than twelve-month horizon and on the basis of a daily interest rate benchmark, primarily through short-term interest rate swaps and short-term currency swaps, without modifying currency exposure.

### Interest rate risk on non-current debt

The Group's policy consists of incurring non-current debt at a floating rate or at a fixed rate, depending on the interest rates at the time of issue. Debt is incurred in dollars, in euros according to general corporate needs. Long-term interest rate and currency swaps may be used to hedge bonds at their issuance in order to create a variable or fixed rate synthetic debt. In order to partially modify the interest rate structure of the long-term debt, TOTAL may also enter into long-term interest rate swaps.

### Currency exposure

The Group generally seeks to minimize the currency exposure of each entity to its functional currency (primarily the dollar, the euro, the pound sterling and the Norwegian krone).

For currency exposure generated by commercial activity, the hedging of revenues and costs in foreign currencies is typically performed using currency operations on the spot market and, in some cases, on the forward market. The Group rarely hedges future cash flows, although it may use options to do so.

With respect to currency exposure linked to non-current assets, the Group has a hedging policy of financing these assets in their functional currency.

Net short-term currency exposure is periodically monitored against limits set by the Group's senior management.

The non-current debt described in Note 15.1 to the Consolidated Financial Statements is generally raised by the corporate treasury entities either directly in dollars or in euros, or in other currencies which are then exchanged for dollars or euros through swap issues to appropriately match general corporate needs. The proceeds from these debt issuances are loaned to affiliates whose accounts are kept in dollars or in euros. Thus, the net sensitivity of these positions to currency exposure is not significant.

The Group's short-term currency swaps, the notional value of which appears in Note 15.2 to the Consolidated Financial Statements, are used to attempt to optimize the centralized cash management of the Group. Thus, the sensitivity to currency fluctuations which may be induced is likewise considered negligible.

### Sensitivity analysis on interest rate and foreign exchange risk

The tables below present the potential impact of an increase or decrease of 10 basis points on the interest rate yield curves for each of the currencies on the fair value of the current financial instruments as of December 31, 2016, 2015 and 2014.

Assets/(Liabilities) (M\$)	Carrying amount	Estimated fair value	Change in fair value due to a change in interest rate by	
			+10 basis points	-10 basis points
<b>As of December 31, 2016</b>				
Bonds (non-current portion, before swaps)	(36,656)	(37,757)	221	(221)
Swaps hedging fixed-rates bonds (liabilities)	(3,651)	(3,651)	-	-
Swaps hedging fixed-rates bonds (assets)	845	845	-	-
Total swaps hedging fixed-rates bonds (assets and liabilities)	(2,806)	(2,806)	(117)	117
Current portion of non-current debt after swap (excluding capital lease obligations)	(4,614)	(4,614)	5	(4)
Other interest rates swaps	33	33	7	(7)
Currency swaps and forward exchange contracts	(23)	(23)	-	-
<b>As of December 31, 2015</b>				
Bonds (non-current portion, before swaps)	(39,257)	(40,087)	156	(156)
Swaps hedging fixed-rates bonds (liabilities)	(2,891)	(2,891)	-	-
Swaps hedging fixed-rates bonds (assets)	1,219	1,219	-	-
Total swaps hedging fixed-rates bonds (assets and liabilities)	(1,672)	(1,672)	(144)	144
Current portion of non-current debt after swap (excluding capital lease obligations)	(4,518)	(4,518)	5	(5)
Other interest rates swaps	(1)	(1)	8	(8)
Currency swaps and forward exchange contracts	(26)	(26)	-	-
<b>As of December 31, 2014</b>				
Bonds (non-current portion, before swaps)	(43,088)	(44,079)	292	(286)
Swaps hedging fixed-rates bonds (liabilities)	(944)	(944)	-	-
Swaps hedging fixed-rates bonds (assets)	1,319	1,319	-	-
Total swaps hedging fixed-rates bonds (assets and liabilities)	375	375	(153)	149
Current portion of non-current debt after swap (excluding capital lease obligations)	(4,411)	(4,411)	5	(4)
Other interest rates swaps	2	2	3	(3)
Currency swaps and forward exchange contracts	318	318	-	-

The impact of changes in interest rates on the cost of net debt before tax is as follows:

**For the year ended December 31,**

(M\$)	2016	2015	2014
Cost of net debt	(1,104)	(873)	(640)
Interest rate translation of:			
+ 10 basis points	(17)	(20)	(19)
-10 basis points	17	20	19
+ 100 basis points	(172)	(204)	(193)
-100 basis points	172	204	193

As a result of the policy for the management of currency exposure previously described, the Group's sensitivity to currency exposure is primarily influenced by the net equity of the subsidiaries whose functional currency is the euro and the ruble, and to a lesser extent, the pound sterling, the Norwegian krone.

This sensitivity is reflected in the historical evolution of the currency translation adjustment recorded in the statement of changes in consolidated shareholders' equity which, over the course of the last three years, is essentially related to the fluctuation of the euro, the ruble and the pound sterling and is set forth in the table below:

	Dollar/Euro exchange rates	Dollar/Pound sterling exchange rates	Dollar/Ruble exchange rates
<b>December 31, 2016</b>	<b>0.95</b>	<b>0.81</b>	<b>61.00</b>
December 31, 2015	0.92	0.67	74.10
December 31, 2014	0.82	0.64	59.58



**As of December 31, 2016**

(M\$)	Total	Euro	Dollar	Pound sterling	Ruble	Other Currencies
Shareholders' equity at historical exchange rate	112,551	38,645	51,863	5,997	7,227	8,819
Currency translation adjustment before net investment hedge	(13,871)	(6,845)	-	(1,978)	(3,286)	(1,762)
Net investment hedge – open instruments	-	-	-	-	-	-
Shareholders' equity at exchange rate as of December 31, 2016	98,680	31,800	51,863	4,019	3,941	7,057

**As of December 31, 2015**

(M\$)	Total	Euro	Dollar	Pound sterling	Ruble	Other Currencies
Shareholders' equity at historical exchange rate	104,613	37,345	46,272	5,926	6,816	8,254
Currency translation adjustment before net investment hedge	(12,119)	(5,337)	-	(1,145)	(3,936)	(1,701)
Net investment hedge – open instruments	-	-	-	-	-	-
Shareholders' equity at exchange rate as of December 31, 2015	92,494	32,008	46,272	4,781	2,880	6,553

**As of December 31, 2014**

(M\$)	Total	Euro	Dollar	Pound sterling	Ruble	Other Currencies
Shareholders' equity at historical exchange rate	97,810	26,056	50,179	6,762	6,489	8,324
Currency translation adjustment before net investment hedge	(7,480)	(2,290)	-	(894)	(3,215)	(1,081)
Net investment hedge – open instruments	-	-	-	-	-	-
Shareholders' equity at exchange rate as of December 31, 2014	90,330	23,766	50,179	5,868	3,274	7,243

Based on the 2016 financial statements, a conversion using rates different from + or – 10% for each of the currencies below would have the following impact on shareholders equity and net income (Group share):

**As of December 31, 2016**

(M\$)	Euro	Pound sterling	Ruble
<b>Impact of an increase of 10% of exchange rates on:</b>			
– shareholders equity	3,180	402	394
– net income (Group share)	126	8	52
<b>Impact of a decrease of 10% of exchange rates on:</b>			
– shareholders equity	(3,180)	(402)	(394)
– net income (Group share)	(126)	(8)	(52)

**Stock market risk**

The Group holds interests in a number of publicly-traded companies (see Note 8 to the Consolidated Financial Statements). The market value of these holdings fluctuates due to various factors, including stock market trends, valuations of the sectors in which the companies operate, and the economic and financial condition of each individual company.

**Liquidity risk**

TOTAL S.A. has confirmed lines of credit granted by international banks, which are calculated to allow it to manage its short-term liquidity needs as required.

As of December 31, 2016, these lines of credit amounted to \$10,076 million, of which \$10,076 million was unused. The agreements for the lines of credit granted to TOTAL S.A. do not contain conditions related to the Company's financial ratios, to its financial ratings from specialized agencies, or to the occurrence of events that could have a material adverse effect on its financial position. As of December 31, 2016, the aggregate amount of the principal confirmed lines of credit granted by international banks to Group companies, including TOTAL S.A., was \$11,164 million, of which \$10,724 million was unused. The lines of credit granted to Group companies other than TOTAL S.A. are not intended to finance the Group's general needs; they are intended to finance either the general needs of the borrowing subsidiary or a specific project.

The following tables show the maturity of the financial assets and liabilities of the Group as of December 31, 2016, 2015 and 2014 (see Note 15.1 to the Consolidated Financial Statements).

**As of December 31, 2016**

(M\$)	Less than 1 year	1-2 years	2-3 years	3-4 years	4-5 years	More than 5 years	Total
<b>Assets/(Liabilities)</b>							
Non-current financial debt (notional value excluding interests)	-	(4,320)	(5,702)	(4,952)	(3,578)	(23,607)	(42,159)
Current borrowings	(13,920)	-	-	-	-	-	(13,920)
Other current financial liabilities	(327)	-	-	-	-	-	(327)
Current financial assets	4,548	-	-	-	-	-	4,548
Assets and liabilities available for sale or exchange	140	-	-	-	-	-	140
Cash and cash equivalents	24,597	-	-	-	-	-	24,597
<b>Net amount before financial expense</b>	<b>15,038</b>	<b>(4,320)</b>	<b>(5,702)</b>	<b>(4,952)</b>	<b>(3,578)</b>	<b>(23,607)</b>	<b>(27,121)</b>
Financial expense on non-current financial debt	(799)	(783)	(682)	(552)	(465)	(1,271)	(4,552)
Interest differential on swaps	(79)	(56)	(201)	(253)	(272)	(910)	(1,771)
<b>Net amount</b>	<b>14,160</b>	<b>(5,159)</b>	<b>(6,585)</b>	<b>(5,757)</b>	<b>(4,315)</b>	<b>(25,788)</b>	<b>(33,444)</b>

**As of December 31, 2015**

(M\$)	Less than 1 year	1-2 years	2-3 years	3-4 years	4-5 years	More than 5 years	Total
<b>Assets/(Liabilities)</b>							
Non-current financial debt (notional value excluding interests)	-	(4,602)	(4,420)	(5,542)	(4,965)	(23,716)	(43,245)
Current borrowings	(12,488)	-	-	-	-	-	(12,488)
Other current financial liabilities	(171)	-	-	-	-	-	(171)
Current financial assets	6,190	-	-	-	-	-	6,190
Assets and liabilities available for sale or exchange	(141)	-	-	-	-	-	(141)
Cash and cash equivalents	23,269	-	-	-	-	-	23,269
<b>Net amount before financial expense</b>	<b>16,659</b>	<b>(4,602)</b>	<b>(4,420)</b>	<b>(5,542)</b>	<b>(4,965)</b>	<b>(23,716)</b>	<b>(26,586)</b>
Financial expense on non-current financial debt	(763)	(813)	(747)	(663)	(524)	(1,104)	(4,614)
Interest differential on swaps	131	171	48	(55)	(126)	(610)	(441)
<b>Net amount</b>	<b>16,027</b>	<b>(5,244)</b>	<b>(5,119)</b>	<b>(6,260)</b>	<b>(5,615)</b>	<b>(25,430)</b>	<b>(31,641)</b>

**As of December 31, 2014**

(M\$)	Less than 1 year	1-2 years	2-3 years	3-4 years	4-5 years	More than 5 years	Total
<b>Assets/(Liabilities)</b>							
Non-current financial debt (notional value excluding interests)	-	(4,793)	(4,547)	(4,451)	(4,765)	(25,606)	(44,162)
Current borrowings	(10,942)	-	-	-	-	-	(10,942)
Other current financial liabilities	(180)	-	-	-	-	-	(180)
Current financial assets	1,293	-	-	-	-	-	1,293
Assets and liabilities available for sale or exchange	56	-	-	-	-	-	56
Cash and cash equivalents	25,181	-	-	-	-	-	25,181
<b>Net amount before financial expense</b>	<b>15,408</b>	<b>(4,793)</b>	<b>(4,547)</b>	<b>(4,451)</b>	<b>(4,765)</b>	<b>(25,606)</b>	<b>(28,754)</b>
Financial expense on non-current financial debt	(901)	(833)	(783)	(718)	(624)	(1,960)	(5,819)
Interest differential on swaps	369	167	(31)	(127)	(154)	(790)	(566)
<b>Net amount</b>	<b>14,876</b>	<b>(5,459)</b>	<b>(5,361)</b>	<b>(5,296)</b>	<b>(5,543)</b>	<b>(28,356)</b>	<b>(35,139)</b>

The following table sets forth financial assets and liabilities related to operating activities as of December 31, 2016, 2015 and 2014 (see Note 14 of the Notes to the Consolidated Financial Statements).

**As of December 31,**  
(M\$)

Assets/(Liabilities)	2016	2015	2014
Accounts payable	(23,227)	(20,928)	(24,150)
Other operating liabilities	(9,616)	(9,914)	(7,935)
<i>including financial instruments related to commodity contracts</i>	(2,077)	(1,609)	(1,073)
Accounts receivable, net	12,213	10,629	15,704
Other operating receivables	10,218	10,909	10,792
<i>including financial instruments related to commodity contracts</i>	2,425	3,379	2,502
<b>Total</b>	<b>(10,412)</b>	<b>(9,304)</b>	<b>(5,589)</b>

These financial assets and liabilities mainly have a maturity date below one year.

### Credit risk

Credit risk is defined as the risk of the counterparty to a contract failing to perform or pay the amounts due.

The Group is exposed to credit risks in its operating and financing activities. The Group's maximum exposure to credit risk is partially related to financial assets recorded on its balance sheet, including energy derivative instruments that have a positive market value.

The following table presents the Group's maximum credit risk exposure:

**As of December 31,**  
(M\$)

Assets/(Liabilities)	2016	2015	2014
Loans to equity affiliates (Note 8)	4,718	4,378	4,626
Loans and advances (Note 6)	3,048	3,407	3,326
Non-current financial assets (Note 15.1)	908	1,219	1,319
Accounts receivable (Note 5)	12,213	10,629	15,704
Other operating receivables (Note 5)	10,218	10,909	10,792
Current financial assets (Note 15.1)	4,548	6,190	1,293
Cash and cash equivalents (Note 15.1)	24,597	23,269	25,181
<b>Total</b>	<b>60,250</b>	<b>60,001</b>	<b>62,241</b>

The valuation allowance on accounts receivable, other operating receivables and on loans and advances is detailed in Notes 5 and 6 to the Consolidated Financial Statements.

As part of its credit risk management related to operating and financing activities, the Group has developed margining agreements with certain counterparties. As of December 31, 2016, the net margin call paid amounted to \$2,605 million (against \$124 million paid as of December 31, 2015 and \$1,437 million received as of December 31, 2014).

The Group has established a number of programs for the sale of receivables, without recourse, with various banks, primarily to reduce its exposure to such receivables. As a result of these programs the Group retains no risk of payment default after the sale, but may continue to service the customer accounts as part of a service arrangement on behalf of the buyer and is required to pay to the buyer payments it receives from the customers relating to the receivables sold. As of December 31, 2016, the net value of receivables sold amounted to \$5,369 million. The Group has substantially transferred all the risks and rewards related to receivables. No financial asset or liability remains recognized in the consolidated balance sheet after the date of sale.

Furthermore, in 2016 the Group conducted several operations of reverse factoring for a value of \$275 million and some operations of stock disposal for a value of \$366 million.

Credit risk is managed by the Group's business segments as follows:

#### Upstream segment

##### – Exploration & Production

Risks arising under contracts with government authorities or other oil companies or under long-term supply contracts necessary for the development of projects are evaluated during the project approval process. The long-term aspect of these contracts and the high-quality of the other parties lead to a low level of credit risk.

Risks related to commercial operations, other than those described above (which are, in practice, directly monitored by subsidiaries), are subject to procedures for establishing credit limits and reviewing outstanding balances.

Customer receivables are subject to provisions on a case-by-case basis, based on prior history and management's assessment of the facts and circumstances.

#### – Gas activities

Gas activities deal with counterparties in the energy, industrial and financial sectors throughout the world. Financial institutions providing credit risk coverage are highly rated international bank and insurance groups.

Potential counterparties are subject to credit assessment and approval before concluding transactions and are thereafter subject to regular review, including re-appraisal and approval of the limits previously granted.

The creditworthiness of counterparties is assessed based on an analysis of quantitative and qualitative data regarding financial standing and business risks, together with the review of any relevant third party and market information, such as data published by rating agencies. On this basis, credit limits are defined for each potential counterparty and, where appropriate, transactions are subject to specific authorizations.

Credit exposure, which is essentially an economic exposure or an expected future physical exposure, is permanently monitored and subject to sensitivity measures.

Credit risk is mitigated by the systematic use of industry standard contractual frameworks that permit netting, enable requiring added security in case of adverse change in the counterparty risk, and allow for termination of the contract upon occurrence of certain events of default.

### Refining & Chemicals segment

#### – Refining & Chemicals

Credit risk is primarily related to commercial receivables. Internal procedures of Refining & Chemicals include rules for the management of credit describing the fundamentals of internal control in this domain. Each Business Unit implements the procedures of the activity for managing and provisioning credit risk according to the size of the subsidiary and the market in which it operates. The principal elements of these procedures are:

- implementation of credit limits with different authorization procedures,
- use of insurance policies or specific guarantees (letters of credit),
- regular monitoring and assessment of overdue accounts (aging balance), including collection procedures,
- provisioning of bad debts on a customer-by-customer basis, according to payment delays and local payment practices (provisions may also be calculated based on statistics).

Counterparties are subject to credit assessment and approval prior to any transaction being concluded. Regular reviews are made for all active counterparties including a re-appraisal and renewing of the granted credit limits. The limits of the counterparties are assessed based on quantitative and qualitative data regarding financial standing, together with the review of any relevant third party and market information, such as that provided by rating agencies and insurance companies.

#### – Trading & Shipping

Trading & Shipping deals with commercial counterparties and financial institutions located throughout the world. Counterparties to physical and derivative transactions are primarily entities

involved in the oil and gas industry or in the trading of energy commodities, or financial institutions. Credit risk coverage is arranged with financial institutions, international banks and insurance groups selected in accordance with strict criteria.

The Trading & Shipping division applies a strict policy of internal delegation of authority governing establishment of country and counterparty credit limits and approval of specific transactions. Credit exposures contracted under these limits and approvals are monitored on a daily basis.

Potential counterparties are subject to credit assessment and approval prior to any transaction being concluded and all active counterparties are subject to regular reviews, including re-appraisal and approval of granted limits. The creditworthiness of counterparties is assessed based on an analysis of quantitative and qualitative data regarding financial standing and business risks, together with the review of any relevant third party and market information, such as ratings published by Standard & Poor's, Moody's Investors Service and other agencies.

Contractual arrangements are structured so as to maximize the risk mitigation benefits of netting between transactions wherever possible and additional protective terms providing for the provision of security in the event of financial deterioration and the termination of transactions on the occurrence of defined default events are used to the greatest permitted extent.

Credit risks in excess of approved levels are secured by means of letters of credit and other guarantees, cash deposits and insurance arrangements. In respect of derivative transactions, risks are secured by margin call contracts wherever possible.

### Marketing & Services segment

#### – Marketing & Services

Internal procedures for the Marketing & Services division include rules on credit risk that describe the basis of internal control in this domain, including the separation of authority between commercial and financial operations.

Credit policies are defined at the local level and procedures to monitor customer risk are implemented (credit committees at the subsidiary level, the creation of credit limits for corporate customers, etc.). Each entity also implements monitoring of its outstanding receivables. Risks related to credit may be mitigated or limited by subscription of credit insurance and/or requiring security or guarantees.

Bad debts are provisioned on a case-by-case basis at a rate determined by management based on an assessment of the risk of credit loss.

#### – New Energies

Internal procedures for the New Energies division include rules on credit risk management. Procedures to monitor customer risk are defined at the local level, especially for SunPower (rules for the approval of credit limits, use of guarantees, monitoring and assessment of the receivables portfolio, provisioning of doubtful debts...).

## 16) Financial instruments related to commodity contracts

### 16.1) Financial instruments related to commodity contracts

#### Accounting policies

Financial instruments related to commodity contracts, including crude oil, petroleum products, gas, and power purchase/sales contracts within the trading activities, together with the commodity contract derivative instruments such as energy contracts and forward freight agreements, are used to adjust the Group's exposure to price fluctuations within global trading limits. According to the industry practice, these instruments are considered as held for trading. Changes in fair value are recorded in the statement of income. The fair value of these instruments is recorded in "Other current assets" or "Other creditors and accrued liabilities" depending on whether they are assets or liabilities.

The valuation methodology is to mark-to-market all open positions for both physical and paper transactions. The valuations are determined on a daily basis using observable market data based on organized and over the counter (OTC) markets. In particular cases when market data is not directly available, the valuations are derived from observable data such as arbitrages, freight or spreads and market corroboration. For valuation of risks which are the result of a calculation, such as options for example, commonly known models are used to compute the fair value.

As of December 31, 2016 (M\$)	Gross value before offsetting - assets	Gross value before offsetting - liabilities	Amounts offset - assets <sup>(c)</sup>	Amounts offset - liabilities <sup>(c)</sup>	Net balance sheet value presented - assets	Net balance sheet value presented - liabilities	Other amounts not offset	Net carrying amount	Fair value <sup>(b)</sup>
<b>Assets/(Liabilities)</b>									
<b>Crude oil, petroleum products and freight rates activities</b>									
Petroleum products, crude oil and freight rate swaps	464	(266)	(140)	140	324	(126)	-	198	198
Forwards <sup>(a)</sup>	172	(214)	(8)	8	164	(206)	-	(42)	(42)
Options	194	(207)	(125)	125	69	(82)	-	(13)	(13)
Futures	-	-	-	-	-	-	-	-	-
Options on futures	151	(164)	(150)	150	1	(14)	-	(13)	(13)
Other/Collateral	-	-	-	-	-	-	(220)	(220)	(220)
<b>Total crude oil, petroleum products and freight rates</b>	<b>981</b>	<b>(851)</b>	<b>(423)</b>	<b>423</b>	<b>558</b>	<b>(428)</b>	<b>(220)</b>	<b>(90)</b>	<b>(90)</b>
<b>Gas activities</b>									
Swaps	63	(39)	(3)	3	60	(36)	-	24	24
Forwards <sup>(a)</sup>	1,879	(1,672)	(61)	61	1,818	(1,611)	-	207	207
Options	15	(28)	(26)	26	(11)	(2)	-	(13)	(13)
Futures	-	-	-	-	-	-	-	-	-
Other/Collateral	-	-	-	-	-	-	(97)	(97)	(97)
<b>Total Gas</b>	<b>1,957</b>	<b>(1,739)</b>	<b>(90)</b>	<b>90</b>	<b>1,867</b>	<b>(1,649)</b>	<b>(97)</b>	<b>121</b>	<b>121</b>
<b>Total</b>	<b>2,938</b>	<b>(2,590)</b>	<b>(513)</b>	<b>513</b>	<b>2,425</b>	<b>(2,077)</b>	<b>(317)</b>	<b>31</b>	<b>31</b>
<b>Total of fair value non recognized in the balance sheet</b>									
									-

(a) Forwards: contracts resulting in physical delivery are accounted for as derivative commodity contracts and included in the amounts shown.

(b) When the fair value of derivatives listed on an organized exchange market (futures, options on futures and swaps) is offset with the margin call received or paid in the balance sheet, this fair value is set to zero.

(c) Amounts offset in accordance with IAS 32.

As of December 31, 2015 (M\$)	Gross value before offsetting - assets	Gross value before offsetting - liabilities	Amounts offset - assets <sup>(c)</sup>	Amounts offset - liabilities <sup>(c)</sup>	Net balance sheet value presented - assets	Net balance sheet value presented - liabilities	Other amounts not offset	Net carrying amount	Fair value <sup>(b)</sup>
<b>Assets/(Liabilities)</b>									
<b>Crude oil, petroleum products and freight rates activities</b>									
Petroleum products, crude oil and freight rate swaps	1,517	(498)	(350)	350	1,167	(148)	-	1,019	1,019
Forwards <sup>(a)</sup>	68	(130)	(25)	25	43	(105)	-	(62)	(62)
Options	660	(468)	(460)	460	200	(8)	-	192	192
Futures	9	-	-	-	9	-	-	9	9
Options on futures	127	(128)	(127)	127	-	(1)	-	(1)	(1)
Other/Collateral	-	-	-	-	-	-	(1,145)	(1,145)	(1,145)
<b>Total crude oil, petroleum products and freight rates</b>	<b>2,381</b>	<b>(1,224)</b>	<b>(962)</b>	<b>962</b>	<b>1,419</b>	<b>(262)</b>	<b>(1,145)</b>	<b>12</b>	<b>12</b>
<b>Gas activities</b>									
Swaps	50	(175)	(19)	19	31	(156)	-	(125)	(125)
Forwards <sup>(a)</sup>	2,255	(1,498)	(320)	320	1,935	(1,178)	-	757	757
Options	5	(24)	(11)	11	(6)	(13)	-	(19)	(19)
Futures	-	-	-	-	-	-	-	-	-
Other/Collateral	-	-	-	-	-	-	23	23	23
<b>Total Gas</b>	<b>2,310</b>	<b>(1,697)</b>	<b>(350)</b>	<b>350</b>	<b>1,960</b>	<b>(1,347)</b>	<b>23</b>	<b>636</b>	<b>636</b>
<b>Total</b>	<b>4,691</b>	<b>(2,921)</b>	<b>(1,312)</b>	<b>1,312</b>	<b>3,379</b>	<b>(1,609)</b>	<b>(1,122)</b>	<b>648</b>	<b>648</b>
<b>Total of fair value non recognized in the balance sheet</b>									
									-

(a) Forwards: contracts resulting in physical delivery are accounted for as derivative commodity contracts and included in the amounts shown.

(b) When the fair value of derivatives listed on an organized exchange market (futures, options on futures and swaps) is offset with the margin call received or paid in the balance sheet, this fair value is set to zero.

(c) Amounts offset in accordance with IAS 32.

As of December 31, 2014 (M\$)	Gross value before offsetting - assets	Gross value before offsetting - liabilities	Amounts offset - assets <sup>(c)</sup>	Amounts offset - liabilities <sup>(c)</sup>	Net balance sheet value presented - assets	Net balance sheet value presented - liabilities	Other amounts not offset	Net carrying amount	Fair value <sup>(b)</sup>
<b>Assets/(Liabilities)</b>									
<b>Crude oil, petroleum products and freight rates activities</b>									
Petroleum products, crude oil and freight rate swaps	1,505	(465)	(384)	384	1,121	(81)	-	1,040	1,040
Forwards <sup>(a)</sup>	168	(197)	(56)	56	112	(141)	-	(29)	(29)
Options	928	(1,224)	(790)	790	138	(434)	-	(296)	(296)
Futures	5	-	-	-	5	-	-	5	5
Options on futures	307	(130)	(130)	130	177	-	-	177	177
Other/Collateral	-	-	-	-	-	-	(505)	(505)	(505)
<b>Total crude oil, petroleum products and freight rates</b>	<b>2,913</b>	<b>(2,016)</b>	<b>(1,360)</b>	<b>1,360</b>	<b>1,553</b>	<b>(656)</b>	<b>(505)</b>	<b>392</b>	<b>392</b>
<b>Gas activities</b>									
Swaps	138	(41)	(19)	19	119	(22)	-	97	97
Forwards <sup>(a)</sup>	1,110	(671)	(278)	278	832	(393)	-	439	439
Options	5	(9)	(7)	7	(2)	(2)	-	(4)	(4)
Futures	-	-	-	-	-	-	-	-	-
Other/Collateral	-	-	-	-	-	-	(89)	(89)	(89)
<b>Total Gas</b>	<b>1,253</b>	<b>(721)</b>	<b>(304)</b>	<b>304</b>	<b>949</b>	<b>(417)</b>	<b>(89)</b>	<b>443</b>	<b>443</b>
<b>Total</b>	<b>4,166</b>	<b>(2,737)</b>	<b>(1,664)</b>	<b>1,664</b>	<b>2,502</b>	<b>(1,073)</b>	<b>(594)</b>	<b>835</b>	<b>835</b>

**Total of fair value non recognized in the balance sheet**

- (a) Forwards: contracts resulting in physical delivery are accounted for as derivative commodity contracts and included in the amounts shown.  
(b) When the fair value of derivatives listed on an organized exchange market (futures, options on futures and swaps) is offset with the margin call received or paid in the balance sheet, this fair value is set to zero.  
(c) Amounts offset in accordance with IAS 32.

Most commitments on crude oil and refined products have a short term maturity (less than one year). The maturity of most Gas division derivatives is less than three years forward.

The changes in fair value of financial instruments related to commodity contracts are detailed as follows:

For the year ended December 31, (M\$)	Fair value as of January 1,	Impact on income	Settled contracts	Other	Fair value as of December 31,
<b>Crude oil, petroleum products and freight rates activities</b>					
<b>2016</b>	<b>1,157</b>	<b>3,013</b>	<b>(4,040)</b>	<b>-</b>	<b>130</b>
2015	897	3,318	(3,058)	-	1,157
2014	(128)	2,471	(1,445)	(1)	897
<b>Gas activities</b>					
<b>2016</b>	<b>613</b>	<b>392</b>	<b>(742)</b>	<b>(45)</b>	<b>218</b>
2015	532	113	3	(35)	613
2014	558	922	(909)	(39)	532

The fair value hierarchy for financial instruments related to commodity contracts is as follows:

As of December 31, 2016 (M\$)	Quoted prices in active markets for identical assets (level 1)	Prices based on observable data (level 2)	Prices based on non observable data (level 3)	Total
Crude oil, petroleum products and freight rates activities	(22)	152	-	130
Gas activities	409	(191)	-	218
<b>Total</b>	<b>387</b>	<b>(39)</b>	<b>-</b>	<b>348</b>

As of December 31, 2015 (M\$)	Quoted prices in active markets for identical assets (level 1)	Prices based on observable data (level 2)	Prices based on non observable data (level 3)	Total
Crude oil, petroleum products and freight rates activities	15	1,142	-	1,157
Gas activities	79	534	-	613
<b>Total</b>	<b>94</b>	<b>1,676</b>	<b>-</b>	<b>1,770</b>

As of December 31, 2014 (M\$)	Quoted prices in active markets for identical assets (level 1)	Prices based on observable data (level 2)	Prices based on non observable data (level 3)	Total
Crude oil, petroleum products and freight rates activities	239	658	-	897
Gas activities	92	440	-	532
<b>Total</b>	<b>331</b>	<b>1,098</b>	<b>-</b>	<b>1,429</b>

The description of each fair value level is presented in Note 15 to the Consolidated Financial Statements.

### Cash flow hedge

The impact on the statement of income and other comprehensive income of the hedging instruments related to commodity contracts and qualified as cash flow hedges is detailed as follows:

As of December 31, (M\$)	2016	2015	2014
Profit (Loss) recorded in equity during the period	(69)	-	-
Amount reclassified from equity to the income statement during the period	(1)	-	-

These financial instruments are mainly two years term Henry Hub derivatives.

As of December 31, 2016, the ineffective portion of these financial instruments is a loss of \$5 million. In 2015 and 2014, the ineffective portion of these financial instruments was nil.

## 16.2) Oil and Gas market related risks management

### Oil and gas market related risks

Due to the nature of its business, the Group has significant oil and gas trading activities as part of its day-to-day operations in order to optimize revenues from its oil and gas production and to obtain favorable pricing to supply its refineries.

In its international oil trading business, the Group follows a policy of not selling its future production. However, in connection with this trading business, the Group, like most other oil companies, uses energy derivative instruments to adjust its exposure to price fluctuations of crude oil, refined products, natural gas, and power. The Group also uses freight rate derivative contracts in its shipping business to adjust its exposure to freight-rate fluctuations. To hedge against this risk, the Group uses various instruments such as futures, forwards, swaps and options on organized markets or over-the-counter markets. The list of the different derivatives held by the Group in these markets is detailed in Note 16.1 to the Consolidated Financial Statements.

The Trading & Shipping division measures its market risk exposure, *i.e.*, potential loss in fair values, on its crude oil, refined products and freight rates trading activities using a value-at-risk technique. This technique is based on an historical model and makes an assessment of the market risk arising from possible future changes in market values over a 24-hour period. The calculation of the range of potential changes in fair values is based on the end-of-day exposures and historical price movements of the last 400 business days for all traded instruments and maturities. Options are systematically re-evaluated using appropriate models.

The “value-at-risk” represents the most unfavorable movement in fair value obtained with a 97.5% confidence level. This means that the Group’s portfolio result is likely to exceed the value-at-risk loss measure once over 40 business days if the portfolio exposures were left unchanged.



### Trading & Shipping: value-at-risk with a 97.5% probability

As of December 31,  
(M\$)

	High	Low	Average	Year end
<b>2016</b>	<b>24.6</b>	<b>7.2</b>	<b>14.0</b>	<b>22.1</b>
2015	11.6	5.5	8.6	7.4
2014	12.9	3.3	7.7	5.1

As part of its gas and power trading activity, the Group also uses derivative instruments such as futures, forwards, swaps and options in both organized and over-the-counter markets. In general, the transactions are settled at maturity date through physical delivery. The Gas division measures its market risk exposure, *i.e.*, potential loss in fair values, on its trading business using a value-at-risk technique. This technique is based on an historical model and

makes an assessment of the market risk arising from possible future changes in market values over a one-day period. The calculation of the range of potential changes in fair values takes into account a snapshot of the end-of-day exposures and the set of historical price movements for the past two years for all instruments and maturities in the global trading business.

### Gas division trading: value-at-risk with a 97.5% probability

As of December 31,  
(M\$)

	High	Low	Average	Year end
<b>2016</b>	<b>8.4</b>	<b>2.0</b>	<b>3.9</b>	<b>2.1</b>
2015	15.8	2.0	7.1	8.0
2014	15.4	3.2	6.0	4.0

The Group has implemented strict policies and procedures to manage and monitor these market risks. These are based on the separation of control and front-office functions and on an integrated information system that enables real-time monitoring of trading activities.

Limits on trading positions are approved by the Group's Executive Committee and are monitored daily. To increase flexibility and

encourage liquidity, hedging operations are performed with numerous independent operators, including other oil companies, major energy producers or consumers and financial institutions. The Group has established counterparty limits and monitors outstanding amounts with each counterparty on an ongoing basis.

## 17) Post closing events

On December 21, 2016, TOTAL announced the signing of an agreement with Petrobras related to the acquisition of a package of assets representing a global value of around \$2.2 billion, made of cash, carry and contingent payments. At the date the publication of the Consolidated Financial Statements is authorized, the transaction remains subject to the final execution of the Sale and Purchase agreements, to the relevant regulatory approvals and to partners' preemption rights only on the lara transaction.

On January 3, 2017, TOTAL acquired a 23% interest in the company Tellurian to develop an integrated gas project in the United States for an amount of \$203 million.

On January 31, 2017, TOTAL closed the sale of Atotech to the Carlyle Group.

## 18) Consolidation scope

As of December 31, 2016, 934 entities are consolidated of which 839 are fully consolidated and 95 are accounted for under equity method (E).

The table below sets forth the main Group consolidated entities:

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Upstream</b>					
	Abu Dhabi Gas Industries Limited	15.00%	E	United Arab Emirates	United Arab Emirates
	Abu Dhabi Gas Liquefaction Company Limited	5.00%	E	United Arab Emirates	United Arab Emirates
	Abu Dhabi Marine Areas Limited	33.33%	E	United Kingdom	United Arab Emirates
	Abu Dhabi Petroleum Company Limited	23.75%	E	United Kingdom	United Arab Emirates
	Angola Block 14 B.V.	50.01%		Netherlands	Angola
	Angola LNG Limited	13.60%	E	Bermuda	Angola
	Angola LNG Supply Services LLC	13.60%	E	United States	United States
	Bonny Gas Transport Limited	15.00%	E	Bermuda	Nigeria
	Brass Holdings S.A.R.L.	100.00%		Luxembourg	Luxembourg
	Brass LNG Limited	20.48%	E	Nigeria	Nigeria
	Cepsa Gas Comercializadora S.A.	35.00%	E	Spain	Spain
	Deer Creek Pipelines Limited	75.00%		Canada	Canada
	Dolphin Energy Limited	24.50%	E	United Arab Emirates	United Arab Emirates
	E.F. Oil And Gas Limited	100.00%		United Kingdom	United Kingdom
	Elf E&P	100.00%		France	France
	Elf Exploration UK Limited	100.00%		United Kingdom	United Kingdom
	Elf Petroleum Iran	100.00%		France	Iran
	Elf Petroleum UK Limited	100.00%		United Kingdom	United Kingdom
	Fosmax LNG	27.50%	E	France	France
	Gas Del Litoral SRLCV	25.00%	E	Mexico	Mexico
	Gas Investment and Services Company Limited	10.00%	E	Bermuda	Oman
	Gulf Total Tractebel Power Company PSJC	20.00%	E	United Arab Emirates	United Arab Emirates
	Hazira LNG Private Limited	26.00%	E	India	India
	Hazira Port Private Limited	26.00%	E	India	India
	Ichthys LNG PTY Limited	30.00%	E	Australia	Australia
	Lampiris France S.A.S.	100.00%		France	France
	Lampiris S.A.	100.00%		Belgium	Belgium
	Mabruk Oil Operations	49.02%		France	Libya
	Moattama Gas Transportation Company Limited	31.24%	E	Bermuda	Myanmar
	National Gas Shipping Company Limited	5.00%	E	United Arab Emirates	United Arab Emirates
	Nigeria LNG Limited	15.00%	E	Nigeria	Nigeria
	Norpipe Oil A/S	34.93%	E	Norway	Norway
	Norpipe Petroleum UK Limited	32.87%	E	United Kingdom	Norway
	Norsea Pipeline Limited	32.87%	E	United Kingdom	Norway
	North Oil Company	30.00%	E	Qatar	Qatar
	Novatek	18.90%	E	Russia	Russia
	Oman LNG LLC	5.54%	E	Oman	Oman
	Pars LNG Limited	40.00%	E	Bermuda	Iran
	Petrocedeño	30.32%	E	Venezuela	Venezuela
	Private Oil Holdings Oman Limited	10.00%	E	United Kingdom	Oman
	Qatar Liquefied Gas Company Limited	10.00%	E	Qatar	Qatar
	Qatar Liquefied Gas Company Limited (II)	16.70%	E	Qatar	Qatar
	Ruwais Fertilizer Industries Limited	33.33%	E	United Arab Emirates	United Arab Emirates
	Société Béarnaise De Gestion Industrielle	100.00%		France	France
	South Hook CHP	8.35%	E	United Kingdom	United Kingdom
	South Hook LNG Terminal Company Limited	8.35%	E	United Kingdom	United Kingdom
	Terneftegas LLC <sup>(a)</sup>	58.64%	E	Russia	Russia
	Total (BTC) B.V.	100.00%		Netherlands	Netherlands
	Total Abu Al Bu Khoosh	100.00%		France	United Arab Emirates
	Total Austral	100.00%		France	Argentina
	Total Brazil Services B.V.	100.00%		Netherlands	Netherlands
	Total Dolphin Midstream	100.00%		France	France
	Total E&P Absheron B.V.	100.00%		Netherlands	Azerbaijan

(a) % of control different from % of interest: 49%.

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Upstream (contd)</b>					
	Total E&P Algérie	100.00%		France	Algeria
	Total E&P Americas, LLC	100.00%		United States	United States
	Total E&P Angola	100.00%		France	Angola
	Total E&P Angola Block 15/06 Limited	100.00%		Bermuda	Angola
	Total E&P Angola Block 17.06	100.00%		France	Angola
	Total E&P Angola Block 25	100.00%		France	Angola
	Total E&P Angola Block 32	100.00%		France	Angola
	Total E&P Angola Block 33	100.00%		France	Angola
	Total E&P Angola Block 39	100.00%		France	Angola
	Total E&P Angola Block 40	100.00%		France	Angola
	Total E&P Aruba B.V.	100.00%		Netherlands	Aruba
	TOTAL E&P Asia Pacific Pte. Limited	100.00%		Singapore	Singapore
	Total E&P Australia	100.00%		France	Australia
	Total E&P Australia II	100.00%		France	Australia
	Total E&P Australia III	100.00%		France	Australia
	Total E&P Azerbaijan B.V.	100.00%		Netherlands	Azerbaijan
	Total E&P Bolivie	100.00%		France	Bolivia
	Total E&P Borneo B.V.	100.00%		Netherlands	Brunei
	Total E&P Bulgarie B.V.	100.00%		Netherlands	Bulgarie
	Total E&P Cambodge	100.00%		France	Cambodia
	Total E&P Canada Limited	100.00%		Canada	Canada
	Total E&P Chine	100.00%		France	China
	Total E&P Colombie	100.00%		France	Colombia
	Total E&P Congo	85.00%		Republic of the Congo	Republic of the Congo
	Total E&P Côte d'Ivoire	100.00%		France	Côte d'Ivoire
	Total E&P Côte d'Ivoire CI – 514	100.00%		France	Côte d'Ivoire
	Total E&P Côte d'Ivoire CI – 515	100.00%		France	Côte d'Ivoire
	Total E&P Côte d'Ivoire CI – 516	100.00%		France	Côte d'Ivoire
	Total E&P Côte d'Ivoire CI-605 B.V.	100.00%		Netherlands	Côte d'Ivoire
	Total E&P Cyprus B.V.	100.00%		Netherlands	Cyprus
	Total E&P Deep Offshore Borneo B.V.	100.00%		Netherlands	Brunei
	Total E&P Denmark B.V.	100.00%		Netherlands	Denmark
	Total E&P Do Brasil Ltda	100.00%		Brazil	Brazil
	Total E&P Dolphin Upstream	100.00%		France	France
	Total E&P Dubai	100.00%		France	United Arab Emirates
	Total E&P East El Burullus Offshore B.V.	100.00%		Netherlands	Egypt
	Total E&P Egypt Block 2 B.V.	100.00%		Netherlands	Egypt
	Total E&P Égypte	100.00%		France	Egypt
	Total E&P Europe and Central Asia Limited	100.00%		United Kingdom	United Kingdom
	Total E&P France	100.00%		France	France
	Total E&P Golfe Holdings	100.00%		France	Qatar
	Total E&P Golfe Limited	100.00%		France	Qatar
	Total E&P Guyane Française	100.00%		France	France
	Total E&P Holding Ichthys	100.00%		France	France
	Total E&P Holdings Australia PTY Limited	100.00%		Australia	Australia
	Total E&P Holdings Russia	100.00%		France	France
	Total E&P Holdings UAE B.V.	100.00%		Netherlands	United Arab Emirates
	Total E&P Ichthys B.V.	100.00%		Netherlands	Australia
	Total E&P Indonesia GMB Kutai II	100.00%		France	Indonesia
	Total E&P Indonesia Mentawai B.V.	100.00%		Netherlands	Indonesia
	Total E&P Indonesia South Mandar	100.00%		France	Indonesia
	Total E&P Indonesia Telen B.V.	100.00%		Netherlands	Indonesia
	Total E&P Indonésie	100.00%		France	Indonesia
	Total E&P Iran	100.00%		France	Iran
	Total E&P Iraq	100.00%		France	Iraq
	Total E&P Italia	100.00%		Italy	Italy
	Total E&P Kazakhstan	100.00%		France	Kazakhstan
	Total E&P Kenya B.V.	100.00%		Netherlands	Kenya
	Total E&P Kurdistan Region of Iraq (Harir) B.V.	100.00%		Netherlands	Iraq
	Total E&P Kurdistan Region of Iraq (Safen) B.V.	100.00%		Netherlands	Iraq

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Upstream (contd)</b>					
	Total E&P Kurdistan Region of Iraq (Taza) B.V.	100.00%		Netherlands	Iraq
	Total E&P Kurdistan Region of Iraq B.V.	100.00%		Netherlands	Iraq
	Total E&P Libye	100.00%		France	Libya
	Total E&P Malaysia	100.00%		France	Malaysia
	Total E&P Mauritania Block C9 B.V.	100.00%		Netherlands	Mauritania
	Total E&P Mauritanie	100.00%		France	Mauritania
	Total E&P Mauritanie Block TA29 B.V.	100.00%		Netherlands	Mauritania
	Total E&P Mexico S.A. de C.V.	100.00%		Mexico	Mexico
	Total E&P Mozambique B.V.	100.00%		Netherlands	Mozambique
	Total E&P Myanmar	100.00%		France	Myanmar
	Total E&P Nederland B.V.	100.00%		Netherlands	Netherlands
	Total E&P New Ventures Inc.	100.00%		United States	United States
	Total E&P Nigeria S.A.S.	100.00%		France	France
	Total E&P Nigeria Deepwater A Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater B Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater C Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater D Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater E Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater F Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater G Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Deepwater H Limited	100.00%		Nigeria	Nigeria
	Total E&P Nigeria Limited	100.00%		Nigeria	Nigeria
	Total E&P Norge AS	100.00%		Norway	Norway
	Total E&P Oman	100.00%		France	Oman
	Total E&P Philippines B.V.	100.00%		Netherlands	Philippines
	Total E&P PNG 2 B.V.	100.00%		Netherlands	Papua New Guinea
	Total E&P PNG 5 B.V.	100.00%		Netherlands	Papua New Guinea
	Total E&P PNG Limited	100.00%		Papua New Guinea	Papua New Guinea
	Total E&P Poland B.V.	100.00%		Netherlands	Poland
	Total E&P Qatar	100.00%		France	Qatar
	Total E&P RDC	100.00%		Democratic Republic of Congo	Democratic Republic of Congo
	Total E&P Research & Technology USA LLC	100.00%		United States	United States
	Total E&P Russie	100.00%		France	Russia
	Total E&P Sebuk	100.00%		France	Indonesia
	Total E&P Services China Company Limited	100.00%		China	China
	Total E&P South Africa B.V.	100.00%		Netherlands	South Africa
	Total E&P South Sageri	100.00%		France	Indonesia
	Total E&P South Sudan	100.00%		France	Republic of South Sudan
	Total E&P Syrie	100.00%		France	Syrian Arab Republic
	Total E&P Tadjikistan B.V.	100.00%		Netherlands	Tajikistan
	Total E&P Thailand	100.00%		France	Thailand
	Total E&P Timan-Pechora LLC	100.00%		Russia	Russia
	Total E&P Uganda B.V.	100.00%		Netherlands	Uganda
	Total E&P UK Limited	100.00%		United Kingdom	United Kingdom
	Total E&P Uruguay B.V.	100.00%		Netherlands	Uruguay
	Total E&P Uruguay Onshore B.V.	100.00%		Netherlands	Uruguay
	Total E&P USA Inc.	100.00%		United States	United States
	Total E&P USA Oil Shale, LLC	100.00%		United States	United States
	Total E&P Well Response	100.00%		France	France
	Total E&P Yamal	100.00%		France	France
	Total E&P Yemen	100.00%		France	Yemen
	Total E&P Yemen Block 3 B.V.	100.00%		Netherlands	Yemen
	Total Energie Gas GmbH	100.00%		Germany	Germany
	Total Énergie Gaz	100.00%		France	France
	Total Exploration M'Bridge	100.00%		Netherlands	Angola
	Total Facilities Management B.V.	100.00%		Netherlands	Netherlands
	Total Gabon	58.28%		Gabon	Gabon
	Total Gas & Power Actifs Industriels	100.00%		France	France
	Total Gas & Power Asia Private Limited	100.00%		Singapore	Singapore

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Upstream (contd)</b>					
	Total Gas & Power Brazil	100.00%		France	France
	Total Gas & Power Chartering Limited	100.00%		United Kingdom	United Kingdom
	Total Gas & Power Limited	100.00%		United Kingdom	United Kingdom
	Total Gas & Power North America Inc.	100.00%		United States	United States
	Total Gas & Power Services Limited	100.00%		United Kingdom	United Kingdom
	Total Gas & Power Thailand	100.00%		France	France
	Total Gas Contracts Limited	100.00%		United Kingdom	United Kingdom
	Total Gas Pipeline USA Inc.	100.00%		United States	United States
	Total Gas Y Electricidad Argentina S.A.	100.00%		Argentina	Argentina
	Total Gasandes	100.00%		France	France
	Total Gass Handel Norge AS	100.00%		Norway	Norway
	Total Gastransport Nederland B.V.	100.00%		Netherlands	Netherlands
	Total Gaz Electricité Holdings France	100.00%		France	France
	Total GLNG Australia	100.00%		France	Australia
	Total GLNG Australia Holdings	100.00%		France	Australia
	Total Holding Dolphin Amont	100.00%		France	France
	Total Holdings International B.V.	100.00%		Netherlands	Netherlands
	Total Holdings Nederland B.V.	100.00%		Netherlands	Netherlands
	Total Holdings Nederland International B.V.	100.00%		Netherlands	Netherlands
	Total LNG Angola	100.00%		France	France
	Total LNG Supply Services USA Inc.	100.00%		United States	United States
	Total Midstream Holdings UK Limited	100.00%		United Kingdom	United Kingdom
	Total NNS LLC	100.00%		United States	United Kingdom
	Total Oil and Gas South America	100.00%		France	France
	Total Oil and Gas Venezuela B.V.	100.00%		Netherlands	Venezuela
	Total Pars LNG	100.00%		France	Iran
	Total Participations Pétrolières Gabon	100.00%		Gabon	Gabon
	Total Petroleum Angola	100.00%		France	Angola
	Total Profils Pétroliers	100.00%		France	France
	Total Qatar Oil and Gas	100.00%		France	France
	Total South Pars	100.00%		France	Iran
	Total Tengah	100.00%		France	Indonesia
	Total Termokarstovoye B.V.	100.00%		Netherlands	Russia
	Total Tractebel Emirates O & M Company	50.00%	E	France	United Arab Emirates
	Total Tractebel Emirates Power Company	50.00%	E	France	United Arab Emirates
	Total Upstream Nigeria Limited	100.00%		Nigeria	Nigeria
	Total Upstream UK Limited	100.00%		United Kingdom	United Kingdom
	Total Venezuela	100.00%		France	France
	Total Yemen LNG Company Limited	100.00%		Bermuda	Bermuda
	Transportadora de Gas del Mercosur S.A.	32.68%	E	Argentina	Argentina
	Unitah Colorado Resources II, LLC	100.00%		United States	United States
	Yamal LNG <sup>(b)</sup>	29.48%	E	Russia	Russia
	Yemen LNG Company Limited	39.62%	E	Bermuda	Yemen
	Ypergas S.A.	37.33%		Venezuela	Venezuela
<b>Refining &amp; Chemicals</b>					
	Appryl S.N.C	50.00%		France	France
	Atlantic Trading and Marketing Financial Inc.	100.00%		United States	United States
	Atlantic Trading and Marketing Inc.	100.00%		United States	United States
	Atotech (China) Chemicals Limited	100.00%		China	China
	Atotech (Yangzhou) Chemicals Limited	100.00%		China	China
	Atotech Asia Pacific	100.00%		Hong Kong	Hong Kong
	Atotech B.V.	100.00%		Netherlands	Netherlands
	Atotech Canada Limited	100.00%		Canada	Canada
	Atotech CZ	100.00%		Czech Republic	Czech Republic
	Atotech de Mexico	100.00%		Mexico	Mexico
	Atotech Deutschland GmbH	100.00%		Germany	Germany
	Atotech Development Center Private Limited	100.00%		India	India
	Atotech do Brasil Galvanotecnica	100.00%		Brazil	Brazil
	Atotech Espana S.A.	100.00%		Spain	Spain

(b) % of control different from % of interest: 20.02%.

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Refining &amp; Chemicals (contd)</b>					
	Atotech France	100.00%		France	France
	Atotech India Private Limited	100.00%		India	India
	Atotech Istanbul Kimya Sanayi Ticaret Limited Sirketi	100.00%		Turkey	Turkey
	Atotech Italia	100.00%		Italy	Italy
	Atotech Japan	100.00%		Japan	Japan
	Atotech Korea Limited	100.00%		South Korea	South Korea
	Atotech Malaysia Sdn Bhd	100.00%		Malaysia	Malaysia
	Atotech Nederland B.V.	100.00%		Netherlands	Netherlands
	Atotech Österreich GmbH	100.00%		Austria	Austria
	Atotech Poland	100.00%		Poland	Poland
	Atotech SEA Pte	100.00%		Singapore	Singapore
	Atotech Servicios De Mexico S.A. de C.V.	100.00%		Mexico	Mexico
	Atotech SK	100.00%		Slovakia	Slovakia
	Atotech Skandinavien	100.00%		Sweden	Sweden
	Atotech Slovenija, Proizvodnja Keminih Izdelkov, D.D.	100.00%		Slovenia	Slovenia
	Atotech Taiwan	100.00%		Taiwan	Taiwan
	Atotech Thailand	100.00%		Thailand	Thailand
	Atotech UK	100.00%		United Kingdom	United Kingdom
	Atotech USA Inc.	100.00%		United States	United States
	Atotech Vietnam Company Limited	100.00%		Vietnam	Vietnam
	Balzatex S.A.S	100.00%		France	France
	Bary Controls Aerospace S.N.C.	100.00%		France	France
	BASF Total Petrochemicals LLC	40.00%		United States	United States
	Bay Junction Inc.	100.00%		United States	United States
	Borrachas Portalegre Ltda	100.00%		Portugal	Portugal
	BOU Verwaltungs GmbH	100.00%		Germany	Germany
	Buckeye Products Pipeline LP	14.66%	E	United States	United States
	Caoutchoucs Modernes S.A.S.	100.00%		France	France
	Catelsa-Caceres S.A.U.	100.00%		Spain	Spain
	Cie Tunisienne du Caoutchouc S.A.R.L.	100.00%		Tunisia	Tunisia
	Composite Industrie Maroc S.A.R.L.	100.00%		Morocco	Morocco
	Composite Industrie S.A.	100.00%		France	France
	Cosden, LLC	100.00%		United States	United States
	COS-MAR Company	50.00%		United States	United States
	Cray Valley (Guangzhou) Chemical Company, Limited	100.00%		China	China
	Cray Valley Czech	100.00%		Czech Republic	Czech Republic
	Cray Valley HSC Asia Limited	100.00%		China	China
	Cray Valley Italia S.R.L.	100.00%		Italy	Italy
	Cray Valley S.A.	100.00%		France	France
	CSSA – Chartering and Shipping Services S.A.	100.00%		Switzerland	Switzerland
	Dalian Total Consulting Company Limited	100.00%		China	China
	Dalian West Pacific Petrochemical Company Limited	22.41%	E	China	China
	Espa S.A.R.L.	100.00%		France	France
	Ethylène Est	99.98%		France	France
	Feluy Immobati	100.00%		Belgium	Belgium
	FINA Technology, Inc.	100.00%		United States	United States
	Financière Industrie	100.00%		France	France
	FPL Enterprises, Inc.	100.00%		United States	United States
	Gasket (Suzhou) Valve Components Company, Limited	100.00%		China	China
	Gasket International SPA	100.00%		Italy	Italy
	Grace Development Limited	100.00%		Hong Kong	Hong Kong
	Grande Paroisse S.A.	100.00%		France	France
	Guangzhou Sphere Chemicals Limited	100.00%		China	China
	Gulf Coast Pipeline LP	14.66%	E	United States	United States
	Hanwha Total Petrochemical Co. Limited	50.00%	E	South Korea	South Korea

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Refining &amp; Chemicals (contd)</b>					
	HBA Hutchinson Brasil Automotivo Ltda	100.00%		Brazil	Brazil
	Hutchinson (UK) Limited	100.00%		United Kingdom	United Kingdom
	Hutchinson (Wuhan) Automotive Rubber Products Company Limited	100.00%		China	China
	Hutchinson Aéronautique & Industrie Limited	100.00%		Canada	Canada
	Hutchinson Aeroservices GmbH	100.00%		Germany	Germany
	Hutchinson Aeroservices S.A.S.	100.00%		France	France
	Hutchinson Aerospace & Industry Inc.	100.00%		United States	United States
	Hutchinson Aerospace GmbH	100.00%		Germany	Germany
	Hutchinson Aftermarket USA Inc.	100.00%		United States	United States
	Hutchinson Antivibration Systems Inc.	100.00%		United States	United States
	Hutchinson Argentina S.A.	100.00%		Argentina	Argentina
	Hutchinson Autopartes Mexico S.A. de C.V.	100.00%		Mexico	Mexico
	Hutchinson Borrachas de Portugal Ltda	100.00%		Portugal	Portugal
	Hutchinson Corporation	100.00%		United States	United States
	Hutchinson d.o.o Ruma	100.00%		Serbia	Serbia
	Hutchinson Do Brasil S.A.	100.00%		Brazil	Brazil
	Hutchinson Fluid Management Systems Inc.	100.00%		United States	United States
	Hutchinson GmbH	100.00%		Germany	Germany
	Hutchinson Holding GmbH	100.00%		Germany	Germany
	Hutchinson Holdings UK Limited	100.00%		United Kingdom	United Kingdom
	Hutchinson Iberia S.A.	100.00%		Spain	Spain
	Hutchinson Industrial Rubber Products (Suzhou) Company, Limited	100.00%		China	China
	Hutchinson Industrias Del Caucho SAU	100.00%		Spain	Spain
	Hutchinson Industries Inc.	100.00%		United States	United States
	Hutchinson Japan Company Limited	100.00%		Japan	Japan
	Hutchinson Korea Limited	100.00%		South Korea	South Korea
	Hutchinson Maroc S.A.R.L. AU	100.00%		Morocco	Morocco
	Hutchinson Nichirin Brake Hoses SL	30.00%	E	Spain	Spain
	Hutchinson Palamos	100.00%		Spain	Spain
	Hutchinson Poland SP ZO.O.	100.00%		Poland	Poland
	Hutchinson Polymers S.N.C.	100.00%		France	France
	Hutchinson Porto Tubos Flexiveis Ltda	100.00%		Portugal	Portugal
	Hutchinson Precision Sealing Systems Inc.	100.00%		United States	United States
	Hutchinson Rubber Products Private Limited Inde	100.00%		France	India
	Hutchinson S.A.	100.00%		France	France
	Hutchinson S.N.C.	100.00%		France	France
	Hutchinson S.R.L. (Italie)	100.00%		Italy	Italy
	Hutchinson S.R.L. (Roumanie)	100.00%		Romania	Romania
	Hutchinson Sales Corporation	100.00%		United States	United States
	Hutchinson Santé S.N.C.	100.00%		France	France
	Hutchinson Seal De Mexico S.A. de CV.	100.00%		Mexico	Mexico
	Hutchinson Sealing Systems Inc.	100.00%		United States	United States
	Hutchinson SRO	100.00%		Czech Republic	Czech Republic
	Hutchinson Stop – Choc GmbH & CO. KG	100.00%		Germany	Germany
	Hutchinson Suisse S.A.	100.00%		Switzerland	Switzerland
	Hutchinson Transferencia de Fluidos S.A. de C.V.	100.00%		Mexico	Mexico
	Hutchinson Tunisie S.A.R.L.	100.00%		Tunisia	Tunisia
	Industrias Tecnicas De La Espuma SL	100.00%		Spain	Spain
	Industrielle Desmarquoy S.N.C.	100.00%		France	France
	Jéhier S.A.S	99.89%		France	France
	JPR S.A.S	100.00%		France	France
	Keumhan Vietnam Company Limited	100.00%		Vietnam	Vietnam
	KTN Kunststofftechnik Nobitz GmbH	100.00%		Germany	Germany
	Laffan Refinery Company Limited	10.00%	E	Qatar	Qatar
	Laffan Refinery Company Limited 2	10.00%	E	Qatar	Qatar
	LaPorte Pipeline Company LP	50.00%	E	United States	United States
	LaPorte Pipeline GP LLC	50.00%	E	United States	United States

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Refining &amp; Chemicals (contd)</b>					
	Le Joint Francais S.N.C.	100.00%		France	France
	Legacy Site Services LLC	100.00%		United States	United States
	Les Stratifiés S.A.S	100.00%		France	France
	Lone Wolf Land Company	100.00%		United States	United States
	LSS Funding Inc.	100.00%		United States	United States
	Machen Land Limited	100.00%		United Kingdom	United Kingdom
	Mapa – Spontex Inc.	100.00%		United States	United States
	Naphtachimie	50.00%		France	France
	Olutex Oberlausitzer Luftfahrttextilien GmbH	100.00%		Germany	Germany
	Pamargan (Malta) Products Limited	100.00%		Malta	Malta
	Pamargan Products Limited	100.00%		United Kingdom	United Kingdom
	Paulstra S.N.C.	100.00%		France	France
	Paulstra Silentbloc S.A.	100.00%		Belgium	Belgium
	Polyblend GmbH	68.00%		Germany	Germany
	Qatar Petrochemical Company Q.S.C. (QAPCO)	20.00%	E	Qatar	Qatar
	Qatofin Company Limited	49.09%	E	Qatar	Qatar
	Résilium	100.00%		Belgium	Belgium
	Retia	100.00%		France	France
	Retia USA LLC	100.00%		United States	United States
	San Jacinto Rail Limited	17.00%	E	United States	United States
	Saudi Aramco Total Refining & Petrochemical Company	37.50%	E	Saoudia Arabia	Saoudia Arabia
	SCI Cibat	83.33%		France	France
	Sealants Europe	34.00%	E	France	France
	SigmaKalon Group B.V.	100.00%		Netherlands	Netherlands
	Société du Pipeline Sud-Européen	35.14%	E	France	France
	Stillman Seal Corporation	100.00%		United States	United States
	Stop-Choc (UK) Limited	100.00%		United Kingdom	United Kingdom
	Techlam S.A.S.	100.00%		France	France
	Total Activités Maritimes	100.00%		France	France
	Total Deutschland GmbH <sup>(c)</sup>	100.00%		Germany	Germany
	Total Downstream UK PLC	100.00%		United Kingdom	United Kingdom
	Total European Trading	100.00%		France	France
	Total Laffan Refinery	100.00%		France	France
	Total Laffan Refinery II B.V.	100.00%		Netherlands	Netherlands
	Total Lindsey Oil Refinery Limited	100.00%		United Kingdom	United Kingdom
	Total Oil Trading S.A.	100.00%		Switzerland	Switzerland
	Total Olefins Antwerp	100.00%		Belgium	Belgium
	Total Opslag En Pijpleiding Nederland NV	55.00%		Netherlands	Netherlands
	Total PAR LLC	100.00%		United States	United States
	Total Petrochemicals & Refining Ordos B.V.	100.00%		Netherlands	Netherlands
	Total Petrochemicals & Refining S.A./NV <sup>(c)</sup>	100.00%		Belgium	Belgium
	Total Petrochemicals & Refining USA Inc. <sup>(c)</sup>	100.00%		United States	United States
	Total Petrochemicals (China) Trading Company, Limited	100.00%		China	China
	Total Petrochemicals (Foshan) Limited	100.00%		China	China
	Total Petrochemicals (Hong Kong) Limited	100.00%		Hong Kong	Hong Kong
	Total Petrochemicals (Ningbo) Limited	100.00%		China	China
	Total Petrochemicals Development Feluy	100.00%		Belgium	Belgium
	Total Petrochemicals Ecaussinnes	100.00%		Belgium	Belgium
	Total Petrochemicals Feluy	100.00%		Belgium	Belgium
	Total Petrochemicals France	100.00%		France	France
	Total Petrochemicals Iberica	100.00%		Spain	Spain
	Total Petrochemicals Pipeline USA Inc.	100.00%		United States	United States
	Total Petrochemicals UK Limited	100.00%		United Kingdom	United Kingdom
	Total Polymers Antwerp	100.00%		Belgium	Belgium
	Total Raffinaderij Antwerpen N.V.	100.00%		Belgium	Belgium
	Total Raffinage Chimie	100.00%		France	France
	Total Raffinage France	100.00%		France	France
	Total Raffinerie Mitteldeutschland GmbH	100.00%		Germany	Germany

(c) Multi-segment entities.



Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Refining &amp; Chemicals (contd)</b>					
	Total Refining & Chemicals Saudi Arabia S.A.S.	100.00%		France	France
	Total Research & Technology Feluy	100.00%		Belgium	Belgium
	Total Splitter USA Inc	100.00%		United States	United States
	Total Trading and Marketing Canada LP	100.00%		Canada	Canada
	Total Trading Asia Pte Limited	100.00%		Singapore	Singapore
	Total Trading Canada Limited	100.00%		Canada	Canada
	Total Trading Products S.A.	100.00%		Switzerland	Switzerland
	Transalpes S.N.C.	67.00%		France	France
	Trans-Ethylène	99.98%		France	France
	UAB Atotech – Chemeta	100.00%		Lithuania	Lithuania
	Vibrachoc SAU	100.00%		Spain	Spain
	Zeeland Refinery NV	55.00%		Netherlands	Netherlands
<b>Marketing &amp; Services</b>					
	8point3 General Partner, LLC	28.37%	E	United States	United States
	8point3 Holding Company, LLC	28.37%	E	United States	United States
	8point3 OpCo Holdings, LLC	20.71%	E	United States	United States
	8point3 Operating Company, LLC	20.71%	E	United States	United States
	Advanced Thermal Batteries Inc.	50.00%	E	United States	United States
	Aerospatiale Batteries (ASB)	50.00%	E	France	France
	Aetolia Energy Site Anonymi Energeiaki Etaireia (distinctive title Aetolia Energeiaki Etaireia)	39.71%		Greece	Greece
	Aetolia Energy Site Malta Limited	56.73%		Malta	Malta
	Air Total (Suisse) S.A.	100.00%		Switzerland	Switzerland
	Air Total International S.A.	100.00%		Switzerland	Switzerland
	Alcad AB	100.00%		Sweden	Sweden
	AlexSun 1 Malta Limited	56.73%		Malta	Malta
	AlexSun2 Malta Limited	56.73%		Malta	Malta
	Almyros Energy Solution Anonymi Energeiaki Etaireia (Distinctive Title Almyros Energeiaki A.E.)	39.71%		Greece	Greece
	Almyros Energy Solution Malta Limited	56.73%		Malta	Malta
	Alvea	100.00%		France	France
	Amco-Saft India Limited	100.00%		India	India
	Amyris Inc.	23.51%	E	United States	United States
	Antilles Gaz	100.00%		France	France
	Aragonne Solar, LLC	56.73%		United States	United States
	Ardeches Solaire – Draga 1	56.73%		France	France
	Arica Solar, LLC	56.73%		United States	United States
	Aristea	51.00%	E	Belgium	Belgium
	Arteco	49.99%	E	Belgium	Belgium
	AS 24	100.00%		France	France
	AS 24 Tankservice GmbH	100.00%		Germany	Germany
	AS24 Belgie N.V.	100.00%		Belgium	Belgium
	AS24 Española S.A.	100.00%		Spain	Spain
	AS24 Fuel Cards Limited	100.00%		United Kingdom	United Kingdom
	AS24 Polska SP ZO.O.	100.00%		Poland	Poland
	AUO SunPower Sdn. Bhd	56.73%		Malaysia	Malaysia
	Badenhorst PV 2 Hold Company LLC	56.73%		United States	United States
	Beit Hagedi Renewable Energies Limited	56.73%		Israel	Israel
	Bertophase (PTY) Limited	56.73%		South Africa	South Africa
	Bluestem Solar LLC	56.73%		United States	United States
	BNB Bloomfield Solar, LLC	56.73%		United States	United States
	Boulder Solar II, LLC	56.73%		United States	United States
	Boulder Solar III, LLC	56.73%		United States	United States
	Boulder Solar IV, LLC	56.73%		United States	United States
	Boulder Solar Power Parent, LLC	56.73%		United States	United States
	Boulder Solar Power, LLC	56.73%		United States	United States
	BSP Class B Member HoldCo, LLC	56.73%		United States	United States
	BSP Class B Member, LLC	56.73%		United States	United States
	BSP Holding Company, LLC	56.73%		United States	United States
	BSPCB Class B Member, LLC	56.73%		United States	United States

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Buffalo North Star Solar, LLC	56.73%		United States	United States
	Caldeo	100.00%		France	France
	Centrale Solaire 1	56.73%		France	United States
	Centrale Solaire 2	56.73%		France	United States
	Charente Maritime Solaire – St Léger 1	56.73%		France	France
	Charvet La Mure Bianco	100.00%		France	France
	Cogenra Development, Inc.	56.73%		United States	United States
	Cogenra Solar, Inc.	56.73%		United States	United States
	Compagnie Pétrolière de l'Ouest- CPO	100.00%		France	France
	Cooper Ranch Solar LLC	56.73%		United States	United States
	Corona Sands, LLC	28.36%		United States	United States
	CPE Énergies	100.00%		France	France
	Cristal Marketing Egypt	80.78%		Egypt	Egypt
	DCA-MORY-SHIP	100.00%		France	France
	Dear PV Hold Company LLC	56.73%		United States	United States
	Desert SunBurst, LLC	56.73%		United States	United States
	Diamond Energy PTY Limited	14.18%	E	Australia	Australia
	Dragonfly Systems, Inc.	56.73%		United States	United States
	Eau Chaude Réunion (ECR)	50.00%	E	France	France
	Egedis	100.00%		France	France
	Elf Oil UK Aviation Limited	100.00%		United Kingdom	United Kingdom
	Elf Oil UK Properties Limited	100.00%		United Kingdom	United Kingdom
	Fast Jung KB	100.00%		Sweden	Sweden
	First Philec Solar Corporation	8.51%	E	Philippines	Philippines
	Frieman & Wolf Batterietechnik GmbH	100.00%		Germany	Germany
	Georgia Sun I, LLC	56.73%		United States	United States
	GFS I Class B Member HoldCo, LLC	56.73%		United States	United States
	GFS I Class B Member, LLC	56.73%		United States	United States
	GFS I Holding Company, LLC	56.73%		United States	United States
	Gilat Renewable Energies Limited	56.73%		Israel	Israel
	Golden Fields Solar I Parent, LLC	56.73%		United States	United States
	Golden Fields Solar I, LLC	56.73%		United States	United States
	Golden Fields Solar II, LLC	56.73%		United States	United States
	Golden Fields Solar III, LLC	56.73%		United States	United States
	Golden Fields Solar IV, LLC	56.73%		United States	United States
	Greenbotics, Inc.	56.73%		United States	United States
	Guangzhou Elf Lubricants Company Limited	77.00%		China	China
	Helios Residential Solar Fund, LLC	56.73%		United States	United States
	Hemethia Successful Limited	56.73%		Malta	Malta
	High Plains Ranch I, LLC	56.73%		United States	United States
	Huaxia CPV (Inner Mongolia) Power Corporation, Limited	14.18%	E	China	China
	Industrial Power Services LLC	56.73%		United States	United States
	Infinite Sunshine 2015-1, LLC	56.73%		United States	United States
	Institut Photovoltaïque D'Ile De France (IPVF)	43.00%		France	France
	Java Solar, LLC	56.73%		United States	United States
	JDA Overseas Holdings, LLC	56.73%		United States	United States
	K2015014806 (South Africa) (PTY) Limited	56.73%		South Africa	United States
	K2015263261 (South Africa) (PTY) Limited	56.73%		South Africa	United States
	Kern High School District Solar, LLC	56.73%		United States	United States
	Kern High School District Solar (2), LLC	56.73%		United States	United States
	Klipgats 7 Hold Company LLC	56.73%		United States	United States
	Klipgats PV 3 Hold Company LLC	56.73%		United States	United States
	Kozani Energy Anonymi Energeiaki	56.73%		Greece	Greece
	Etaireia (distinctive title Kozani Energy S.A.)				
	Kozani Energy Malta Limited	56.73%		Malta	Malta
	Lemoore Stratford Land Holdings IV, LLC	56.73%		United States	United States
	Livingston Ridge Solar LLC	56.73%		United States	United States
	Loving Solar LLC	56.73%		United States	United States
	Lucerne Valley Solar I, LLC	56.73%		United States	United States

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Lucerne Valley Solar One Holdings, LLC	56.73%		United States	United States
	Luis Solar, LLC	56.73%		United States	United States
	Lux Residential Solar Fund, LLC	56.73%		United States	United States
	Mesquite Solar I, LLC	56.73%		United States	United States
	Michel Mineralölhandel GmbH	100.00%		Germany	Germany
	Missiles & Space Batteries Limited	50.00%	E	United Kingdom	United Kingdom
	Mulilo Prieska PV (RF) Proprietary Limited	27.00%	E	South Africa	South Africa
	Napa Sanitation District Solar, LLC	56.73%		United States	United States
	National Petroleum Refiners Of South Africa (PTY) Limited	18.22%	E	South Africa	South Africa
	Nevatim Green Energies Limited	56.73%		Israel	Israel
	Northstar Macys East Coast 2016, LLC	56.73%		United States	United States
	Northstar Macys Illinois, LLC	56.73%		United States	United States
	Northstar Macys Maryland 2015, LLC	56.73%		United States	United States
	Northstar Macys US West 2016, LLC	56.73%		United States	United States
	Northstar Santa Clara County 2016, LLC	56.73%		United States	United States
	Ochoa Solar LLC	56.73%		United States	United States
	Parrey Parent, LLC	56.73%		United States	United States
	Parrey, LLC	56.73%		United States	United States
	Patish (West) Green Energies Limited	56.73%		Israel	Israel
	Phantom Field Resources, LLC	56.73%		United States	United States
	Photovoltaic Park Malta Limited	56.73%		Malta	Malta
	Photovoltaica Parka Veroia Anonymi Etaireia	56.73%		Greece	Greece
	Pluto Acquisition Company, LLC	56.73%		United States	United States
	Produits Pétroliers Stela	99.99%		France	France
	Project Sunday Development, LLC	56.73%		United States	United States
	Project Sunday Holdings LLC	56.73%		United States	United States
	PV Salvador SpA	20.00%	E	Chile	Chile
	Quimica Vasca S.A. Unipersonal	100.00%		Spain	Spain
	Ray of Success Anonymi Energeiaki Etaireia (Distinctive Title Ray of Success A.E.)	39.71%		Greece	Greece
	Ray of Success Malta Limited	56.73%		Malta	Malta
	Redstone Solar I, LLC	56.73%		United States	United States
	Rotem SunPower Limited	56.73%		Israel	Israel
	Saft (Zhuhai FTZ) Batteries Company Limited	100.00%		China	China
	Saft AB	100.00%		Sweden	Sweden
	Saft Acquisition S.A.S	100.00%		France	France
	Saft America Inc.	100.00%		United States	United States
	Saft AS	100.00%		Norway	Norway
	Saft Australia PTY Limited	100.00%		Australia	Australia
	Saft Batterias SL	100.00%		Spain	Spain
	Saft Batterie Italia S.R.L.	100.00%		Italy	Italy
	Saft Batterien GmbH	100.00%		Germany	Germany
	Saft Batteries Pte Limited	100.00%		Singapore	Singapore
	Saft Batteries PTY Limited	100.00%		Australia	Australia
	Saft Batterijen B.V.	100.00%		Netherlands	Netherlands
	Saft Do Brasil Ltda	100.00%		Brazil	Brazil
	Saft Federal Systems Inc.	100.00%		United States	United States
	Saft Ferak AS	100.00%		Czech Republic	Czech Republic
	Saft Finance S.A.R.L	100.00%		Luxembourg	Luxembourg
	Saft Groupe S.A.	100.00%		France	France
	Saft Hong Kong Limited	100.00%		Hong Kong	Hong Kong
	Saft Japan KK	100.00%		Japan	Japan
	Saft JV Holding Company	100.00%		United States	United States
	Saft Limited	100.00%		United Kingdom	United Kingdom
	Saft LLC	100.00%		Russia	Russia
	Saft Nife ME Limited	100.00%		Cyprus	Cyprus
	Saft S.A.S	100.00%		France	France
	Saft Sweden AB	100.00%		Sweden	Sweden
	Sahara Solar Investment, LLC	56.73%		United States	United States

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Sandy Hills Solar I, LLC	56.73%		United States	United States
	Saudi Total Petroleum Products	51.00%	E	Saoudia Arabia	Saoudia Arabia
	Servauto Nederland B.V.	100.00%		Netherlands	Netherlands
	SGS Antelope Valley Development, LLC	56.73%		United States	United States
	Sgula (East) Green Energies Limited	56.73%		Israel	United States
	Sgula (West) Green Energies Limited	56.73%		Israel	Israel
	Shams Power Company PJSC	20.00%	E	United Arab Emirates	United Arab Emirates
	Société des transports pétroliers par pipeline	35.50%	E	France	France
	Société d'exploitation de centrales photovoltaïques 1	28.42%		France	France
	Société d'exploitation de l'usine de Rouen	98.98%		France	France
	Société mahoraise de stockage de produits pétroliers	100.00%		France	France
	Société Urbaine des Pétroles	100.00%		France	France
	S-Oil Total Lubricants Company Limited	50.00%	E	South Korea	South Korea
	Solar Assurance Capital PTY Limited	56.73%		Australia	Australia
	Solar Greenhouse I, LLC	56.73%		United States	United States
	Solar Star Arizona HMR-I, LLC	56.73%		United States	United States
	Solar Star Arizona I, LLC	56.73%		United States	United States
	Solar Star Arizona II, LLC	56.73%		United States	United States
	Solar Star Arizona III, LLC	56.73%		United States	United States
	Solar Star Arizona IV, LLC	56.73%		United States	United States
	Solar Star Arizona V, LLC	56.73%		United States	United States
	Solar Star Arizona VI, LLC	56.73%		United States	United States
	Solar Star Arizona VII, LLC	56.73%		United States	United States
	Solar Star Arizona XIII, LLC	56.73%		United States	United States
	Solar Star California I, LLC	56.73%		United States	United States
	Solar Star California IV, LLC	56.73%		United States	United States
	Solar Star California VII, LLC	56.73%		United States	United States
	Solar Star California XII, LLC	56.73%		United States	United States
	Solar Star California XL, LLC	56.73%		United States	United States
	Solar Star California XLI Parent, LLC	56.73%		United States	United States
	Solar Star California XLI, LLC	56.73%		United States	United States
	Solar Star California XLII, LLC	56.73%		United States	United States
	Solar Star California XLIII, LLC	56.73%		United States	United States
	Solar Star California XLIV, LLC	56.73%		United States	United States
	Solar Star California XLVI, LLC	56.73%		United States	United States
	Solar Star California XLVII, LLC	56.73%		United States	United States
	Solar Star California XLVIII, LLC	56.73%		United States	United States
	Solar Star California XV Parent, LLC	56.73%		United States	United States
	Solar Star California XV, LLC	56.73%		United States	United States
	Solar Star California XVI, LLC	56.73%		United States	United States
	Solar Star California XVII, LLC	56.73%		United States	United States
	Solar Star California XVIII, LLC	56.73%		United States	United States
	Solar Star California XXI, LLC	56.73%		United States	United States
	Solar Star California XXII, LLC	56.73%		United States	United States
	Solar Star California XXIII, LLC	56.73%		United States	United States
	Solar Star California XXIV, LLC	56.73%		United States	United States
	Solar Star California XXIX, LLC	56.73%		United States	United States
	Solar Star California XXV, LLC	56.73%		United States	United States
	Solar Star California XXVI, LLC	56.73%		United States	United States
	Solar Star California XXVII, LLC	56.73%		United States	United States
	Solar Star California XXVIII, LLC	56.73%		United States	United States
	Solar Star California XXX (2), LLC	56.73%		United States	United States
	Solar Star California XXXIV, LLC	56.73%		United States	United States
	Solar Star California XXXIX, LLC	56.73%		United States	United States
	Solar Star California XXXV, LLC	56.73%		United States	United States
	Solar Star California XXXVI, LLC	56.73%		United States	United States
	Solar Star California XXXVII, LLC	56.73%		United States	United States
	Solar Star California XXXVIII, LLC	56.73%		United States	United States

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Solar Star Colorado II, LLC	56.73%		United States	United States
	Solar Star Colorado III Parent, LLC	56.73%		United States	United States
	Solar Star Colorado III, LLC	56.73%		United States	United States
	Solar Star Connecticut I, LLC	56.73%		United States	United States
	Solar Star Hawaii I, LLC	56.73%		United States	United States
	Solar Star Hawaii IV, LLC	56.73%		United States	United States
	Solar Star Hi Air, LLC	56.73%		United States	United States
	Solar Star Massachusetts II, LLC	56.73%		United States	United States
	Solar Star New Jersey IV, LLC	56.73%		United States	United States
	Solar Star New York I, LLC	56.73%		United States	United States
	Solar Star Oceanside, LLC	56.73%		United States	United States
	Solar Star Oregon I, LLC	56.73%		United States	United States
	Solar Star Rancho CWD I, LLC	56.73%		United States	United States
	Solar Star Texas II, LLC	56.73%		United States	United States
	Solar Star Texas IV, LLC	56.73%		United States	United States
	Solar Star YC, LLC	56.73%		United States	United States
	SolarBridge Technologies, Inc.	56.73%		United States	United States
	South Asia LPG Private Limited	50.00%	E	India	India
	SP Cordobesa Malta Limited	56.73%		Malta	Malta
	SP Quintana Malta Limited	56.73%		Malta	Malta
	Spezial Geratebau Hamburg GmbH	100.00%		Germany	Germany
	SPML Land, Inc.	56.73%		Philippines	Philippines
	SPWR Energias Renovaveis Unipessoal, Ltda	56.73%		Portugal	Portugal
	SPWR EW 2013-1, LLC	0.57%		United States	United States
	SPWR MS 2013-1, LLC	28.36%		United States	United States
	SPWR UBS 2013-1, LLC	0.57%		United States	United States
	SPWR USB 2013-2, LLC	0.57%		United States	United States
	SPWR USB 2013-3, LLC	0.57%		United States	United States
	SSCA XLI Class B Member HoldCo, LLC	56.73%		United States	United States
	SSCA XLI Class B Member, LLC	56.73%		United States	United States
	SSCA XLI Holding Company, LLC	56.73%		United States	United States
	SSCA XXXII Holding Company, LLC	56.73%		United States	United States
	SSCO III Class B Holdings, LLC	56.73%		United States	United States
	SSCO III Holdings Company, LLC	56.73%		United States	United States
	SSCO III Managing Member, LLC	56.73%		United States	United States
	SSSA, LLC	56.73%		United States	United States
	Strata Solar, LLC	56.73%		United States	United States
	SunFront I, LLC	56.73%		United States	United States
	SunPower Access I, LLC	56.73%		United States	United States
	SunPower AssetCo, LLC	56.73%		United States	United States
	SunPower Bermuda Holdings	56.73%		Bermuda	Bermuda
	SunPower Capital Australia PTY Limited	56.73%		Australia	Australia
	SunPower Capital Services, LLC	56.73%		United States	United States
	SunPower Capital, LLC	56.73%		United States	United States
	SunPower Commercial Holding Company II, LLC	56.73%		United States	United States
	SunPower Commercial Holding Company III, LLC	56.73%		United States	United States
	SunPower Commercial II Class B, LLC	56.73%		United States	United States
	SunPower Commercial III Class B, LLC	56.73%		United States	United States
	SunPower Corp Israel Limited	56.73%		Israel	Israel
	SunPower Corporation	56.73%		United States	United States
	SunPower Corporation (Switzerland) S.A.R.L.	56.73%		Switzerland	Switzerland
	SunPower Corporation Australia PTY Limited	56.73%		Australia	Australia
	SunPower Corporation Limited	56.73%		Hong Kong	Hong Kong
	SunPower Corporation Malta Holdings Limited	56.73%		Malta	Malta
	SunPower Corporation Mexico, S. de R.L. de C.V.	56.73%		Mexico	Mexico
	SunPower Corporation	56.73%		South Africa	South Africa
	Southern Africa (PTY) Limited				
	SunPower Corporation SpA	56.73%		Chile	Chile
	SunPower Corporation UK Limited	56.73%		United Kingdom	United Kingdom
	SunPower Corporation, Systems	56.73%		United States	United States

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	SunPower DevCo, LLC	56.73%		United States	United States
	SunPower Development Company	56.73%		United States	United States
	SunPower Energía SpA	56.73%		Chile	Chile
	SunPower Energy Corporation Limited	56.73%		Hong Kong	United States
	SunPower Energy Systems (PTY) Limited	56.73%		South Africa	South Africa
	SunPower Energy Systems Canada Corporation	56.73%		Canada	Canada
	SunPower Energy Systems Korea	56.73%		South Korea	South Korea
	SunPower Energy Systems Singapore PTE Limited	56.73%		Singapore	Singapore
	SunPower Energy Systems Southern Africa (PTY) Limited	56.73%		South Africa	South Africa
	SunPower Energy Systems Spain, S.L.	56.73%		Spain	Spain
	SunPower Foundation	56.73%		United States	United States
	SunPower France S.A.S.	56.73%		France	France
	SunPower GmbH	56.73%		Germany	Germany
	SunPower HoldCo, LLC	56.73%		United States	United States
	SunPower Italia S.R.L.	56.73%		Italy	Italy
	SunPower Japan KK	56.73%		Japan	Japan
	SunPower Malta Limited	56.73%		Malta	Malta
	SunPower Manufacturing (PTY) Limited	56.73%		South Africa	South Africa
	SunPower Manufacturing Corporation Limited	56.73%		Hong Kong	United States
	SunPower Manufacturing de Vernejoul	56.73%		France	France
	SunPower Mühendislik Insaat Enerji Üretim ve Ticaret A.S	56.73%		Turkey	Turkey
	SunPower Nanao Parent, LLC	56.73%		United States	United States
	SunPower Netherlands Hold Company 1 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Hold Company 2 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Hold Company 3 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Hold Company 4 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Hold Company 5 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Hold Company 6 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Hold Company 7 B.V.	56.73%		Netherlands	Netherlands
	SunPower Netherlands Holdings B.V.	56.73%		Netherlands	Netherlands
	SunPower North America, LLC	56.73%		United States	United States
	SunPower Philippines Limited – Regional Operating Headquarters	56.73%		Cayman Islands	Philippines
	SunPower Philippines Manufacturing Limited	56.73%		Cayman Islands	Philippines
	SunPower Software I, Inc.	56.73%		United States	United States
	SunPower Solar Energy Technology (Tianjin) Corporation, Limited	56.73%		China	China
	SunPower Solar India Private Limited	56.73%		India	India
	SunPower Solar Malaysia Sdn. Bhd.	56.73%		Malaysia	Malaysia
	SunPower SolarProgram III, LLC	56.73%		United States	United States
	SunPower SolarProgram IV, LLC	56.73%		United States	United States
	SunPower Solarprogram V, LLC	56.73%		United States	United States
	SunPower Solarprogram VI, LLC	56.73%		United States	United States
	SunPower SolarProgram VII, LLC	56.73%		United States	United States
	SunPower SolarProgram VIII, LLC	56.73%		United States	United States
	SunPower SolarProgram IX, LLC	56.73%		United States	United States
	SunPower Systems Belgium SPRL	56.73%		Belgium	Belgium
	SunPower Systems Mexico S. de R.L. de C.V.	56.73%		Mexico	Mexico
	SunPower Systems S.A.R.L.	56.73%		Switzerland	Switzerland
	SunPower Technologies France S.A.S.	56.73%		France	France
	SunPower Technology Limited	56.73%		Cayman Islands	Cayman Islands
	SunPower YC Holdings, LLC	56.73%		United States	United States
	SunRay Italy S.R.L.	56.73%		Italy	Italy
	Sunrente Investissement France S.A.S.	56.73%		France	France
	SunRise 1, LLC	32.06%		United States	United States
	Sunzil	50.00%	E	France	France
	Sunzil Caraibes	50.00%	E	France	France

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Sunzil Mayotte S.A.S.	50.00%	E	France	France
	Sunzil Ocean Indien	50.00%	E	France	France
	Sunzil Pacific	50.00%	E	France	France
	Sunzil Polynésie	50.00%	E	France	France
	Sunzil Polynésie Services	50.00%	E	France	France
	Sunzil Services Caraïbes	50.00%	E	France	France
	Sunzil Services Ocean Indien	50.00%	E	France	France
	Swingletree Operations, LLC	56.73%		United States	United States
	Tadiran Batteries GmbH	100.00%		Germany	Germany
	Tadiran Batteries Limited	100.00%		Israel	Israel
	TEMASOL	56.73%		Morocco	Morocco
	Tenesol S.A.S.	56.73%		France	France
	Tenesol SPV1	56.73%		France	France
	Tenesol SPV2	56.73%		France	France
	Tenesol Venezuela	56.73%		Venezuela	Venezuela
	Tita Energy (PTY) Limited	56.73%		South Africa	United States
	Torimode (PTY) Limited	56.73%		South Africa	South Africa
	Toriprox (PTY) Limited	56.73%		South Africa	South Africa
	Torisol (PTY) Limited	56.73%		South Africa	South Africa
	Total (Africa) Limited	100.00%		United Kingdom	United Kingdom
	Total (Fiji) Limited	100.00%		Fiji Islands	Fiji Islands
	Total Abengoa Solar Emirates Investment Company B.V.	50.00%	E	Netherlands	United Arab Emirates
	Total Additifs et Carburants Spéciaux	100.00%		France	France
	Total Africa S.A.	100.00%		France	France
	Total Aviation & Export Limited	100.00%		Zambia	Zambia
	Total Belgium	100.00%		Belgium	Belgium
	Total Bitumen Deutschland GmbH	100.00%		Germany	Germany
	Total Bitumen UK Limited	100.00%		United Kingdom	United Kingdom
	Total Botswana (PTY) Limited	50.10%		Botswana	Botswana
	Total Burkina	100.00%		Burkina Faso	Burkina Faso
	Total Cambodge	100.00%		Cambodia	Cambodia
	Total Cameroun	67.01%		Cameroon	Cameroon
	Total Caraïbes	100.00%		France	France
	Total Ceska Republika S.R.O.	100.00%		Czech Republic	Czech Republic
	Total China Investment Company Limited	100.00%		China	China
	Total Congo	99.70%		Republic of the Congo	Republic of the Congo
	Total Corse	100.00%		France	France
	Total Côte D'Ivoire	72.99%		Côte d'Ivoire	Côte d'Ivoire
	Total Denmark A/S	100.00%		Denmark	Denmark
	Total Deutschland GmbH <sup>(c)</sup>	100.00%		Germany	Germany
	Total Egypt	80.78%		Egypt	Egypt
	Total Énergie Développement	100.00%		France	France
	Total Energie Do Brasil	56.73%		Brazil	Brazil
	Total Énergies Nouvelles Activités USA	100.00%		France	France
	Total Erg SPA	49.00%	E	Italy	Italy
	Total España S.A.	100.00%		Spain	Spain
	Total Especialidades Argentina	100.00%		Argentina	Argentina
	Total Ethiopia	100.00%		Ethiopia	Ethiopia
	Total Fluides	100.00%		France	France
	Total Freeport Corporation	51.00%	E	Philippines	Philippines
	Total Fuels Wuhan Company Limited	100.00%		China	China
	Total Glass Lubricants Europe GmbH	100.00%		Germany	Germany
	Total Guadeloupe	100.00%		France	France
	Total Guinea Ecuatorial	70.00%		Equatorial Guinea	Equatorial Guinea
	Total Guinée	100.00%		Guinea	Guinea
	Total Holding Asie	100.00%		France	France
	Total Holding India	100.00%		France	France
	Total Jamaica Limited	100.00%		Jamaica	Jamaica
	Total Jordan PSC	100.00%		Jordan	Jordan

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Total Kenya	93.96%		Kenya	Kenya
	Total Lesotho (PTY) Limited	50.10%		Lesotho	Lesotho
	Total Liban	100.00%		Lebanon	Lebanon
	Total Liberia Inc.	100.00%		Liberia	Liberia
	Total Lubricants (China) Company Limited	77.00%		China	China
	Total Lubricants Taiwan Limited	63.00%		Taiwan	Taiwan
	Total Lubrifiants	99.98%		France	France
	Total Lubrifiants Service Automobile	99.98%		France	France
	Total Luxembourg S.A.	100.00%		Luxembourg	Luxembourg
	Total Madagasikara S.A.	79.44%		Madagascar	Madagascar
	Total Mali	100.00%		Mali	Mali
	Total Marine Fuels	100.00%		Singapore	Singapore
	Total Marketing Services	100.00%		France	France
	Total Marketing Egypt	80.78%		Egypt	Egypt
	Total Marketing France	100.00%		France	France
	Total Marketing Gabon	90.00%		Gabon	Gabon
	Total Marketing Middle East Free Zone	100.00%		United Arab Emirates	United Arab Emirates
	Total Marketing Tchad	100.00%		Chad	Chad
	Total Marketing Uganda	100.00%		Uganda	Uganda
	Total Maroc	55.00%		Morocco	Morocco
	Total Mauritius	55.00%		Mauritius Island	Mauritius Island
	Total Mayotte	100.00%		France	France
	Total Mexico S.A. de C.V.	100.00%		Mexico	Mexico
	Total Mineraloel und Chemie GmbH	100.00%		Germany	Germany
	Total Mineralol GmbH	100.00%		Germany	Germany
	Total Mozambique	100.00%		Mozambique	Mozambique
	Total Namibia (PTY) Limited	50.10%		Namibia	Namibia
	Total Nederland NV	100.00%		Netherlands	Netherlands
	Total New Energies Limited	100.00%		United Kingdom	United Kingdom
	Total New Energies USA, Inc.	100.00%		United States	United States
	Total New Energies Ventures USA, Inc.	100.00%		United States	United States
	Total Niger S.A.	100.00%		Niger	Niger
	Total Nigeria PLC	61.72%		Nigeria	Nigeria
	Total Nuevas Energias Chile SpA	100.00%		Chile	Chile
	Total Oil Asia-Pacific Pte Limited	100.00%		Singapore	Singapore
	Total Oil India PVT Limited	100.00%		India	India
	Total Outre-Mer	100.00%		France	France
	Total Pacifique	100.00%		France	France
	Total Parco Pakistan Limited	50.00%	E	Pakistan	Pakistan
	Total Parko Marketing Limited	50.00%	E	Bahamas	Pakistan
	Total Petroleum (Shanghai) Company Limited	100.00%		China	China
	Total Petroleum Ghana Limited	76.74%		Ghana	Ghana
	Total Petroleum Puerto Rico Corp.	100.00%		Puerto Rico	Puerto Rico
	Total Philippines Corporation	51.00%	E	Philippines	Philippines
	Total Polska	100.00%		Poland	Poland
	Total Polynésie	99.54%		France	France
	Total RDC	60.00%		Democratic Republic of Congo	Democratic Republic of Congo
	Total Réunion	100.00%		France	France
	Total Romania S.A.	100.00%		Romania	Romania
	Total Sénégal	69.14%		Senegal	Senegal
	Total Sinochem Fuels Company Limited	49.00%	E	China	China
	Total Sinochem Oil Company Limited	49.00%	E	China	China
	Total South Africa (PTY) Limited	50.10%		South Africa	South Africa
	Total Specialties USA Inc.	100.00%		United States	United States
	Total Supply MS S.A.	100.00%		Switzerland	Switzerland
	Total Swaziland (PTY) Limited	50.10%		Swaziland	Swaziland
	Total Tanzania Limited	100.00%		Tanzania	Tanzania
	Total Tianjin Manufacturing Company Limited	77.00%		China	China
	Total Togo	76.72%		Togo	Togo



Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Marketing &amp; Services (contd)</b>					
	Total Tunisie	100.00%		Tunisia	Tunisia
	Total Turkey Pazarlama	100.00%		Turkey	Turkey
	Total UAE LLC	49.00%		United Arab Emirates	United Arab Emirates
	Total Uganda Limited	100.00%		Uganda	Uganda
	Total UK Limited	100.00%		United Kingdom	United Kingdom
	Total Union Océane	100.00%		France	France
	Total Vostok	100.00%		Russia	Russia
	Total Zambia	100.00%		Zambia	Zambia
	Total Zimbabwe Limited	80.00%		Zimbabwe	Zimbabwe
	Tyczka Totalgaz GmbH	50.00%	E	Germany	Germany
	Urim Green Energies Limited	56.73%		Israel	Israel
	V Energy S.A.	70.00%		Dominican Republic	Dominican Republic
	Vandenberg Solar I, LLC	56.73%		United States	United States
	Vega Solar 1 S.A.P.I. de C.V.	56.73%		Mexico	United States
	Vega Solar 2 S.A.P.I. de C.V.	56.73%		Mexico	United States
	Vega Solar 3 S.A.P.I. de C.V.	56.73%		Mexico	United States
	Vega Solar 4 S.A.P.I. de C.V.	56.73%		Mexico	United States
	Vega Solar 5 S.A.P.I. de C.V.	56.73%		Mexico	United States
	Whippletree Solar, LLC	56.73%		United States	United States
	Wildwood Solar II, LLC	56.73%		United States	United States
	Wood Draw Solar LLC	56.73%		United States	United States
	Zruha Green Energies Limited	56.73%		Israel	Israel
<b>Corporate</b>					
	Albatros	100.00%		France	France
	Elf Aquitaine	100.00%		France	France
	Elf Aquitaine Fertilisants	100.00%		France	France
	Elf Aquitaine Inc.	100.00%		United States	United States
	Elf Forest Products LLC	100.00%		United States	United States
	Etmofina	100.00%		Belgium	Belgium
	Financière Valorgest	100.00%		France	France
	Fingestval	100.00%		France	France
	Omnium Reinsurance Company S.A.	100.00%		Switzerland	Switzerland
	Pan Insurance Limited	100.00%		Ireland	Ireland
	Septentrion Participations	100.00%		France	France
	Socap S.A.S.	100.00%		France	France
	Société Civile Immobilière CB2	100.00%		France	France
	Sofax Banque	100.00%		France	France
	Sogapar	100.00%		France	France
	TOTAL S.A.	-		France	France
	Total Affiliates Capital USA Inc.	100.00%		United States	United States
	Total American Services Inc.	100.00%		United States	United States
	Total Capital	100.00%		France	France
	Total Capital Canada Limited	100.00%		Canada	Canada
	Total Capital International	100.00%		France	France
	Total Corporate Management (Beijing) Company Limited	100.00%		China	China
	Total Delaware Inc.	100.00%		United States	United States
	Total Energy Ventures Europe	100.00%		France	France
	Total Energy Ventures International	100.00%		France	France
	Total Finance	100.00%		France	France
	Total Finance Corporate Services Limited	100.00%		United Kingdom	United Kingdom
	Total Finance Global Services S.A.	100.00%		Belgium	Belgium
	Total Finance International B.V.	100.00%		Netherlands	Netherlands
	Total Finance Nederland B.V.	100.00%		Netherlands	Netherlands
	Total Finance USA Inc.	100.00%		United States	United States
	Total Funding Nederland B.V.	100.00%		Netherlands	Netherlands
	Total Funding Nederland International B.V.	100.00%		Netherlands	Netherlands
	Total Gestion Filiales	100.00%		France	France
	Total Gestion USA	100.00%		France	France

Business segment	Statutory corporate name	% Group interest	Method	Country of incorporation	Country of operations
<b>Corporate (contd)</b>					
	Total Global Information Technology Services	100.00%		France	France
	Total Global Information Technology Services Belgium	99.98%		Belgium	Belgium
	Total Holding Allemagne	100.00%		France	France
	Total Holdings Europe	100.00%		France	France
	Total Holdings UK Limited	100.00%		United Kingdom	United Kingdom
	Total Holdings USA Inc.	100.00%		United States	United States
	Total International NV	100.00%		Netherlands	Netherlands
	Total Nucléaire	100.00%		France	France
	Total Operations Canada Limited	100.00%		Canada	Canada
	Total Overseas Holding (PTY) Limited	100.00%		South Africa	Netherlands
	Total Participations	100.00%		France	France
	Total Petrochemicals & Refining S.A./NV <sup>(c)</sup>	100.00%		Belgium	Belgium
	Total Petrochemicals & Refining USA Inc. <sup>(c)</sup>	100.00%		United States	United States
	Total Petrochemicals Security USA Inc.	100.00%		United States	United States
	Total Resources (Canada) Limited	100.00%		Canada	Canada
	Total Treasury	100.00%		France	France
	Total UK Finance Limited	100.00%		United Kingdom	United Kingdom

(c) Multi-segment entities.

# Supplemental oil and gas information (unaudited)

1.	Oil and gas information pursuant to FASB Accounting Standards Codification 932	308
1.1.	Assessment process for reserves	.308
1.2.	Proved developed reserves	.309
1.3.	Proved undeveloped reserves	.309
1.4.	Estimated proved reserves of oil, bitumen and gas	.310
1.5.	Results of operations for oil and gas producing activities	.318
1.6.	Cost incurred	.321
1.7.	Capitalized costs related to oil and gas producing activities	.322
1.8.	Standardized measure of discounted future net cash flows (excluding transportation)	.323
1.9.	Changes in the standardized measure of discounted future net cash flows	.326
2.	Other information	327
2.1.	Net gas production, production prices and production costs	.327
3.	Report on the payments made to governments (Article L. 225-102-3 of the French Commercial Code)	329
3.1.	Reporting by country and type of Payment	.330
3.2.	Reporting of Payments by Project and by type of Payment, and by Government and by type of Payment	.331

# 1. Oil and gas information pursuant to FASB Accounting Standards Codification 932

Proved reserves estimates are calculated according to the Securities and Exchange Commission (SEC) Rule 4-10 of Regulation S-X set forth in the “Modernization of Oil and Gas Reporting” release (SEC Release n° 33-8995) and the Financial

Accounting Standard Board (FASB) Accounting Standards Update regarding Extractive Activities – Oil and Gas (ASC 932), which provide definitions and disclosure requirements.

## 1.1. Assessment process for reserves

The estimation of reserves is an ongoing process that is done within affiliates by experienced geoscientists, engineers and economists under the supervision of each affiliate’s General Management. Staff involved in reserves evaluation are trained to follow SEC-compliant internal guidelines and policies regarding criteria that must be met before reserves can be considered as proved. All of the Group’s proved reserves held in subsidiaries and equity affiliates are estimated within the affiliates of the Group with the exception of the proved reserves held by the equity affiliate PAO Novatek. The assessment of the net proved liquids and natural gas reserves of certain properties owned by PAO Novatek was completed as of December 31, 2016, in accordance with the standards applied by the Group, based on an independent third-party report from DeGolyer & MacNaughton. These independently assessed reserves account for 48% of PAO Novatek’s net proved reserves and 52% of the total net proved reserves TOTAL held in Russia as of December 31, 2016.

The technical validation process relies on a Technical Reserves Committee that is responsible for approving proved reserves changes above a certain threshold and technical evaluations of reserves associated with an investment decision that requires approval from the Exploration & Production Executive Committee. The Chairman of the Technical Reserves Committee is appointed by the Senior Management of Exploration & Production and its members represent expertise in reservoir engineering, production geology, production geophysics, drilling and development studies.

An internal control process related to reserves estimation is formalized and involves the following elements:

- A central Reserve Entity the responsibility of which is: to consolidate, document and archive the Group’s reserves; to ensure coherence of evaluations worldwide; to maintain the Corporate Reserves Guidelines Standards in line with SEC guidelines and policies; to deliver training on reserves evaluation and classification; and to conduct periodically in-depth technical review of reserves for each affiliate.
- An annual review of affiliates’ reserves conducted by an internal group of specialists selected for their expertise in geosciences and engineering and/or their knowledge of the affiliate. All members of this group, chaired by the Reserves Vice-President (“RVP”) of

the Development and Support to Operations division and composed of at least three Technical Reserves Committee members, are knowledgeable in the SEC guidelines for proved reserves evaluation. Their responsibility is to provide an independent review of reserves changes proposed by affiliates and ensure that reserves are estimated using appropriate standards and procedures.

- At the end of the annual review carried out by the Development division and Support to Operations, an SEC Reserves Committee chaired by the Exploration & Production Senior Vice President Corporate Affairs and comprised of the Development and Support to Operations, Exploration, Strategy and Legal Senior Vice Presidents, or their representatives, as well as the Chairman of the Technical Reserves Committee and the RVP, approves the elements of the SEC reserve booking proposals concerning criteria that are not dependent upon reservoir and geosciences techniques. The results of the annual review and the proposals for including revisions or additions of SEC Proved Reserves are presented to the Exploration & Production Executive Committee for approval before final validation by the Group’s General Management and Chief Financial Officer.

The reserves evaluation and control process is audited periodically by the Group’s internal auditors.

The RVP of the Development and Support to Operations division is the technical person responsible for preparing the reserves estimates for the Group. Appointed by the President of Exploration & Production, the RVP supervises the Reserve Entity, chairs the annual review of reserves, and is a member of the Technical Reserves Committee and the SEC Reserves Committee. The current RVP has over thirty years of experience in the oil and gas industry. He previously held several management positions in the Group in reservoir engineering and geosciences, and has more than fifteen years of experience in the field of reserves evaluation and control process. He holds an engineering degree from *Institut National des Sciences Appliquées*, Lyon, France, and a petroleum engineering degree from *École Nationale Supérieure du Pétrole et des Moteurs* (IFP School), France. He is the current Chairman of the Society of Petroleum Engineers Oil and Gas Reserves Committee and a member of the UNECE (United Nations Economic Commission for Europe) Expert Group on Resource Classification.

## 1.2. Proved developed reserves

As of December 31, 2016, proved developed reserves of hydrocarbons (crude oil, LNG, bitumen and natural gas) were 6,667 Mboe and represented 58% of the proved reserves. As of December 31, 2015, proved developed reserves of hydrocarbons (crude oil, LNG, bitumen and natural gas) were 6,186 Mboe and represented 53% of the proved reserves. As of December 31, 2014, proved

developed reserves of hydrocarbons (crude oil, LNG, bitumen and natural gas) were 5,706 Mboe and represented 50% of the proved reserves. Over the past three years, the average of proved developed reserves renewal has remained above 1,100 Mboe per year, illustrating TOTAL's ability to consistently transfer proved undeveloped reserves into developed status.

## 1.3. Proved undeveloped reserves

As of December 31, 2016, TOTAL's combined proved undeveloped reserves of oil and gas were 4,851 Mboe compared to 5,394 Mboe at the end of 2015. The decrease of 543 Mboe of proved undeveloped reserves was due to the addition of 440 Mboe of undeveloped reserves related to extensions and discoveries, -340 Mboe due to revisions of previous estimates, -108 Mboe related to acquisitions/divestitures and -535 Mboe due to the booking of proved undeveloped reserves to proved developed reserves. In 2016, the cost incurred to develop proved undeveloped reserves (PUDs) was \$11.8 billion, which represented 87% of 2016 development costs incurred, and was related to projects located for the most part in Angola, Australia, Canada, the Republic of the Congo, Kazakhstan, Nigeria, Norway, the United Arab Emirates and the United Kingdom.

The revisions to previous estimates of -340 Mboe were due to:

- -16 Mboe due to new information obtained from drilling and production history, including primarily revision of the proved undeveloped reserves in some fields in Russia, the Republic of the Congo and Nigeria, and additional infill wells in Qatar and the United Arab Emirates;
- -262 Mboe due to economic factors as a result of lower yearly average hydrocarbon prices, including primarily a partial debooking of the Canadian oil sands proved undeveloped reserves, an economic cut-off effect (*i.e.*, end of economic production coming earlier) on several fields, partially compensated by a higher entitlement share (from, in particular, assets in Canada and certain other production sharing and risked service contracts); and
- -62 Mboe due to other revisions including reclassification of certain projects out of proved reserves primarily in Nigeria and the United States.

The overall decrease of -108 Mboe related to acquisitions/divestitures consists primarily of divestitures, including mainly the sales of a 1.87% interest in Yamal (Russia), a 10% interest in Incahuasi & Aquio (Bolivia), a 20% interest in Kharyaga (Russia) and a 15% interest in Gina Krog (Norway).

Approximately 44% of the Group's proved undeveloped reserves are associated with producing projects and are located for the most part in Russia, Kazakhstan, Nigeria, Norway, Canada and Qatar.

These reserves are expected to be developed over time as part of initial field development plans or additional development phases.

The timing to bring these proved reserves into production will depend upon several factors including reservoir performance, surface facilities or plant capacity constraints and contractual limitations on production levels. The remaining proved undeveloped reserves correspond to undeveloped fields or assets for which a development has been sanctioned or is in progress.

The Group's portfolio of projects includes a few large scale and complex developments for which reserves have remained proved undeveloped for more than five years or the Group anticipates that it may take more than five years from the time of recording proved reserves to the start of production. These specific projects represent approximately 29% of the Group's proved undeveloped reserves and include developments in deep offshore Nigeria, in offshore Australia and Norway and in oil sands in Canada.

These projects are highly complex to develop due to a combination of factors that include, among others, the nature of the reservoir rock and fluid properties, challenging market and operating environments, and the size of the projects. In addition, some of these projects are generally designed and optimized for a given production capacity that controls the pace at which the field is developed and the wells are drilled. At production start-up, only a portion of the proved reserves are developed in order to deliver sufficient production potential to meet capacity constraints and contractual obligations. Under these specific circumstances, the Group believes that it is justified to report as proved reserves the level of reserves used in connection with the approved project, despite the fact that some of these PUDs may remain undeveloped for more than five years. In addition, TOTAL has demonstrated in recent years the Group's ability to develop and bring into production similar large scale and complex projects, including the development of deep-offshore fields in Angola, Nigeria, the Republic of the Congo, HP/HT fields in the United Kingdom, heavy oil projects in Venezuela and LNG projects in Qatar, Yemen, Nigeria and Indonesia.

The tables provided below are presented by the following geographic areas: Europe and Central Asia (with figures shown for Russia separately), Africa (excluding North Africa), the Americas, Middle East and North Africa, and Asia-Pacific.

## 1.4. Estimated proved reserves of oil, bitumen and gas

The following tables present, for oil, bitumen and gas reserves, an estimate of the Group's oil, bitumen and gas quantities by geographic areas as of December 31, 2016, 2015 and 2014.

Quantities shown correspond to proved developed and undeveloped reserves together with changes in quantities for 2016, 2015 and 2014.

The definitions used for proved, proved developed and proved undeveloped oil and gas reserves are in accordance with the revised Rule 4-10 of SEC Regulation S-X.

All references in the following tables to reserves or production are to the Group's entire share of such reserves or production. TOTAL's worldwide proved reserves include the proved reserves of its consolidated subsidiaries as well as its proportionate share of the proved reserves of equity affiliates.

Significant changes in proved reserves between 2015 and 2016 are discussed below.

For consolidated subsidiaries, the revisions of +88 Mboe for the year 2016 were due to:

- +496 Mboe due to new information obtained from drilling and production history mainly in the United Arab Emirates and the United States and the rebooking of certain fields onshore in Libya that re-started production;

- -347 Mboe due to economic factors as a result of lower yearly average hydrocarbon prices, including primarily a partial debooking of the Canadian oil sands proved undeveloped reserves, as well as an earlier economic limit on a number of other assets, partly compensated, in particular, by higher entitlement share from production sharing and risked service contracts; and
- -61 Mboe due to other revisions including primarily a reclassification of certain projects out of proved reserves on a number of other assets.

The acquisition in the Americas corresponds to the purchase of Chesapeake's share in the Barnett closed in November 2016.

For equity affiliates, the revisions of +83 Mboe for the year 2016 were due to:

- +58 Mboe mainly due to new information obtained from drilling and production history mainly in Qatar and Russia; and
- +25 Mboe due to economic factors related to a higher entitlement share as a result of lower yearly average hydrocarbon prices.

The extensions in Russia correspond mainly to the booking of the two last gas sales agreements on Yamal LNG.

The acquisition in the zone of Middle East and North Africa corresponds to the entry in the Northern Oil Company operating the Al Shaheen field in Qatar.

### Price impact on proved reserves

(in million barrels of oil equivalent)

Consolidated subsidiaries and equity affiliates

Proved reserves 2016 based on SEC rules (42.82 \$/b) <sup>(a)</sup>	11,518
Price impact	387
Proved reserves 2016 at constant price (54.17 \$/b) <sup>(b)</sup>	11,905

(a) 42.82 \$/b was the average Brent price of the first day of each month of 2016.

(b) 54.17 \$/b was the average Brent price of the first day of each month of 2015.

### 1.4.1. Changes in oil, bitumen and gas reserves

(in million barrels of oil equivalent)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	<b>2,287</b>	<b>28</b>	<b>2,414</b>	<b>590</b>	<b>1,824</b>	<b>1,082</b>	<b>8,225</b>
Revisions of previous estimates	26	4	42	13	(11)	26	100
Extensions, discoveries and other	21	-	111	3	151	29	315
Acquisitions of reserves in place	1	-	-	-	-	-	1
Sales of reserves in place	(232)	-	(21)	-	-	-	(253)
Production for the year	(138)	(3)	(222)	(49)	(76)	(87)	(575)
<b>Balance as of December 31, 2014 - Brent at 101.27 \$/b</b>	<b>1,965</b>	<b>29</b>	<b>2,324</b>	<b>557</b>	<b>1,888</b>	<b>1,050</b>	<b>7,813</b>
Revisions of previous estimates	1	-	(4)	(7)	144	62	196
Extensions, discoveries and other	11	-	9	864	6	7	897
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	(28)	-	(76)	-	(160)	-	(264)
Production for the year	(137)	(4)	(233)	(105)	(79)	(94)	(652)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	<b>1,812</b>	<b>25</b>	<b>2,020</b>	<b>1,309</b>	<b>1,799</b>	<b>1,025</b>	<b>7,990</b>
Revisions of previous estimates	49	1	1	232	(234)	39	88
Extensions, discoveries and other	47	-	11	5	33	15	111
Acquisitions of reserves in place	-	-	-	-	152	-	152
Sales of reserves in place	(27)	(13)	-	-	(21)	-	(61)
Production for the year	(155)	(2)	(230)	(104)	(90)	(97)	(678)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	<b>1,726</b>	<b>11</b>	<b>1,802</b>	<b>1,442</b>	<b>1,639</b>	<b>982</b>	<b>7,602</b>

Minority interest in proved developed and undeveloped reserves as of

December 31, 2014 - Brent at 101.27 \$/b	-	-	146	-	-	-	146
December 31, 2015 - Brent at 54.17 \$/b	-	-	128	-	-	-	128
<b>December 31, 2016 - Brent at 42.82 \$/b</b>	<b>-</b>	<b>-</b>	<b>105</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>105</b>

(in million barrels of oil equivalent)

Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	<b>-</b>	<b>1,642</b>	<b>76</b>	<b>1,335</b>	<b>248</b>	<b>-</b>	<b>3,301</b>
Revisions of previous estimates	-	6	(2)	(8)	2	-	(2)
Extensions, discoveries and other	-	516	-	2	-	-	518
Acquisitions of reserves in place	-	107	-	-	-	-	107
Sales of reserves in place	-	(6)	-	-	-	-	(6)
Production for the year	-	(83)	(1)	(110)	(14)	-	(208)
<b>Balance as of December 31, 2014 - Brent at 101.27 \$/b</b>	<b>-</b>	<b>2,182</b>	<b>73</b>	<b>1,219</b>	<b>236</b>	<b>-</b>	<b>3,710</b>
Revisions of previous estimates	-	96	(2)	(10)	(44)	-	40
Extensions, discoveries and other	-	-	-	-	-	-	-
Acquisitions of reserves in place	-	56	-	-	-	-	56
Sales of reserves in place	-	(12)	-	-	-	-	(12)
Production for the year	-	(102)	-	(88)	(14)	-	(204)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	<b>-</b>	<b>2,220</b>	<b>71</b>	<b>1,121</b>	<b>178</b>	<b>-</b>	<b>3,590</b>
Revisions of previous estimates	-	16	-	68	(1)	-	83
Extensions, discoveries and other	-	331	-	-	-	-	331
Acquisitions of reserves in place	-	-	-	190	-	-	190
Sales of reserves in place	-	(59)	-	-	-	-	(59)
Production for the year	-	(119)	(1)	(87)	(12)	-	(219)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	<b>-</b>	<b>2,389</b>	<b>70</b>	<b>1,292</b>	<b>165</b>	<b>-</b>	<b>3,916</b>

(in million barrels of oil equivalent)

## Consolidated subsidiaries and equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>As of December 31, 2014 - Brent at 101.27 \$/b</b>							
<b>Proved developed and undeveloped reserves</b>	<b>1,965</b>	<b>2,211</b>	<b>2,397</b>	<b>1,776</b>	<b>2,124</b>	<b>1,050</b>	<b>11,523</b>
Consolidated subsidiaries	1,965	29	2,324	557	1,888	1,050	7,813
Equity affiliates	-	2,182	73	1,219	236	-	3,710
<b>Proved developed reserves</b>	<b>991</b>	<b>1,067</b>	<b>1,321</b>	<b>1,593</b>	<b>535</b>	<b>199</b>	<b>5,706</b>
Consolidated subsidiaries	991	18	1,304	467	450	199	3,429
Equity affiliates	-	1,049	17	1,126	85	-	2,277
<b>Proved undeveloped reserves</b>	<b>974</b>	<b>1,144</b>	<b>1,076</b>	<b>183</b>	<b>1,589</b>	<b>851</b>	<b>5,817</b>
Consolidated subsidiaries	974	11	1,020	90	1,438	851	4,384
Equity affiliates	-	1,133	56	93	151	-	1,433
<b>As of December 31, 2015 - Brent at 54.17 \$/b</b>							
<b>Proved developed and undeveloped reserves</b>	<b>1,812</b>	<b>2,245</b>	<b>2,091</b>	<b>2,430</b>	<b>1,977</b>	<b>1,025</b>	<b>11,580</b>
Consolidated subsidiaries	1,812	25	2,020	1,309	1,799	1,025	7,990
Equity affiliates	-	2,220	71	1,121	178	-	3,590
<b>Proved developed reserves</b>	<b>1,009</b>	<b>1,070</b>	<b>1,173</b>	<b>2,062</b>	<b>626</b>	<b>246</b>	<b>6,186</b>
Consolidated subsidiaries	1,009	16	1,161	1,070	549	246	4,051
Equity affiliates	-	1,054	12	992	77	-	2,135
<b>Proved undeveloped reserves</b>	<b>803</b>	<b>1,175</b>	<b>918</b>	<b>368</b>	<b>1,351</b>	<b>779</b>	<b>5,394</b>
Consolidated subsidiaries	803	9	859	239	1,250	779	3,939
Equity affiliates	-	1,166	59	129	101	-	1,455
<b>As of December 31, 2016 - Brent at 42.82 \$/b</b>							
<b>Proved developed and undeveloped reserves</b>	<b>1,726</b>	<b>2,400</b>	<b>1,872</b>	<b>2,734</b>	<b>1,804</b>	<b>982</b>	<b>11,518</b>
Consolidated subsidiaries	1,726	11	1,802	1,442	1,639	982	7,602
Equity affiliates	-	2,389	70	1,292	165	-	3,916
<b>Proved developed reserves</b>	<b>1,025</b>	<b>1,017</b>	<b>1,141</b>	<b>2,281</b>	<b>979</b>	<b>224</b>	<b>6,667</b>
Consolidated subsidiaries	1,025	7	1,132	1,158	897	224	4,443
Equity affiliates	-	1,010	9	1,123	82	-	2,224
<b>Proved undeveloped reserves</b>	<b>701</b>	<b>1,383</b>	<b>731</b>	<b>453</b>	<b>825</b>	<b>758</b>	<b>4,851</b>
Consolidated subsidiaries	701	4	670	284	742	758	3,159
Equity affiliates	-	1,379	61	169	83	-	1,692



## 1.4.2. Changes in oil reserves

The oil reserves include crude oil, condensates and natural gas liquids reserves.

(in million barrels)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	<b>1,131</b>	<b>25</b>	<b>1,758</b>	<b>345</b>	<b>86</b>	<b>211</b>	<b>3,556</b>
Revisions of previous estimates	13	4	27	11	3	5	63
Extensions, discoveries and other	3	-	101	3	14	2	123
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	(43)	-	(20)	-	-	-	(63)
Production for the year	(61)	(3)	(178)	(32)	(15)	(11)	(300)
<b>Balance as of December 31, 2014 - Brent at 101.27 \$/b</b>	<b>1,043</b>	<b>26</b>	<b>1,688</b>	<b>327</b>	<b>88</b>	<b>207</b>	<b>3,379</b>
Revisions of previous estimates	(9)	-	3	(46)	27	10	(15)
Extensions, discoveries and other	4	-	8	856	2	-	870
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	(3)	-	(58)	-	-	-	(61)
Production for the year	(59)	(3)	(191)	(86)	(16)	(12)	(367)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	<b>976</b>	<b>23</b>	<b>1,450</b>	<b>1,051</b>	<b>101</b>	<b>205</b>	<b>3,806</b>
Revisions of previous estimates	22	1	6	239	(9)	6	265
Extensions, discoveries and other	14	-	11	4	11	-	40
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	(13)	(11)	-	-	(2)	-	(26)
Production for the year	(63)	(3)	(185)	(84)	(16)	(11)	(362)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	<b>936</b>	<b>10</b>	<b>1,282</b>	<b>1,210</b>	<b>85</b>	<b>200</b>	<b>3,723</b>

Minority interest in proved developed and undeveloped reserves as of

December 31, 2014 - Brent at 101.27 \$/b	-	-	128	-	-	-	128
December 31, 2015 - Brent at 54.17 \$/b	-	-	115	-	-	-	115
<b>December 31, 2016 - Brent at 42.82 \$/b</b>	<b>-</b>	<b>-</b>	<b>95</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>95</b>

(in million barrels)

Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	<b>-</b>	<b>148</b>	<b>12</b>	<b>372</b>	<b>237</b>	<b>-</b>	<b>769</b>
Revisions of previous estimates	-	(3)	(5)	(3)	2	-	(9)
Extensions, discoveries and other	-	81	-	3	-	-	84
Acquisitions of reserves in place	-	9	-	-	-	-	9
Sales of reserves in place	-	(1)	-	-	-	-	(1)
Production for the year	-	(9)	-	(51)	(13)	-	(73)
<b>Balance as of December 31, 2014 - Brent at 101.27 \$/b</b>	<b>-</b>	<b>225</b>	<b>7</b>	<b>321</b>	<b>226</b>	<b>-</b>	<b>779</b>
Revisions of previous estimates	-	34	6	(11)	(42)	-	(13)
Extensions, discoveries and other	-	-	-	-	-	-	-
Acquisitions of reserves in place	-	6	-	-	-	-	6
Sales of reserves in place	-	(2)	-	-	-	-	(2)
Production for the year	-	(17)	-	(50)	(14)	-	(81)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	<b>-</b>	<b>246</b>	<b>13</b>	<b>260</b>	<b>170</b>	<b>-</b>	<b>689</b>
Revisions of previous estimates	-	42	-	58	(1)	-	99
Extensions, discoveries and other	-	15	-	-	-	-	15
Acquisitions of reserves in place	-	-	-	167	-	-	167
Sales of reserves in place	-	(2)	-	-	-	-	(2)
Production for the year	-	(25)	-	(53)	(12)	-	(90)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	<b>-</b>	<b>276</b>	<b>13</b>	<b>432</b>	<b>157</b>	<b>-</b>	<b>878</b>

(in million barrels)

## Consolidated subsidiaries and equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>As of December 31, 2014 - Brent at 101.27 \$/b</b>							
<b>Proved developed and undeveloped reserves<sup>(a)</sup></b>	<b>1,043</b>	<b>251</b>	<b>1,695</b>	<b>648</b>	<b>314</b>	<b>207</b>	<b>4,158</b>
Consolidated subsidiaries	1,043	26	1,688	327	88	207	3,379
Equity affiliates	-	225	7	321	226	-	779
<b>Proved developed reserves</b>	<b>446</b>	<b>136</b>	<b>934</b>	<b>512</b>	<b>136</b>	<b>17</b>	<b>2,181</b>
Consolidated subsidiaries	446	16	930	252	54	17	1,715
Equity affiliates	-	120	4	260	82	-	466
<b>Proved undeveloped reserves</b>	<b>597</b>	<b>115</b>	<b>761</b>	<b>136</b>	<b>178</b>	<b>190</b>	<b>1,977</b>
Consolidated subsidiaries	597	10	758	75	34	190	1,664
Equity affiliates	-	105	3	61	144	-	313
<b>As of December 31, 2015 - Brent at 54.17 \$/b</b>							
<b>Proved developed and undeveloped reserves<sup>(a)</sup></b>	<b>976</b>	<b>269</b>	<b>1,463</b>	<b>1,311</b>	<b>271</b>	<b>205</b>	<b>4,495</b>
Consolidated subsidiaries	976	23	1,450	1,051	101	205	3,806
Equity affiliates	-	246	13	260	170	-	689
<b>Proved developed reserves</b>	<b>445</b>	<b>151</b>	<b>836</b>	<b>1,061</b>	<b>145</b>	<b>17</b>	<b>2,655</b>
Consolidated subsidiaries	445	15	833	846	71	17	2,227
Equity affiliates	-	136	3	215	74	-	428
<b>Proved undeveloped reserves</b>	<b>531</b>	<b>118</b>	<b>627</b>	<b>250</b>	<b>126</b>	<b>188</b>	<b>1,840</b>
Consolidated subsidiaries	531	8	617	205	30	188	1,579
Equity affiliates	-	110	10	45	96	-	261
<b>As of December 31, 2016 - Brent at 42.82 \$/b</b>							
<b>Proved developed and undeveloped reserves<sup>(a)</sup></b>	<b>936</b>	<b>286</b>	<b>1,295</b>	<b>1,642</b>	<b>242</b>	<b>200</b>	<b>4,601</b>
Consolidated subsidiaries	936	10	1,282	1,210	85	200	3,723
Equity affiliates	-	276	13	432	157	-	878
<b>Proved developed reserves</b>	<b>476</b>	<b>152</b>	<b>819</b>	<b>1,309</b>	<b>151</b>	<b>14</b>	<b>2,921</b>
Consolidated subsidiaries	476	7	816	955	73	14	2,341
Equity affiliates	-	145	3	354	78	-	580
<b>Proved undeveloped reserves</b>	<b>460</b>	<b>134</b>	<b>476</b>	<b>333</b>	<b>91</b>	<b>186</b>	<b>1,680</b>
Consolidated subsidiaries	460	3	466	255	12	186	1,382
Equity affiliates	-	131	10	78	79	-	298

(a) The tables do not include separate figures for NGL reserves because they represented less than 8.5% of the Group's proved developed and undeveloped oil reserves in each of the years 2014, 2015 and 2016.

### 1.4.3. Changes in bitumen reserves

(in million barrels)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	-	-	-	-	1,088	-	1,088
Revisions of previous estimates	-	-	-	-	(25)	-	(25)
Extensions, discoveries and other	-	-	-	-	87	-	87
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	-	-	-	-	-	-	-
Production for the year	-	-	-	-	(5)	-	(5)
<b>Balance as of December 31, 2014 - Brent at 101.27 \$/b</b>	-	-	-	-	1,145	-	1,145
Revisions of previous estimates	-	-	-	-	130	-	130
Extensions, discoveries and other	-	-	-	-	-	-	-
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	-	-	-	-	(160)	-	(160)
Production for the year	-	-	-	-	(5)	-	(5)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	-	-	-	-	1,110	-	1,110
Revisions of previous estimates	-	-	-	-	(284)	-	(284)
Extensions, discoveries and other	-	-	-	-	-	-	-
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	-	-	-	-	-	-	-
Production for the year	-	-	-	-	(13)	-	(13)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	-	-	-	-	813	-	813
<b>Proved developed reserves as of</b>							
December 31, 2014 - Brent at 101.27 \$/b	-	-	-	-	17	-	17
December 31, 2015 - Brent at 54.17 \$/b	-	-	-	-	100	-	100
<b>December 31, 2016 - Brent at 42.82 \$/b</b>	-	-	-	-	160	-	160
<b>Proved undeveloped reserves as of</b>							
December 31, 2014 - Brent at 101.27 \$/b	-	-	-	-	1,128	-	1,128
December 31, 2015 - Brent at 54.17 \$/b	-	-	-	-	1,010	-	1,010
<b>December 31, 2016 - Brent at 42.82 \$/b</b>	-	-	-	-	653	-	653

There are no bitumen reserves for equity affiliates.

There are no minority interests for bitumen reserves.

## 1.4.4. Changes in gas reserves

(in billion cubic feet)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	<b>6,205</b>	<b>16</b>	<b>3,291</b>	<b>1,385</b>	<b>3,663</b>	<b>4,782</b>	<b>19,342</b>
Revisions of previous estimates	81	-	82	11	54	117	345
Extensions, discoveries and other	99	-	56	1	296	154	606
Acquisitions of reserves in place	6	-	-	-	-	-	6
Sales of reserves in place	(1,038)	-	(6)	-	-	-	(1,044)
Production for the year	(419)	(1)	(220)	(97)	(320)	(431)	(1,488)
<b>Balance as of December 31, 2014 - Brent at 101.27 \$/b</b>	<b>4,934</b>	<b>15</b>	<b>3,203</b>	<b>1,300</b>	<b>3,693</b>	<b>4,622</b>	<b>17,767</b>
Revisions of previous estimates	55	1	(57)	197	(92)	296	400
Extensions, discoveries and other	40	-	7	42	24	38	151
Acquisitions of reserves in place	-	-	-	-	-	-	-
Sales of reserves in place	(135)	-	(93)	-	-	-	(228)
Production for the year	(424)	(1)	(212)	(110)	(324)	(471)	(1,542)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	<b>4,470</b>	<b>15</b>	<b>2,848</b>	<b>1,429</b>	<b>3,301</b>	<b>4,485</b>	<b>16,548</b>
Revisions of previous estimates	143	(2)	(44)	(28)	347	189	605
Extensions, discoveries and other	173	-	-	7	126	85	391
Acquisitions of reserves in place	-	-	-	-	874	-	874
Sales of reserves in place	(80)	(7)	-	-	(101)	-	(188)
Production for the year	(498)	(1)	(220)	(111)	(343)	(494)	(1,667)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	<b>4,208</b>	<b>5</b>	<b>2,584</b>	<b>1,297</b>	<b>4,204</b>	<b>4,265</b>	<b>16,563</b>

Minority interest in proved developed and undeveloped reserves as of

December 31, 2014 - Brent at 101.27 \$/b	-	-	91	-	-	-	91
December 31, 2015 - Brent at 54.17 \$/b	-	-	64	-	-	-	64
<b>December 31, 2016 - Brent at 42.82 \$/b</b>	<b>-</b>	<b>-</b>	<b>48</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>48</b>

(in billion cubic feet)

Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>Proved developed and undeveloped reserves</b>							
<b>Balance as of December 31, 2013 - Brent at 108.02 \$/b</b>	<b>-</b>	<b>8,029</b>	<b>343</b>	<b>5,250</b>	<b>62</b>	<b>-</b>	<b>13,684</b>
Revisions of previous estimates	-	50	17	(25)	2	-	44
Extensions, discoveries and other	-	2,328	-	-	-	-	2,328
Acquisitions of reserves in place	-	521	-	-	-	-	521
Sales of reserves in place	-	(28)	-	-	-	-	(28)
Production for the year	-	(392)	(4)	(328)	(2)	-	(726)
<b>Balance as of December 31, 2014 - Brent at 107.27 \$/b</b>	<b>-</b>	<b>10,508</b>	<b>356</b>	<b>4,897</b>	<b>62</b>	<b>-</b>	<b>15,823</b>
Revisions of previous estimates	-	337	(45)	6	(11)	-	287
Extensions, discoveries and other	-	-	-	-	-	-	-
Acquisitions of reserves in place	-	267	-	-	-	-	267
Sales of reserves in place	-	(52)	-	-	-	-	(52)
Production for the year	-	(456)	-	(208)	(3)	-	(667)
<b>Balance as of December 31, 2015 - Brent at 54.17 \$/b</b>	<b>-</b>	<b>10,604</b>	<b>311</b>	<b>4,695</b>	<b>48</b>	<b>-</b>	<b>15,658</b>
Revisions of previous estimates	-	(132)	(3)	51	(1)	-	(85)
Extensions, discoveries and other	-	1,717	-	-	-	-	1,717
Acquisitions of reserves in place	-	-	-	132	-	-	132
Sales of reserves in place	-	(308)	-	-	-	-	(308)
Production for the year	-	(503)	(7)	(181)	(2)	-	(693)
<b>Balance as of December 31, 2016 - Brent at 42.82 \$/b</b>	<b>-</b>	<b>11,378</b>	<b>301</b>	<b>4,697</b>	<b>45</b>	<b>-</b>	<b>16,421</b>

(in billion cubic feet)

Consolidated subsidiaries and equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>As of December 31, 2014 - Brent at 101.27 \$/b</b>							
<b>Proved developed and undeveloped reserves</b>	<b>4,934</b>	<b>10,523</b>	<b>3,559</b>	<b>6,197</b>	<b>3,755</b>	<b>4,622</b>	<b>33,590</b>
Consolidated subsidiaries	4,934	15	3,203	1,300	3,693	4,622	17,767
Equity affiliates	-	10,508	356	4,897	62	-	15,823
<b>Proved developed reserves</b>	<b>2,914</b>	<b>4,958</b>	<b>1,939</b>	<b>5,946</b>	<b>2,167</b>	<b>1,109</b>	<b>19,033</b>
Consolidated subsidiaries	2,914	9	1,871	1,224	2,145	1,109	9,272
Equity affiliates	-	4,949	68	4,722	22	-	9,761
<b>Proved undeveloped reserves</b>	<b>2,020</b>	<b>5,565</b>	<b>1,620</b>	<b>251</b>	<b>1,588</b>	<b>3,513</b>	<b>14,557</b>
Consolidated subsidiaries	2,020	6	1,332	76	1,548	3,513	8,495
Equity affiliates	-	5,559	288	175	40	-	6,062
<b>As of December 31, 2015 - Brent at 54.17 \$/b</b>							
<b>Proved developed and undeveloped reserves</b>	<b>4,470</b>	<b>10,619</b>	<b>3,159</b>	<b>6,124</b>	<b>3,349</b>	<b>4,485</b>	<b>32,206</b>
Consolidated subsidiaries	4,470	15	2,848	1,429	3,301	4,485	16,548
Equity affiliates	-	10,604	311	4,695	48	-	15,658
<b>Proved developed reserves</b>	<b>3,021</b>	<b>4,890</b>	<b>1,657</b>	<b>5,511</b>	<b>2,153</b>	<b>1,378</b>	<b>18,610</b>
Consolidated subsidiaries	3,021	6	1,610	1,277	2,133	1,378	9,425
Equity affiliates	-	4,884	47	4,234	20	-	9,185
<b>Proved undeveloped reserves</b>	<b>1,449</b>	<b>5,729</b>	<b>1,502</b>	<b>613</b>	<b>1,196</b>	<b>3,107</b>	<b>13,596</b>
Consolidated subsidiaries	1,449	9	1,238	152	1,168	3,107	7,123
Equity affiliates	-	5,720	264	461	28	-	6,473
<b>As of December 31, 2016 - Brent at 42.82 \$/b</b>							
<b>Proved developed and undeveloped reserves</b>	<b>4,208</b>	<b>11,383</b>	<b>2,885</b>	<b>5,994</b>	<b>4,249</b>	<b>4,265</b>	<b>32,984</b>
Consolidated subsidiaries	4,208	5	2,584	1,297	4,204	4,265	16,563
Equity affiliates <sup>(a)</sup>	-	11,378	301	4,697	45	-	16,421
<b>Proved developed reserves</b>	<b>2,912</b>	<b>4,606</b>	<b>1,582</b>	<b>5,356</b>	<b>3,774</b>	<b>1,260</b>	<b>19,490</b>
Consolidated subsidiaries	2,912	3	1,545	1,157	3,751	1,260	10,628
Equity affiliates	-	4,603	37	4,199	23	-	8,862
<b>Proved undeveloped reserves</b>	<b>1,296</b>	<b>6,777</b>	<b>1,303</b>	<b>638</b>	<b>475</b>	<b>3,005</b>	<b>13,494</b>
Consolidated subsidiaries	1,296	2	1,039	140	453	3,005	5,935
Equity affiliates	-	6,775	264	498	22	-	7,559

## 1.5. Results of operations for oil and gas producing activities

The following tables do not include revenues and expenses related to oil and gas transportation activities and LNG liquefaction and transportation.

		Consolidated subsidiaries						Total
		Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	
<b>2014</b>								
Revenues	Non-Group sales	2,200	-	2,885	1,480	1,195	4,296	12,056
	Group sales	6,064	236	13,010	1,348	971	644	22,273
<b>Total Revenues</b>		<b>8,264</b>	<b>236</b>	<b>15,895</b>	<b>2,828</b>	<b>2,166</b>	<b>4,940</b>	<b>34,329</b>
Production costs		(1,800)	(44)	(2,166)	(559)	(466)	(666)	(5,701)
Exploration expenses		(636)	(9)	(520)	(255)	(183)	(362)	(1,965)
Depreciation, depletion and amortization and valuation allowances		(2,170)	(97)	(4,570)	(724)	(5,717)	(1,877)	(15,155)
Other expenses <sup>(a)</sup>		(419)	(29)	(1,172)	(317)	(402)	(167)	(2,506)
<b>Pre-tax income from producing activities<sup>(b)</sup></b>		<b>3,239</b>	<b>57</b>	<b>7,467</b>	<b>973</b>	<b>(4,602)</b>	<b>1,868</b>	<b>9,002</b>
Income tax		(1,693)	(32)	(5,513)	(887)	882	(1,149)	(8,392)
<b>Results of oil and gas producing activities<sup>(b)</sup></b>		<b>1,546</b>	<b>25</b>	<b>1,954</b>	<b>86</b>	<b>(3,720)</b>	<b>719</b>	<b>610</b>

(a) Included production taxes and accretion expense as provided for by IAS 37 (\$526 million in 2014).

(b) Including adjustment items (see section 10 Notes 3.B, 3.C and 3.D) applicable to ASC 932 perimeter, amounting to a net charge of \$6,532 million before tax and \$5,364 million after tax, mainly related to asset impairments.

<b>2015</b>								
Revenues	Non-Group sales	1,345	-	989	2,340	970	3,013	8,657
	Group sales	3,816	129	7,816	1,858	271	356	14,246
<b>Total Revenues</b>		<b>5,161</b>	<b>129</b>	<b>8,805</b>	<b>4,198</b>	<b>1,241</b>	<b>3,369</b>	<b>22,903</b>
Production costs		(1,521)	(34)	(1,779)	(659)	(497)	(456)	(4,946)
Exploration expenses		(661)	(3)	(615)	(226)	(114)	(372)	(1,991)
Depreciation, depletion and amortization and valuation allowances		(2,415)	(203)	(6,155)	(1,344)	(1,548)	(3,483)	(15,148)
Other expenses <sup>(a)</sup>		(350)	(16)	(722)	(2,756)	(280)	(121)	(4,245)
<b>Pre-tax income from producing activities<sup>(b)</sup></b>		<b>214</b>	<b>(127)</b>	<b>(466)</b>	<b>(787)</b>	<b>(1,198)</b>	<b>(1,063)</b>	<b>(3,427)</b>
Income tax		458	(4)	(220)	(123)	210	(173)	148
<b>Results of oil and gas producing activities<sup>(b)</sup></b>		<b>672</b>	<b>(131)</b>	<b>(686)</b>	<b>(910)</b>	<b>(988)</b>	<b>(1,236)</b>	<b>(3,279)</b>

(a) Included production taxes and accretion expense as provided for by IAS 37 (\$497 million in 2015).

(b) Including adjustment items (see section 10 Notes 3.B, 3.C and 3.D) applicable to ASC 932 perimeter, amounting to a net charge of \$7,104 million before tax and \$5,039 million after tax, mainly related to asset impairments.

(M\$)		Consolidated subsidiaries						Total
		Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	
<b>2016</b>								
Revenues	Non-Group sales	1,075	-	507	613	963	2,113	5,271
	Group sales	3,046	72	6,826	3,033	494	444	13,915
<b>Total Revenues</b>		<b>4,121</b>	<b>72</b>	<b>7,333</b>	<b>3,646</b>	<b>1,457</b>	<b>2,557</b>	<b>19,186</b>
Production costs		(1,083)	(30)	(1,601)	(478)	(488)	(351)	(4,031)
Exploration expenses		(512)	(3)	(108)	(368)	(196)	(77)	(1,264)
Depreciation, depletion and amortization and valuation allowances		(3,421)	(89)	(4,566)	(599)	(603)	(1,191)	(10,469)
Other expenses <sup>(a)</sup>		(339)	(8)	(615)	(2,328)	(224)	(97)	(3,611)
<b>Pre-tax income from producing activities<sup>(b)</sup></b>		<b>(1,234)</b>	<b>(58)</b>	<b>443</b>	<b>(127)</b>	<b>(54)</b>	<b>841</b>	<b>(189)</b>
Income tax		818	14	(143)	(205)	(27)	(184)	273
<b>Results of oil and gas producing activities<sup>(b)</sup></b>		<b>(416)</b>	<b>(44)</b>	<b>300</b>	<b>(332)</b>	<b>(81)</b>	<b>657</b>	<b>84</b>

(a) Included production taxes and accretion expense as provided for by IAS 37 (\$507 million in 2016).

(b) Including adjustment items (see section 10 Notes 3.B, 3.C and 3.D) applicable to ASC 932 perimeter, amounting to a net charge of \$1,943 million before tax and \$1,198 million after tax, mainly related to asset impairments.

(M\$)

Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>2014</b>							
Revenues							
Non-Group sales	-	1,117	-	2,094	-	-	3,211
Group sales	-	(249)	(21)	4,854	885	-	5,469
<b>Total Revenues</b>	<b>-</b>	<b>868</b>	<b>(21)</b>	<b>6,948</b>	<b>885</b>	<b>-</b>	<b>8,680</b>
Production costs	-	(121)	-	(311)	(123)	-	(555)
Exploration expenses	-	(1)	-	-	-	-	(1)
Depreciation, depletion and amortization and valuation allowances	-	(54)	-	(304)	(87)	-	(445)
Other expenses	-	(142)	-	(3,806)	(537)	-	(4,485)
<b>Pre-tax income from producing activities</b>	<b>-</b>	<b>550</b>	<b>(21)</b>	<b>2,527</b>	<b>138</b>	<b>-</b>	<b>3,194</b>
Income tax	-	(140)	-	(689)	(207)	-	(1,036)
<b>Results of oil and gas producing activities</b>	<b>-</b>	<b>410</b>	<b>(21)</b>	<b>1,838</b>	<b>(69)</b>	<b>-</b>	<b>2,158</b>
<b>2015</b>							
Revenues							
Non-Group sales	-	670	-	812	380	-	1,862
Group sales	-	-	-	2,404	10	-	2,414
<b>Total Revenues</b>	<b>-</b>	<b>670</b>	<b>-</b>	<b>3,216</b>	<b>390</b>	<b>-</b>	<b>4,276</b>
Production costs	-	(127)	-	(295)	(54)	-	(476)
Exploration expenses	-	(1)	-	-	-	-	(1)
Depreciation, depletion and amortization and valuation allowances	-	(58)	-	(400)	(98)	-	(556)
Other expenses	-	(134)	-	(1,638)	(170)	-	(1,942)
<b>Pre-tax income from producing activities</b>	<b>-</b>	<b>350</b>	<b>-</b>	<b>883</b>	<b>68</b>	<b>-</b>	<b>1,301</b>
Income tax	-	(65)	-	(184)	(36)	-	(285)
<b>Results of oil and gas producing activities</b>	<b>-</b>	<b>285</b>	<b>-</b>	<b>699</b>	<b>32</b>	<b>-</b>	<b>1,016</b>
<b>2016</b>							
Revenues							
Non-Group sales	-	831	-	399	310	-	1,540
Group sales	-	-	-	2,104	(11)	-	2,093
<b>Total Revenues</b>	<b>-</b>	<b>831</b>	<b>-</b>	<b>2,503</b>	<b>299</b>	<b>-</b>	<b>3,633</b>
Production costs	-	(103)	-	(246)	(42)	-	(391)
Exploration expenses	-	(4)	-	-	-	-	(4)
Depreciation, depletion and amortization and valuation allowances	-	(137)	-	(496)	(94)	-	(727)
Other expenses	-	(109)	-	(1,274)	(116)	-	(1,499)
<b>Pre-tax income from producing activities</b>	<b>-</b>	<b>478</b>	<b>-</b>	<b>487</b>	<b>47</b>	<b>-</b>	<b>1,012</b>
Income tax	-	(80)	-	(107)	55	-	(132)
<b>Results of oil and gas producing activities</b>	<b>-</b>	<b>398</b>	<b>-</b>	<b>380</b>	<b>102</b>	<b>-</b>	<b>880</b>



## 1.6. Cost incurred

The following tables set forth the costs incurred in the Group's oil and gas property acquisition, exploration and development activities, including both capitalized and expensed amounts. They do not include costs incurred related to oil and gas transportation and LNG liquefaction and transportation activities.

(M\$)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>2014</b>							
Proved property acquisition	80	-	17	(1)	-	9	105
Unproved property acquisition	82	-	69	7	544	1	703
Exploration costs	500	9	882	403	375	451	2,620
Development costs <sup>(a)</sup>	5,151	116	8,037	567	3,468	3,024	20,363
<b>Total cost incurred</b>	<b>5,813</b>	<b>125</b>	<b>9,005</b>	<b>976</b>	<b>4,387</b>	<b>3,485</b>	<b>23,791</b>
<b>2015</b>							
Proved property acquisition	57	-	59	1,039	-	10	1,165
Unproved property acquisition	-	4	26	1,205	199	4	1,438
Exploration costs	618	3	287	263	515	261	1,947
Development costs <sup>(a)</sup>	4,735	97	7,582	600	3,143	2,381	18,538
<b>Total cost incurred</b>	<b>5,410</b>	<b>104</b>	<b>7,954</b>	<b>3,107</b>	<b>3,857</b>	<b>2,656</b>	<b>23,088</b>
<b>2016</b>							
Proved property acquisition	102	1	31	10	415	-	559
Unproved property acquisition	5	-	19	1	289	15	329
Exploration costs	594	3	145	93	387	166	1,388
Development costs <sup>(a)</sup>	3,041	30	5,977	729	2,032	898	12,707
<b>Total cost incurred</b>	<b>3,742</b>	<b>34</b>	<b>6,172</b>	<b>833</b>	<b>3,123</b>	<b>1,079</b>	<b>14,983</b>

(M\$)

Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>2014</b>							
Proved property acquisition	-	246	-	-	-	-	246
Unproved property acquisition	-	32	-	-	-	-	32
Exploration costs	-	-	-	-	-	-	-
Development costs <sup>(a)</sup>	-	692	-	500	195	-	1,387
<b>Total cost incurred</b>	<b>-</b>	<b>970</b>	<b>-</b>	<b>500</b>	<b>195</b>	<b>-</b>	<b>1,665</b>
<b>2015</b>							
Proved property acquisition	-	218	-	-	-	-	218
Unproved property acquisition	-	14	-	-	-	-	14
Exploration costs	-	-	-	8	-	-	8
Development costs <sup>(a)</sup>	-	405	-	398	83	-	886
<b>Total cost incurred</b>	<b>-</b>	<b>637</b>	<b>-</b>	<b>406</b>	<b>83</b>	<b>-</b>	<b>1,126</b>
<b>2016</b>							
Proved property acquisition	-	-	-	35	-	-	35
Unproved property acquisition	-	-	-	-	-	-	-
Exploration costs	-	-	-	7	-	-	7
Development costs <sup>(a)</sup>	-	243	-	502	61	-	806
<b>Total cost incurred</b>	<b>-</b>	<b>243</b>	<b>-</b>	<b>544</b>	<b>61</b>	<b>-</b>	<b>848</b>

(a) Including asset retirement costs capitalized during the year and any gains or losses recognized upon settlement of asset retirement obligation during the year.

## 1.7. Capitalized costs related to oil and gas producing activities

Capitalized costs represent the amount of capitalized proved and unproved property costs, including support equipment and facilities, along with the related accumulated depreciation, depletion and amortization. The following tables do not include capitalized costs related to oil and gas transportation and LNG liquefaction and transportation activities.

(M\$)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>As of December 31, 2014</b>							
Proved properties	56,698	1,066	66,173	11,219	17,774	20,368	173,298
Unproved properties	1,148	-	4,790	821	8,309	1,210	16,278
<b>Total capitalized costs</b>	<b>57,846</b>	<b>1,066</b>	<b>70,963</b>	<b>12,040</b>	<b>26,083</b>	<b>21,578</b>	<b>189,576</b>
Accumulated depreciation, depletion and amortization	(28,946)	(496)	(32,725)	(8,017)	(10,657)	(10,807)	(91,648)
<b>Net capitalized costs</b>	<b>28,900</b>	<b>570</b>	<b>38,238</b>	<b>4,023</b>	<b>15,426</b>	<b>10,771</b>	<b>97,928</b>
<b>As of December 31, 2015</b>							
Proved properties	55,050	1,163	73,842	12,816	19,630	22,886	185,387
Unproved properties	1,018	4	4,362	2,058	8,915	997	17,354
<b>Total capitalized costs</b>	<b>56,068</b>	<b>1,167</b>	<b>78,204</b>	<b>14,874</b>	<b>28,545</b>	<b>23,883</b>	<b>202,741</b>
Accumulated depreciation, depletion and amortization	(28,341)	(699)	(39,259)	(9,283)	(11,488)	(13,647)	(102,717)
<b>Net capitalized costs</b>	<b>27,727</b>	<b>468</b>	<b>38,945</b>	<b>5,591</b>	<b>17,057</b>	<b>10,236</b>	<b>100,024</b>
<b>As of December 31, 2016</b>							
Proved properties	54,611	600	78,638	11,275	23,392	23,622	192,138
Unproved properties	1,000	4	4,357	1,657	8,611	1,037	16,666
<b>Total capitalized costs</b>	<b>55,611</b>	<b>604</b>	<b>82,995</b>	<b>12,932</b>	<b>32,003</b>	<b>24,659</b>	<b>208,804</b>
Accumulated depreciation, depletion and amortization	(29,227)	(385)	(42,988)	(7,973)	(12,764)	(14,735)	(108,072)
<b>Net capitalized costs</b>	<b>26,384</b>	<b>219</b>	<b>40,007</b>	<b>4,959</b>	<b>19,239</b>	<b>9,924</b>	<b>100,732</b>

(M\$)	Equity affiliates						
	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>As of December 31, 2014</b>							
Proved properties	-	4,347	-	5,916	1,411	-	11,674
Unproved properties	-	895	-	-	-	-	895
<b>Total capitalized costs</b>	-	<b>5,242</b>	-	<b>5,916</b>	<b>1,411</b>	-	<b>12,569</b>
Accumulated depreciation, depletion and amortization	-	(635)	-	(4,764)	(310)	-	(5,709)
<b>Net capitalized costs</b>	-	<b>4,607</b>	-	<b>1,152</b>	<b>1,101</b>	-	<b>6,860</b>
<b>As of December 31, 2015</b>							
Proved properties	-	4,573	-	4,323	1,500	-	10,396
Unproved properties	-	202	-	-	-	-	202
<b>Total capitalized costs</b>	-	<b>4,775</b>	-	<b>4,323</b>	<b>1,500</b>	-	<b>10,598</b>
Accumulated depreciation, depletion and amortization	-	(655)	-	(3,192)	(403)	-	(4,250)
<b>Net capitalized costs</b>	-	<b>4,120</b>	-	<b>1,131</b>	<b>1,097</b>	-	<b>6,348</b>
<b>As of December 31, 2016</b>							
Proved properties	-	5,802	-	5,029	1,600	-	12,431
Unproved properties	-	211	-	-	-	-	211
<b>Total capitalized costs</b>	-	<b>6,013</b>	-	<b>5,029</b>	<b>1,600</b>	-	<b>12,642</b>
Accumulated depreciation, depletion and amortization	-	(1,026)	-	(3,850)	(506)	-	(5,382)
<b>Net capitalized costs</b>	-	<b>4,987</b>	-	<b>1,179</b>	<b>1,094</b>	-	<b>7,260</b>

## 1.8. Standardized measure of discounted future net cash flows (excluding transportation)

The standardized measure of discounted future net cash flows relating to proved oil and gas reserve quantities was developed as follows:

- estimates of proved reserves and the corresponding production profiles are based on existing technical and economic conditions;
- the estimated future cash flows are determined based on prices used in estimating the Group's proved oil and gas reserves;
- the future cash flows incorporate estimated production costs (including production taxes), future development costs and asset retirement costs. All cost estimates are based on year-end technical and economic conditions;

- future income taxes are computed by applying the year-end statutory tax rate to future net cash flows after consideration of permanent differences and future income tax credits; and
- future net cash flows are discounted at a standard discount rate of 10 percent.

These principles applied are those required by ASC 932 and do not reflect the expectations of real revenues from these reserves, nor their present value; hence, they do not constitute criteria for investment decisions. An estimate of the fair value of reserves should also take into account, among other things, the recovery of reserves not presently classified as proved, anticipated future changes in prices and costs and a discount factor more representative of the time value of money and the risks inherent in reserves estimates.

(M\$)

Consolidated subsidiaries

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>As of December 31, 2014</b>							
Future cash inflows	129,535	2,294	168,785	33,404	87,965	44,599	466,582
Future production costs	(30,633)	(1,255)	(47,514)	(8,522)	(38,776)	(9,789)	(136,489)
Future development costs	(32,110)	(780)	(34,965)	(4,253)	(16,728)	(8,595)	(97,431)
Future income taxes	(21,287)	(172)	(50,633)	(11,310)	(5,891)	(7,552)	(96,845)
<b>Future net cash flows, after income taxes</b>	<b>45,505</b>	<b>87</b>	<b>35,673</b>	<b>9,319</b>	<b>26,570</b>	<b>18,663</b>	<b>135,817</b>
Discount at 10%	(26,240)	(5)	(13,955)	(4,244)	(19,489)	(11,110)	(75,043)
<b>Standardized measure of discounted future net cash flows</b>	<b>19,265</b>	<b>82</b>	<b>21,718</b>	<b>5,075</b>	<b>7,081</b>	<b>7,553</b>	<b>60,774</b>
<b>As of December 31, 2015</b>							
Future cash inflows	69,411	1,045	75,060	57,478	40,866	26,904	270,764
Future production costs	(20,263)	(512)	(27,455)	(46,510)	(24,103)	(8,355)	(127,198)
Future development costs	(20,418)	(495)	(24,843)	(5,099)	(11,104)	(6,289)	(68,248)
Future income taxes	(7,516)	(28)	(12,050)	(1,839)	(1,105)	(3,046)	(25,584)
<b>Future net cash flows, after income taxes</b>	<b>21,214</b>	<b>10</b>	<b>10,712</b>	<b>4,030</b>	<b>4,554</b>	<b>9,214</b>	<b>49,734</b>
Discount at 10%	(10,784)	18	(3,450)	(2,194)	(4,014)	(5,299)	(25,723)
<b>Standardized measure of discounted future net cash flows</b>	<b>10,430</b>	<b>28</b>	<b>7,262</b>	<b>1,836</b>	<b>540</b>	<b>3,915</b>	<b>24,011</b>
<b>As of December 31, 2016</b>							
Future cash inflows	46,212	365	51,677	52,891	21,520	19,209	191,874
Future production costs	(15,428)	(179)	(19,519)	(39,108)	(14,267)	(7,495)	(95,996)
Future development costs	(15,334)	(219)	(19,300)	(4,995)	(5,487)	(4,805)	(50,140)
Future income taxes	(2,599)	(1)	(7,480)	(2,517)	(989)	(955)	(14,541)
<b>Future net cash flows, after income taxes</b>	<b>12,851</b>	<b>(34)</b>	<b>5,378</b>	<b>6,271</b>	<b>777</b>	<b>5,954</b>	<b>31,197</b>
Discount at 10%	(5,172)	8	(64)	(2,986)	(815)	(2,666)	(11,695)
<b>Standardized measure of discounted future net cash flows</b>	<b>7,679</b>	<b>(26)</b>	<b>5,314</b>	<b>3,285</b>	<b>(38)</b>	<b>3,288</b>	<b>19,502</b>
<b>Minority interests in future net cash flows as of (M\$)</b>							
As of December 31, 2014	-	-	1,103	-	-	-	1,103
As of December 31, 2015	-	-	448	-	-	-	448
<b>As of December 31, 2016</b>	<b>-</b>	<b>-</b>	<b>253</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>253</b>

(M\$)

Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>As of December 31, 2014</b>							
Future cash inflows	-	45,472	1,698	68,109	16,209	-	131,488
Future production costs	-	(13,536)	-	(36,848)	(9,393)	-	(59,777)
Future development costs	-	(3,190)	(132)	(3,814)	(1,683)	-	(8,819)
Future income taxes	-	(3,886)	(630)	(5,525)	(1,327)	-	(11,368)
<b>Future net cash flows, after income taxes</b>	-	<b>24,860</b>	<b>936</b>	<b>21,922</b>	<b>3,806</b>	-	<b>51,524</b>
Discount at 10%	-	(19,447)	(575)	(10,331)	(2,078)	-	(32,431)
<b>Standardized measure of discounted future net cash flows</b>	-	<b>5,413</b>	<b>361</b>	<b>11,591</b>	<b>1,728</b>	-	<b>19,093</b>
<b>As of December 31, 2015</b>							
Future cash inflows	-	21,779	52	36,231	7,736	-	65,798
Future production costs	-	(7,973)	-	(16,814)	(2,884)	-	(27,671)
Future development costs	-	(1,146)	(28)	(2,638)	(547)	-	(4,359)
Future income taxes	-	(1,450)	(29)	(2,818)	(918)	-	(5,215)
<b>Future net cash flows, after income taxes</b>	-	<b>11,210</b>	<b>(5)</b>	<b>13,961</b>	<b>3,387</b>	-	<b>28,553</b>
Discount at 10%	-	(9,186)	(98)	(7,009)	(1,759)	-	(18,052)
<b>Standardized measure of discounted future net cash flows</b>	-	<b>2,024</b>	<b>(103)</b>	<b>6,952</b>	<b>1,628</b>	-	<b>10,501</b>
<b>As of December 31, 2016</b>							
Future cash inflows	-	22,393	(248)	30,045	5,815	-	58,005
Future production costs	-	(5,704)	(53)	(15,846)	(2,017)	-	(23,620)
Future development costs	-	(929)	(1)	(2,339)	(392)	-	(3,661)
Future income taxes	-	(1,228)	(20)	(4,661)	-	-	(5,909)
<b>Future net cash flows, after income taxes</b>	-	<b>14,532</b>	<b>(322)</b>	<b>7,199</b>	<b>3,406</b>	-	<b>24,815</b>
Discount at 10%	-	(9,471)	139	(3,869)	(1,697)	-	(14,898)
<b>Standardized measure of discounted future net cash flows</b>	-	<b>5,061</b>	<b>(183)</b>	<b>3,330</b>	<b>1,709</b>	-	<b>9,917</b>

## 1.9. Changes in the standardized measure of discounted future net cash flows

### Consolidated subsidiaries

(M\$)	2014	2015	2016
<b>Beginning of year</b>	<b>63,274</b>	<b>60,774</b>	<b>24,011</b>
Sales and transfers, net of production costs	(26,647)	(14,209)	(12,015)
Net change in sales and transfer prices and in production costs and other expenses	(16,703)	(88,615)	(21,189)
Extensions, discoveries and improved recovery	1,912	933	156
Changes in estimated future development costs	(5,407)	4,412	400
Previously estimated development costs incurred during the year	21,484	19,694	13,967
Revisions of previous quantity estimates	(1,505)	(4,800)	5,347
Accretion of discount	6,327	6,077	2,401
Net change in income taxes	20,116	42,252	6,304
Purchases of reserves in place	26	-	364
Sales of reserves in place	(2,103)	(2,507)	(244)
<b>End of year</b>	<b>60,774</b>	<b>24,011</b>	<b>19,502</b>

### Equity affiliates

(M\$)	2014	2015	2016
<b>Beginning of year</b>	<b>15,419</b>	<b>19,093</b>	<b>10,501</b>
Sales and transfers, net of production costs	(3,639)	(1,860)	(1,745)
Net change in sales and transfer prices and in production costs and other expenses	(1,546)	(14,821)	(3,840)
Extensions, discoveries and improved recovery	4,444	-	1,204
Changes in estimated future development costs	190	1,572	83
Previously estimated development costs incurred during the year	1,330	1,272	971
Revisions of previous quantity estimates	19	315	214
Accretion of discount	1,542	1,909	1,050
Net change in income taxes	834	2,901	(340)
Purchases of reserves in place	543	186	1,929
Sales of reserves in place	(43)	(66)	(110)
<b>End of year</b>	<b>19,093</b>	<b>10,501</b>	<b>9,917</b>

## 2. Other information

### 2.1. Net gas production, production prices and production costs

	Consolidated subsidiaries						Total
	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	
<b>2014</b>							
<b>Natural gas production available for sale (Bcf)<sup>(a)</sup></b>	<b>390</b>	<b>-</b>	<b>180</b>	<b>84</b>	<b>310</b>	<b>408</b>	<b>1,372</b>
<b>Production prices<sup>(b)</sup></b>							
Oil (\$/b) <sup>(c)</sup>	85.75	81.38	90.78	84.88	60.38	85.62	87.26
Bitumen (\$/b)	-	-	-	-	42.83	-	42.83
Natural gas (\$/kcf)	7.24	-	2.64	1.16	3.56	10.28	6.34
<b>Production costs per unit of production (\$/boe)<sup>(d)</sup></b>							
Total liquids and natural gas	13.59	14.72	10.10	12.19	6.24	8.05	10.31
Bitumen	-	-	-	-	42.04	-	42.04
<b>2015</b>							
<b>Natural gas production available for sale (Bcf)<sup>(a)</sup></b>	<b>398</b>	<b>-</b>	<b>171</b>	<b>93</b>	<b>318</b>	<b>449</b>	<b>1,429</b>
<b>Production prices<sup>(b)</sup></b>							
Oil (\$/b) <sup>(c)</sup>	45.91	39.83	45.33	47.63	25.68	47.38	45.12
Bitumen (\$/b)	-	-	-	-	12.16	-	12.16
Natural gas (\$/kcf)	6.00	-	1.97	1.16	2.53	6.62	4.65
<b>Production costs per unit of production (\$/boe)<sup>(d)</sup></b>							
Total liquids and natural gas	11.52	9.77	7.91	6.44	6.35	5.05	7.84
Bitumen	-	-	-	-	37.92	-	37.92
<b>2016</b>							
<b>Natural gas production available for sale (Bcf)<sup>(a)</sup></b>	<b>469</b>	<b>-</b>	<b>180</b>	<b>94</b>	<b>337</b>	<b>471</b>	<b>1,551</b>
<b>Production prices<sup>(b)</sup></b>							
Oil (\$/b) <sup>(c)</sup>	34.63	30.89	37.77	40.23	23.54	37.89	37.18
Bitumen (\$/b)	-	-	-	-	10.77	-	10.77
Natural gas (\$/kcf)	4.24	-	1.43	1.20	2.50	4.53	3.48
<b>Production costs per unit of production (\$/boe)<sup>(d)</sup></b>							
Total liquids and natural gas	7.25	10.90	7.20	4.76	5.52	3.78	6.14
Bitumen	-	-	-	-	19.03	-	19.03

(a) The reported volumes are different from those shown in the reserves table due to gas consumed in operations.

(b) The volumes used for calculation of the average sales prices are the ones sold from the Group's own production.

(c) The reported price represents an average aggregate price of prices for crude oil, condensates and NGL. The table does not include separate figures for NGL production prices because the production of NGL represented less than 7.5% of the Group's total liquids production in each of the years 2014, 2015 and 2016.

(d) The volumes of liquids used for this computation are shown in the proved reserves tables of this report. The reported volumes for natural gas are different from those shown in the reserves table due to gas consumed in operations.

## Equity affiliates

	Europe and Central Asia (excl. Russia)	Russia	Africa (excl. North Africa)	Middle East and North Africa	Americas	Asia-Pacific	Total
<b>2014</b>							
<b>Natural gas production available for sale (Bcf)<sup>(a)</sup></b>	-	386	-	319	-	-	705
<b>Production prices<sup>(b)</sup></b>							
Oil (\$/b) <sup>(c)</sup>	-	54.19	-	86.02	85.72	-	85.26
Bitumen (\$/b)	-	-	-	-	-	-	-
Natural gas (\$/kcf)	-	2.35	-	7.08	-	-	4.64
<b>Production costs per unit of production (\$/boe)<sup>(d)</sup></b>							
Total liquids and natural gas	-	1.48	-	2.86	9.19	-	2.72
Bitumen	-	-	-	-	-	-	-
<b>2015</b>							
<b>Natural gas production available for sale (Bcf)<sup>(a)</sup></b>	-	448	-	200	-	-	648
<b>Production prices<sup>(b)</sup></b>							
Oil (\$/b) <sup>(c)</sup>	-	25.37	-	48.34	32.20	-	42.69
Bitumen (\$/b)	-	-	-	-	-	-	-
Natural gas (\$/kcf)	-	1.23	-	3.28	-	-	1.99
<b>Production costs per unit of production (\$/boe)<sup>(d)</sup></b>							
Total liquids and natural gas	-	1.26	-	3.40	4.05	-	2.37
Bitumen	-	-	-	-	-	-	-
<b>2016</b>							
<b>Natural gas production available for sale (Bcf)<sup>(a)</sup></b>	-	492	5	173	-	-	670
<b>Production prices<sup>(b)</sup></b>							
Oil (\$/b) <sup>(c)</sup>	-	19.36	-	38.61	28.49	-	32.77
Bitumen (\$/b)	-	-	-	-	-	-	-
Natural gas (\$/kcf)	-	1.21	-	1.85	-	-	1.43
<b>Production costs per unit of production (\$/boe)<sup>(d)</sup></b>							
Total liquids and natural gas	-	0.88	-	2.92	3.59	-	1.82
Bitumen	-	-	-	-	-	-	-

(a) The reported volumes are different from those shown in the reserves table due to gas consumed in operations.

(b) The volumes used for calculation of the average sales prices are the ones sold from the Group's own production.

(c) The reported price represents an average aggregate price of prices for crude oil, condensates and NGL. The table does not include separate figures for NGL production prices because the production of NGL represented less than 7.5% of the Group's total liquids production in each of the years 2014, 2015 and 2016.

(d) The volumes of liquids used for this computation are shown in the proved reserves tables of this report. The reported volumes for natural gas are different from those shown in the reserves table due to gas consumed in operations.



### 3. Report on the payments made to governments (Article L. 225-102-3 of the French Commercial Code)

Article L. 225-102-3 of the French Commercial Code<sup>(1)</sup> requires that large undertakings and public-interest entities that are active in the extractive industry or logging of primary forests disclose in an annual report payments of at least €100,000 made to governments in the countries in which they operate.

The consolidated report of TOTAL is presented below pursuant to the aforementioned provisions. This report covers the aforementioned payments made by the Group's extractive companies as defined below, for the benefit of each government of States or territories in which TOTAL carries out its activities, by detailing the total amount of payments made, the total amount by payment type, the total amount by project and the total amount by payment type for each project.

This report has been approved by the Board of Directors of TOTAL S.A.

#### Definitions

The meaning of certain terms used in this report are set forth below:

**Extractive Companies:** TOTAL S.A. and any company or undertaking of which the activities consist, in whole or in part, of the exploration, prospection, discovery, development and extraction of minerals, crude oil and natural gas, amongst others, fully consolidated by TOTAL S.A.

**Payment:** a single payment or multiple interconnected payments of an amount equal to, or in excess of, €100,000 (or its equivalent) paid, whether in money or in kind, for extractives activities. Payment types included in this report are the following:

- **Taxes:** taxes and levies paid on income, production or profits, excluding taxes levied on consumption such as value added taxes, custom duties, personal income taxes and sales taxes.
- **Royalties:** percentage of production payable to the owner of mineral rights.
- **License Fees:** license fees, surface or rental fees, and other consideration for licenses and/or concessions that are paid for access to the area where the extractive activities will be conducted.
- **License Bonus:** bonuses paid for and in consideration of signature, discovery, production, awards, grants and transfers of extraction rights; bonuses related to achievement or failure to achieve certain production levels or certain targets, and discovery of additional mineral reserves/deposits.

- **Dividends:** dividends paid to a host government holding an interest in an Extractive Company.
- **Payments for infrastructure improvements:** payments for local development, including the improvement of infrastructure, not directly necessary for the conduct of extractive activities but mandatory pursuant to the terms of a production sharing contract or to the terms of a law relating to oil and gas activities.
- **Production entitlement:** host Government's share of production. This payment is generally made in kind.

**Government:** any national, regional or local authority of a State or territory, or any department, agency or undertaking controlled by that authority.

**Project:** operational activities governed by a single contract, license, lease, concession or similar legal agreement and that form the basis for payment liabilities with a Government. If multiple such agreements are substantially interconnected, they shall be considered as a single Project. Payments (such as company income tax when it concerns several projects which cannot be separated in application of the fiscal regulations) unable to be attributed to a Project are disclosed under the item "non-attributable".

#### Reporting Principles

This report sets forth all payments as booked in the Extractive Companies' accounts. They are presented based on the Group share in each Project, whether the payments have been made directly by the Group Extractive Companies as operator or indirectly through third-party operating companies.

Production entitlement and Royalties that are mandatorily paid in kind and that are owed to host Governments pursuant to legal or contractual provisions (not booked in the Extractive Companies' accounts pursuant to the accounting standards) are reported in proportion to the interest held by the Extractive Company in the Project as of the date on which such Production entitlements and Royalties are deemed to be acquired.

Payments in kind are estimated at fair value. Fair value corresponds to the contractual price of oil and gas used to calculate Production entitlement, market price (if available) or an appropriate benchmark price. These prices might be calculated on an averaged basis over a given period.

<sup>(1)</sup> Article L. 225-102-3 of the French Commercial Code transposes certain provisions set out in Directive 2013/34/EU of the European Parliament and of the Council of June 26, 2013 (chapter 10).

## 3.1. Reporting by country and type of Payment

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Europe and Central Asia</b>	<b>61,573</b>	-	<b>18,308</b>	<b>58,853</b>	-	<b>7,365</b>	<b>20,820</b>	<b>166,919</b>
Bulgaria	-	-	129	-	-	-	-	129
France	745	-	-	-	-	-	-	745
Italy	-	-	-	-	-	738	-	738
Kazakhstan	-	-	-	58,853	-	6,627	818	66,298
Netherlands	14,414	-	1,112	-	-	-	-	15,526
Norway	29,814	-	11,616	-	-	-	-	41,430
Russia	13,645	-	144	-	-	-	20,002	33,791
United Kingdom	2,955	-	5,307	-	-	-	-	8,262
<b>Africa</b>	<b>1,597,374</b>	-	<b>30,916</b>	<b>37,695</b>	<b>5,063</b>	<b>86,467</b>	<b>1,103,374</b>	<b>2,860,889</b>
Angola	506,910	-	8,699	-	-	1,543	1,049,731	1,566,883
Côte d'Ivoire	-	-	581	8,000	-	-	-	8,581
Democratic Republic of the Congo	-	-	602	-	-	-	-	602
Gabon	195,763	-	7,866	-	5,063	47,419	-	256,111
Madagascar	-	-	449	-	-	-	-	449
Mauritania	-	-	310	-	-	-	-	310
Mozambique	-	-	250	-	-	-	-	250
Nigeria	595,253	-	3,900	-	-	37,505	49,386	686,044
Republic of the Congo	299,448	-	7,316	29,695	-	-	4,257	340,716
South Africa	-	-	478	-	-	-	-	478
Uganda	-	-	465	-	-	-	-	465
<b>Middle East and North Africa</b>	<b>3,317,282</b>	-	<b>34,350</b>	<b>35,500</b>	-	-	<b>844,888</b>	<b>4,232,020</b>
Algeria	76,499	-	-	-	-	-	156,548	233,047
Cyprus	-	-	508	-	-	-	-	508
Egypt	-	-	150	500	-	-	-	650
Iraq	9,891	-	-	-	-	-	-	9,891
Libya	108,614	-	-	-	-	-	182,136	290,750
Oman	127,918	-	-	-	-	-	8,285	136,203
Qatar	107,273	-	-	35,000	-	-	497,919	640,192
United Arab Emirates	2,887,087	-	2,344	-	-	-	-	2,889,431
Yemen	-	-	31,348	-	-	-	-	31,348
<b>Americas</b>	<b>248,455</b>	<b>21,702</b>	<b>31,853</b>	<b>21,583</b>	-	-	<b>18,425</b>	<b>342,018</b>
Argentina	132,201	-	4,111	19,300	-	-	-	155,612
Bolivia	99,467	-	1,880	643	-	-	18,425	120,415
Brazil	-	-	398	-	-	-	-	398
Canada	(310) <sup>(1)</sup>	2,158	20,602	-	-	-	-	22,450
Colombia	9,551	-	-	-	-	-	-	9,551
United States	7,442	19,544	4,862	1,640	-	-	-	33,488
Venezuela	104	-	-	-	-	-	-	104
<b>Asia Pacific</b>	<b>594,328</b>	-	<b>16,546</b>	<b>30,555</b>	-	-	<b>733,915</b>	<b>1,375,344</b>
Australia	3,964	-	(449) <sup>(2)</sup>	-	-	-	-	3,515
Brunei	64,212	-	5	-	-	-	-	64,217
Cambodia	-	-	190	-	-	-	-	190
China	6,802	-	-	-	-	-	14,879	21,681
Indonesia	254,974	-	16,800	-	-	-	651,818	923,592
Myanmar	21,825	-	-	-	-	-	67,218	89,043
Thailand	242,551	-	-	30,555	-	-	-	273,106
<b>Total</b>	<b>5,819,012</b>	<b>21,702</b>	<b>131,973</b>	<b>184,186</b>	<b>5,063</b>	<b>93,832</b>	<b>2,721,422</b>	<b>8,977,190</b>

(1) Reimbursement of Alberta Scientific Research Experimental Development Tax Credit.

(2) Includes reimbursement of stamp duties by Queensland's Office of State Revenue.

### 3.2. Reporting of Payments by Project and by type of Payment, and by Government and by type of Payment

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Algeria</b>								
<b>Payments per Project</b>								
Tin Fouyé Tabankort	76,499	-	-	-	-	-	156,548	233,047
<b>Total</b>	<b>76,499</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>156,548</b>	<b>233,047</b>
<b>Payments per Government</b>								
Direction Générale des Impôts, Direction des Grandes Entreprises c/o Sonatrach	76,499	-	-	-	-	-	-	76,499
Sonatrach	-	-	-	-	-	-	156,548	156,548
<b>Total</b>	<b>76,499</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>156,548</b>	<b>233,047</b>
<b>Angola</b>								
<b>Payments per Project</b>								
Block 17	386,595	-	6,943	-	-	-	962,294	1,355,832
Block 0	82,321	-	644	-	-	-	-	82,965
Block 14	31,489	-	449	-	-	-	83,180	115,118
Block 14k	6,505	-	-	-	-	-	4,257	10,762
Block 32	-	-	248	-	-	-	-	248
Block 17/06	-	-	169	-	-	-	-	169
Block 25	-	-	76	-	-	-	-	76
Block 39	-	-	-	-	-	1,543	-	1,543
Block 40	-	-	170	-	-	-	-	170
<b>Total</b>	<b>506,910</b>	<b>-</b>	<b>8,699</b>	<b>-</b>	<b>-</b>	<b>1,543</b>	<b>1,049,731</b>	<b>1,566,883</b>
<b>Payments per Government</b>								
Caixa do Tesouro Nacional	506,910	-	522	-	-	-	-	507,432
Ministério dos Petróleos	-	-	8,177	-	-	-	-	8,177
Sonangol, E.P.	-	-	-	-	-	1,543	1,049,731	1,051,274
<b>Total</b>	<b>506,910</b>	<b>-</b>	<b>8,699</b>	<b>-</b>	<b>-</b>	<b>1,543</b>	<b>1,049,731</b>	<b>1,566,883</b>
<b>Argentina</b>								
<b>Payments per Project</b>								
Neuquen	24,189	-	353	19,300	-	-	-	43,842
Tierra del Fuego	47,976	-	3,719	-	-	-	-	51,695
Santa Cruz	-	-	39	-	-	-	-	39
Non-attributable	60,036	-	-	-	-	-	-	60,036
<b>Total</b>	<b>132,201</b>	<b>-</b>	<b>4,111</b>	<b>19,300</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>155,612</b>
<b>Payments per Government</b>								
Administracion Federal de Ingresos Publicos	60,036	-	-	-	-	-	-	60,036
Secretaria de Energia, Republica Argentina	26,961	-	658	-	-	-	-	27,619
Provincia del Neuquen	24,189	-	353	14,300	-	-	-	38,842
Provincia del Tierra del Fuego	21,015	-	3,100	-	-	-	-	24,115
Gas y Petroleo del Neuquen S.A.	-	-	-	5,000	-	-	-	5,000
<b>Total</b>	<b>132,201</b>	<b>-</b>	<b>4,111</b>	<b>19,300</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>155,612</b>

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Australia</b>								
<b>Payments per Project</b>								
GLNG	3,964	-	463	-	-	-	-	4,427
ATP 909/911/912	-	-	(912) <sup>(1)</sup>	-	-	-	-	(912)
<b>Total</b>	<b>3,964</b>	<b>-</b>	<b>(449)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,515</b>
<b>Payments per Government</b>								
Queensland Government, Office of State Revenue	3,964	-	(449)	-	-	-	-	3,515
<b>Total</b>	<b>3,964</b>	<b>-</b>	<b>(449)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3,515</b>
<b>Bolivia</b>								
<b>Payments per Project</b>								
Ipati	4,155	-	237	-	-	-	-	4,392
Azero	-	-	560	-	-	-	-	560
Aquio	2,844	-	258	-	-	-	-	3,102
Itau	13,061	-	205	14	-	-	-	13,280
San Alberto	19,717	-	80	327	-	-	2,884	23,008
San Antonio	58,901	-	89	302	-	-	15,541	74,833
Rio Hondo	-	-	451	-	-	-	-	451
Non-attributable	789	-	-	-	-	-	-	789
<b>Total</b>	<b>99,467</b>	<b>-</b>	<b>1,880</b>	<b>643</b>	<b>-</b>	<b>-</b>	<b>18,425</b>	<b>120,415</b>
<b>Payments per Government</b>								
Yacimientos Petrolíferos Fiscales Bolivianos (YPFB)	-	-	1,880	643	-	-	18,425	20,948
Servicio de Impuestos Nacionales (SIN)	789	-	-	-	-	-	-	789
Servicio de Impuestos Nacionales (SIN) c/o YPFB	63,154	-	-	-	-	-	-	63,154
Departamentos c/o YPFB	35,524	-	-	-	-	-	-	35,524
<b>Total</b>	<b>99,467</b>	<b>-</b>	<b>1,880</b>	<b>643</b>	<b>-</b>	<b>-</b>	<b>18,425</b>	<b>120,415</b>
<b>Brazil</b>								
<b>Payments per Project</b>								
Foz do Amazonas	-	-	30	-	-	-	-	30
Ceará (CE-M-661)	-	-	70	-	-	-	-	70
Xerelete (BC-2)	-	-	28	-	-	-	-	28
BM-S-54	-	-	54	-	-	-	-	54
Barreirinhas	-	-	43	-	-	-	-	43
Espirito Santo	-	-	18	-	-	-	-	18
Pelotas	-	-	44	-	-	-	-	44
Non-attributable	-	-	111	-	-	-	-	111
<b>Total</b>	<b>-</b>	<b>-</b>	<b>398</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>398</b>
<b>Payments per Government</b>								
Agencia Nacional de Petroleo, Gas Natural e Biocombustiveis	-	-	398	-	-	-	-	398
<b>Total</b>	<b>-</b>	<b>-</b>	<b>398</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>398</b>

(1) Reimbursement of stamp duties by Queensland's Office of State Revenue.

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Brunei</b>								
<b>Payments per Project</b>								
Block B	64,212	-	5	-	-	-	-	64,217
<b>Total</b>	<b>64,212</b>	<b>-</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>64,217</b>
<b>Payments per Government</b>								
Brunei Government	64,212	-	5	-	-	-	-	64,217
<b>Total</b>	<b>64,212</b>	<b>-</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>64,217</b>
<b>Bulgaria</b>								
<b>Payments per Project</b>								
Khan Asparuh	-	-	129	-	-	-	-	129
<b>Total</b>	<b>-</b>	<b>-</b>	<b>129</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>129</b>
<b>Payments per Government</b>								
Ministry of Energy of Bulgaria	-	-	129	-	-	-	-	129
<b>Total</b>	<b>-</b>	<b>-</b>	<b>129</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>129</b>
<b>Cambodia</b>								
<b>Payments per Project</b>								
OCA – zone 3	-	-	190	-	-	-	-	190
<b>Total</b>	<b>-</b>	<b>-</b>	<b>190</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>190</b>
<b>Payments per Government</b>								
Ministry of Mines and Energy	-	-	190	-	-	-	-	190
<b>Total</b>	<b>-</b>	<b>-</b>	<b>190</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>190</b>
<b>Canada</b>								
<b>Payments per Project</b>								
Joslyn	(310) <sup>(1)</sup>	-	466	-	-	-	-	156
Surmont	-	2,158	19,025	-	-	-	-	21,183
Northern Lights	-	-	41	-	-	-	-	41
Fort Hills	-	-	985	-	-	-	-	985
Other oil sands projects	-	-	85	-	-	-	-	85
<b>Total</b>	<b>(310)</b>	<b>2,158</b>	<b>20,602</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>22,450</b>
<b>Payments per Government</b>								
Province of Alberta	(310)	2,158	1,667	-	-	-	-	3,515
Alberta Energy Regulator	-	-	1,407	-	-	-	-	1,407
Municipality of Wood Buffalo (Alberta)	-	-	17,528	-	-	-	-	17,528
<b>Total</b>	<b>(310)</b>	<b>2,158</b>	<b>20,602</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>22,450</b>
<b>China</b>								
<b>Payments per Project</b>								
Sulige	6,802	-	-	-	-	-	14,879	21,681
<b>Total</b>	<b>6,802</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,879</b>	<b>21,681</b>
<b>Payments per Government</b>								
China National Petroleum Company	6,802	-	-	-	-	-	14,879	21,681
<b>Total</b>	<b>6,802</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>14,879</b>	<b>21,681</b>

(1) Reimbursement of Alberta Scientific Research Experimental Development Tax Credit.

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Colombia</b>								
<b>Payments per Project</b>								
Non-attributable	9,551	-	-	-	-	-	-	9,551
<b>Total</b>	<b>9,551</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9,551</b>
<b>Payments per Government</b>								
Dirección de Impuestos y aduanas Nacionales	9,551	-	-	-	-	-	-	9,551
<b>Total</b>	<b>9,551</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9,551</b>
<b>Côte d'Ivoire</b>								
<b>Payments per Project</b>								
CI-100	-	-	111	-	-	-	-	111
CI-514	-	-	470	-	-	-	-	470
CI-605	-	-	-	8,000	-	-	-	8,000
<b>Total</b>	<b>-</b>	<b>-</b>	<b>581</b>	<b>8,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,581</b>
<b>Payments per Government</b>								
République de Côte d'Ivoire, Direction Générale des Hydrocarbures	-	-	581	8,000	-	-	-	8,581
<b>Total</b>	<b>-</b>	<b>-</b>	<b>581</b>	<b>8,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,581</b>
<b>Cyprus</b>								
<b>Payments per Project</b>								
Block 11	-	-	508	-	-	-	-	508
<b>Total</b>	<b>-</b>	<b>-</b>	<b>508</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>508</b>
<b>Payments per Government</b>								
Ministry of Energy, Commerce, Industry and Tourism	-	-	508	-	-	-	-	508
<b>Total</b>	<b>-</b>	<b>-</b>	<b>508</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>508</b>
<b>Democratic Republic of the Congo</b>								
<b>Payments per Project</b>								
Block 3	-	-	602	-	-	-	-	602
<b>Total</b>	<b>-</b>	<b>-</b>	<b>602</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>602</b>
<b>Payments per Government</b>								
Ministère des Hydrocarbures	-	-	502	-	-	-	-	502
Ministère de l'Environnement	-	-	100	-	-	-	-	100
<b>Total</b>	<b>-</b>	<b>-</b>	<b>602</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>602</b>
<b>Egypt</b>								
<b>Payments per Project</b>								
North El Mahala Onshore	-	-	150	-	-	-	-	150
North El Hammad Offshore	-	-	-	500	-	-	-	500
<b>Total</b>	<b>-</b>	<b>-</b>	<b>150</b>	<b>500</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>650</b>
<b>Payments per Government</b>								
Egyptian Natural Gas Holding Company	-	-	150	500	-	-	-	650
<b>Total</b>	<b>-</b>	<b>-</b>	<b>150</b>	<b>500</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>650</b>

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>France</b>								
<b>Payments per Project</b>								
Lacq	745	-	-	-	-	-	-	745
<b>Total</b>	<b>745</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>745</b>
<b>Payments per Government</b>								
Trésor Public	745	-	-	-	-	-	-	745
<b>Total</b>	<b>745</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>745</b>
<b>Gabon</b>								
<b>Payments per Project</b>								
Concession Fields (Non-attributable)	14,389	-	3,515	-	-	47,419 <sup>(1)</sup>	-	65,323
Concession Anguille	40,529	-	-	-	-	-	-	40,529
Concession Grondin	33,381	-	-	-	-	-	-	33,381
Concession Torpille	29,570	-	-	-	-	-	-	29,570
Atora CEPP	9,555	-	170	-	-	-	-	9,725
Coucal CEPP	1,393	-	251	-	-	-	-	1,644
Avocette CEPP	13,989	-	740	-	-	-	-	14,729
Baudroie-Mérou CEPP	12,425	-	515	-	-	-	-	12,940
Mboga CEPP	(26) <sup>(2)</sup>	-	3	-	-	-	-	(23)
Hyllia II CEPP	4,356	-	659	-	-	-	-	5,015
Diaba CEPP	-	-	454	-	-	-	-	454
Nziembou CEPP	-	-	153	-	-	-	-	153
Rabi CEPP	36,202	-	1,406	-	-	-	-	37,608
Non-attributable	-	-	-	-	5,063	-	-	5,063
<b>Total</b>	<b>195,763</b>	<b>-</b>	<b>7,866</b>	<b>-</b>	<b>5,063</b>	<b>47,419</b>	<b>-</b>	<b>256,111</b>
<b>Payments per Government</b>								
Trésor Public Gabonais	141,949	-	1,450	-	-	-	-	143,399
Direction Générale des Hydrocarbures	-	-	5,246	-	-	-	-	5,246
République du Gabon	53,814	-	-	-	5,063	39,413	-	98,290
Direction Générale des Impôts	-	-	682	-	-	-	-	682
Ville de Port-Gentil	-	-	488	-	-	8,006	-	8,494
<b>Total</b>	<b>195,763</b>	<b>-</b>	<b>7,866</b>	<b>-</b>	<b>5,063</b>	<b>47,419</b>	<b>-</b>	<b>256,111</b>
<b>Indonesia</b>								
<b>Payments per Project</b>								
Mahakam PSC	253,919	-	-	-	-	-	649,330 <sup>(3)</sup>	903,249
Tengah PSC	1,055	-	-	-	-	-	2,488	3,543
South Sageri PSC	-	-	15,000	-	-	-	-	15,000
South West Bird's head PSC	-	-	1,800	-	-	-	-	1,800
<b>Total</b>	<b>254,974</b>	<b>-</b>	<b>16,800</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>651,818</b>	<b>923,592</b>
<b>Payments per Government</b>								
Directorate General of Taxation, Ministry of Finance	254,974	-	-	-	-	-	-	254,974
Satuan Khusus Kegiatan Usaha Hulu Minyak dan Gas Bumi (SKK Migas)	-	-	16,800	-	-	-	651,818	668,618
<b>Total</b>	<b>254,974</b>	<b>-</b>	<b>16,800</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>651,818</b>	<b>923,592</b>

(1) Financing of projects (infrastructure, education, health) under joint control of the State and TOTAL within the framework of the *Provision pour Investissements Diversifiés* (contribution to diversified investments) and of the *Provision pour Investissements dans les Hydrocarbures* (contribution to investments in hydrocarbons).

(2) Refund of 2015 production taxes.

(3) Government Production entitlement for export LNG is valued on a net-back price basis (revenues less costs, such as liquefaction and transportation cost). Production entitlement includes volume of oil taken by the Government to meet domestic obligation. The fees received from the Government are deducted from the valuation of these volumes.

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Iraq</b>								
<b>Payments per Project</b>								
Halfaya	9,891	-	-	-	-	-	-	9,891
<b>Total</b>	<b>9,891</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9,891</b>
<b>Payments per Government</b>								
Iraq government	9,891	-	-	-	-	-	-	9,891
<b>Total</b>	<b>9,891</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>9,891</b>
<b>Italy</b>								
<b>Payments per Project</b>								
Gorgoglione Unified License	-	-	-	-	-	738	-	738
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>738</b>	<b>-</b>	<b>738</b>
<b>Payments per Government</b>								
Regione Basilicata	-	-	-	-	-	738	-	738
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>738</b>	<b>-</b>	<b>738</b>
<b>Kazakhstan</b>								
<b>Payments per Project</b>								
Kashagan	-	-	-	58,853	-	6,627	818	66,298
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>58,853</b>	<b>-</b>	<b>6,627</b>	<b>818</b>	<b>66,298</b>
<b>Payments per Government</b>								
Government of the Republic of Kazakhstan	-	-	-	58,853	-	-	818	59,671
Atyrau and Mangistau regions c/o North Caspian Operating Company b.v.	-	-	-	-	-	214	-	214
Atyrau region c/o North Caspian Operating Company b.v.	-	-	-	-	-	2,378	-	2,378
Mangistau region c/o North Caspian Operating Company b.v.	-	-	-	-	-	4,035	-	4,035
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>58,853</b>	<b>-</b>	<b>6,627</b>	<b>818</b>	<b>66,298</b>
<b>Libya</b>								
<b>Payments per Project</b>								
Areas 15, 16 & 32 (Al Jurf)	108,312	-	-	-	-	-	170,301	278,613
Areas 129 & 130	302	-	-	-	-	-	11,835	12,137
<b>Total</b>	<b>108,614</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>182,136</b>	<b>290,750</b>
<b>Payments per Government</b>								
National Oil Corporation Ministry of Finance c/o National Oil Corporation	302	-	-	-	-	-	182,136	182,438
National Oil Corporation	108,312	-	-	-	-	-	-	108,312
<b>Total</b>	<b>108,614</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>182,136</b>	<b>290,750</b>
<b>Madagascar</b>								
<b>Payments per Project</b>								
Bemolanga	-	-	449	-	-	-	-	449
<b>Total</b>	<b>-</b>	<b>-</b>	<b>449</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>449</b>
<b>Payments per Government</b>								
Office des Mines Nationales et des Industries Stratégiques	-	-	449	-	-	-	-	449
<b>Total</b>	<b>-</b>	<b>-</b>	<b>449</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>449</b>



(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Mauritania</b>								
<b>Payments per Project</b>								
Block C9	-	-	170	-	-	-	-	170
Block TA29	-	-	140	-	-	-	-	140
<b>Total</b>	<b>-</b>	<b>-</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>310</b>
<b>Payments per Government</b>								
Trésor Public de Mauritanie	-	-	310	-	-	-	-	310
<b>Total</b>	<b>-</b>	<b>-</b>	<b>310</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>310</b>
<b>Mozambique</b>								
<b>Payments per Project</b>								
Rovuma Basin Area 3&6	-	-	250	-	-	-	-	250
<b>Total</b>	<b>-</b>	<b>-</b>	<b>250</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>250</b>
<b>Payments per Government</b>								
Instituto Nacional de Petroleo	-	-	250	-	-	-	-	250
<b>Total</b>	<b>-</b>	<b>-</b>	<b>250</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>250</b>
<b>Myanmar</b>								
<b>Payments per Project</b>								
Blocks M5 and M6	21,825	-	-	-	-	-	67,218	89,043
<b>Total</b>	<b>21,825</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>67,218</b>	<b>89,043</b>
<b>Payments per Government</b>								
Myanmar Ministry of Finance	21,825	-	-	-	-	-	-	21,825
Myanmar Oil and Gas Enterprise	-	-	-	-	-	-	67,218	67,218
<b>Total</b>	<b>21,825</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>67,218</b>	<b>89,043</b>
<b>Netherlands</b>								
<b>Payments per Project</b>								
Non-attributable	14,414	-	-	-	-	-	-	14,414
Offshore Blocks	-	-	1,112	-	-	-	-	1,112
<b>Total</b>	<b>14,414</b>	<b>-</b>	<b>1,112</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15,526</b>
<b>Payments per Government</b>								
Belastingdienst Nederland	14,414	-	1,112	-	-	-	-	15,526
<b>Total</b>	<b>14,414</b>	<b>-</b>	<b>1,112</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15,526</b>

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Nigeria</b>								
<b>Payments per Project</b>								
Joint ventures with NNPC, operated – Non-attributable	10,112	-	2,331	-	-	7,094	-	19,537
Joint ventures with NNPC, non operated – Non-attributable	103,886	-	59	-	-	-	-	103,945
OML58 (joint venture with NNPC, operated)	14,376	-	-	-	-	-	-	14,376
OML99 (joint venture with NNPC, operated)	25,610	-	-	-	-	-	-	25,610
OML100 (joint venture with NNPC, operated)	16,985	-	-	-	-	-	-	16,985
OML102 (joint venture with NNPC, operated)	51,167	-	-	-	-	-	-	51,167
OML102 Ekanga (joint venture with NNPC, non operated)	10,454	-	-	-	-	-	-	10,454
OML130	-	-	1,510	-	-	-	-	1,510
OML130 PSA (Akpo & Egina)	19,209	-	-	-	-	30,411	-	49,620
OML118 (Bonga)	82,996	-	-	-	-	-	49,386	132,382
OML138 (Usan)	25,750	-	-	-	-	-	-	25,750
Non-attributable	234,708 <sup>(1)</sup>	-	-	-	-	-	-	234,708
<b>Total</b>	<b>595,253</b>	<b>-</b>	<b>3,900</b>	<b>-</b>	<b>-</b>	<b>37,505</b>	<b>49,386</b>	<b>686,044</b>
<b>Payments per Government</b>								
Federal Inland Revenue Service	305,041	-	-	-	-	-	-	305,041
Department of Petroleum Resources, Federal Government of Nigeria	168,486	-	126	-	-	-	-	168,612
Niger Delta Development Commission	-	-	-	-	-	37,505	-	37,505
Nigerian Maritime Administration & Safety Agency, Federal Government of Nigeria	-	-	3,774	-	-	-	-	3,774
Nigerian National Petroleum Corporation	12,980	-	-	-	-	-	49,386	62,366
Federal Inland Revenue Service c/o Nigerian National Petroleum Corporation	78,933	-	-	-	-	-	-	78,933
Department of Petroleum Resources c/o Nigerian National Petroleum Corporation	29,813	-	-	-	-	-	-	29,813
<b>Total</b>	<b>595,253</b>	<b>-</b>	<b>3,900</b>	<b>-</b>	<b>-</b>	<b>37,505</b>	<b>49,386</b>	<b>686,044</b>
<b>Norway</b>								
<b>Payments per Project</b>								
Asgard area	-	-	3,786	-	-	-	-	3,786
Ekofisk area	-	-	2,105	-	-	-	-	2,105
Heimdal area	-	-	1,357	-	-	-	-	1,357
Oseberg area	-	-	2,228	-	-	-	-	2,228
Sleipner area	-	-	314	-	-	-	-	314
Snohvit area	-	-	940	-	-	-	-	940
Troll area	-	-	387	-	-	-	-	387
Martin Linge PL043	-	-	499	-	-	-	-	499
Non-attributable	29,814	-	-	-	-	-	-	29,814
<b>Total</b>	<b>29,814</b>	<b>-</b>	<b>11,616</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>41,430</b>

(1) This amount includes \$23 million which reduce the tax liability in accordance with the provisions of the Modified Carry Agreement (MCA). Under the MCA, Total E&P Nigeria is entitled to recover 85% of the Carry Capital Cost through claims of capital allowance, described in the MCA as "Carry Tax Relief". The balance of 15% is to be recovered from NNPC's share of crude oil produced.

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Payments per Government</b>								
Norwegian Tax Administration	29,814	-	-	-	-	-	-	29,814
Norwegian Petroleum Directorate	-	-	11,616	-	-	-	-	11,616
<b>Total</b>	<b>29,814</b>	<b>-</b>	<b>11,616</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>41,430</b>
<b>Oman</b>								
<b>Payments per Project</b>								
Block 6	125,340	-	-	-	-	-	-	125,340
Block 53	2,578	-	-	-	-	-	8,285	10,863
<b>Total</b>	<b>127,918</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,285</b>	<b>136,203</b>
<b>Payments per Government</b>								
Oman Ministry of Oil and Gas	-	-	-	-	-	-	8,285	8,285
Oman Ministry of Finance	127,918	-	-	-	-	-	-	127,918
<b>Total</b>	<b>127,918</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,285</b>	<b>136,203</b>
<b>Qatar</b>								
<b>Payments per Project</b>								
Al Khalij	24,020	-	-	-	-	-	-	24,020
Qatargas 1	33,312	-	-	-	-	-	38,684	71,996
North Oil Company	-	-	-	35,000	-	-	-	35,000
Dolphin	49,941	-	-	-	-	-	459,235	509,176
<b>Total</b>	<b>107,273</b>	<b>-</b>	<b>-</b>	<b>35,000</b>	<b>-</b>	<b>-</b>	<b>497,919</b>	<b>640,192</b>
<b>Payments per Government</b>								
Qatar Petroleum	-	-	-	-	-	-	497,919	497,919
Qatar Ministry of Finance	107,273	-	-	35,000	-	-	-	142,273
<b>Total</b>	<b>107,273</b>	<b>-</b>	<b>-</b>	<b>35,000</b>	<b>-</b>	<b>-</b>	<b>497,919</b>	<b>640,192</b>
<b>Republic of the Congo</b>								
<b>Payments per Project</b>								
CPP Haute Mer – Zone A	67,612	-	-	-	-	-	-	67,612
CPP Haute Mer – Zone B	7,892	-	186	-	-	-	-	8,078
CPP Haute Mer – Zone D	70,284	-	3,752	18,882	-	-	-	92,918
CPP Pointe Noire								
Grands Fonds (PNGF)	61,781	-	1,998	-	-	-	-	63,779
CPP Tchendo 2	14,787	-	408	-	-	-	-	15,195
Kombi, Likalala & Libondo	39,492	-	110	-	-	-	-	39,602
Litanzi & Tchibeli	8,687	-	8	-	-	-	-	8,695
Lianzi	6,505	-	-	-	-	-	4,257	10,762
Madingo	22,408	-	854	10,813	-	-	-	34,075
<b>Total</b>	<b>299,448</b>	<b>-</b>	<b>7,316</b>	<b>29,695</b>	<b>-</b>	<b>-</b>	<b>4,257</b>	<b>340,716</b>
<b>Payments per Government</b>								
Ministère des hydrocarbures	267,068	-	-	-	-	-	-	267,068
Trésor Public	25,875	-	7,316	29,695	-	-	-	62,886
Société Nationale des Pétroles Congolais	6,505	-	-	-	-	-	4,257	10,762
<b>Total</b>	<b>299,448</b>	<b>-</b>	<b>7,316</b>	<b>29,695</b>	<b>-</b>	<b>-</b>	<b>4,257</b>	<b>340,716</b>

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Russia</b>								
<b>Payments per Project</b>								
Kharyaga	13,645	-	144	-	-	-	20,002	33,791
<b>Total</b>	<b>13,645</b>	<b>-</b>	<b>144</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20,002</b>	<b>33,791</b>
<b>Payments per Government</b>								
Nenets Tax Inspection	13,645	-	144	-	-	-	-	13,789
Ministry of Energy	-	-	-	-	-	-	20,002	20,002
<b>Total</b>	<b>13,645</b>	<b>-</b>	<b>144</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>20,002</b>	<b>33,791</b>
<b>South Africa</b>								
<b>Payments per Project</b>								
Blocks 11b and 12b	-	-	15	-	-	-	-	15
Block South Outeniqua	-	-	463	-	-	-	-	463
<b>Total</b>	<b>-</b>	<b>-</b>	<b>478</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>478</b>
<b>Payments per Government</b>								
Petroleum Agency South Africa (PASA)	-	-	373	-	-	-	-	373
Upstream Training Trust (UTT)	-	-	105	-	-	-	-	105
<b>Total</b>	<b>-</b>	<b>-</b>	<b>478</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>478</b>
<b>Thailand</b>								
<b>Payments per Project</b>								
Bongkot	242,551	-	-	30,555	-	-	-	273,106
<b>Total</b>	<b>242,551</b>	<b>-</b>	<b>-</b>	<b>30,555</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>273,106</b>
<b>Payments per Government</b>								
Revenue Department	152,931	-	-	-	-	-	-	152,931
Department of Mineral Fuels, Ministry Of Energy	89,620	-	-	-	-	-	-	89,620
Ministry Of Energy	-	-	-	30,555	-	-	-	30,555
<b>Total</b>	<b>242,551</b>	<b>-</b>	<b>-</b>	<b>30,555</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>273,106</b>
<b>Uganda</b>								
<b>Payments per Project</b>								
Block EA-1	-	-	85	-	-	-	-	85
Block EA-1A	-	-	67	-	-	-	-	67
Block EA-2	-	-	107	-	-	-	-	107
Block EA-3	-	-	206	-	-	-	-	206
<b>Total</b>	<b>-</b>	<b>-</b>	<b>465</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>465</b>
<b>Payments per Government</b>								
Ministry of Energy and Mineral Development	-	-	465	-	-	-	-	465
<b>Total</b>	<b>-</b>	<b>-</b>	<b>465</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>465</b>

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>United Arab Emirates</b>								
<b>Payments per Project</b>								
Abu Al Bukhoosh	19,523	-	-	-	-	-	-	19,523
Abu Dhabi Gas Industries Ltd (GASCO)	170,486	-	2,344	-	-	-	-	172,830
Abu Dhabi Company for Onshore Petroleum Operations Ltd (ADCO)	1,896,250	-	-	-	-	-	-	1,896,250
Abu Dhabi Marine Areas Ltd (ADMA)	800,828	-	-	-	-	-	-	800,828
<b>Total</b>	<b>2,887,087</b>	<b>-</b>	<b>2,344</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,889,431</b>
<b>Payments per Government</b>								
Supreme Petroleum Council – Government of Abu Dhabi	19,523	-	-	-	-	-	-	19,523
Abu Dhabi Fiscal Authorities c/o Abu Dhabi Marine Areas Ltd	800,828	-	-	-	-	-	-	800,828
Abu Dhabi Fiscal Authorities	2,066,736	-	-	-	-	-	-	2,066,736
Petroleum Institute	-	-	2,344	-	-	-	-	2,344
<b>Total</b>	<b>2,887,087</b>	<b>-</b>	<b>2,344</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,889,431</b>
<b>United Kingdom</b>								
<b>Payments per Project</b>								
Alwyn North	6,072	-	-	-	-	-	-	6,072
Bruce	(13,122) <sup>(1)</sup>	-	-	-	-	-	-	(13,122)
Frigg	(4,595) <sup>(1)</sup>	-	-	-	-	-	-	(4,595)
Northern North Sea	-	-	1,633	-	-	-	-	1,633
Central Graben Area	7,586	-	1,123	-	-	-	-	8,709
Markham Area	-	-	147	-	-	-	-	147
Greater Laggan Area	-	-	2,207	-	-	-	-	2,207
Onshore	-	-	40	-	-	-	-	40
Non-attributable	7,014	-	157	-	-	-	-	7,171
<b>Total</b>	<b>2,955</b>	<b>-</b>	<b>5,307</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,262</b>
<b>Payments per Government</b>								
HM Revenue & Customs	2,955	-	-	-	-	-	-	2,955
Department of Energy & Climate Change	-	-	5,150	-	-	-	-	5,150
Crown Estate	-	-	157	-	-	-	-	157
<b>Total</b>	<b>2,955</b>	<b>-</b>	<b>5,307</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>8,262</b>
<b>United States</b>								
<b>Payments per Project</b>								
Tahiti	-	14,416	-	-	-	-	-	14,416
Barnett Shale	2,323	5,128	-	-	-	-	-	7,451
Utica	5,119	-	-	-	-	-	-	5,119
Gulf of Mexico	-	-	4,862	1,640	-	-	-	6,502
<b>Total</b>	<b>7,442</b>	<b>19,544</b>	<b>4,862</b>	<b>1,640</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>33,488</b>

(1) Refund of Petroleum Revenue Tax.

(in thousands of dollars)	Taxes	Royalties	License fees	License bonus	Dividends	Infrastructure improvements	Production entitlements	Total of Payments
<b>Payments per Government</b>								
Bureau of Ocean Energy Management	-	-	4,862	1,640	-	-	-	6,502
Office of Natural Resources Revenue	-	14,416	-	-	-	-	-	14,416
State of Ohio	3,129	-	-	-	-	-	-	3,129
Johnson County Tax Assessor	242	-	-	-	-	-	-	242
Tarrant County Tax Assessor	1,753	-	-	-	-	-	-	1,753
Texas State Comptroller's Office	328	-	-	-	-	-	-	328
City of Fort Worth	-	1,494	-	-	-	-	-	1,494
Dallas/Fort Worth International Airport Board	-	362	-	-	-	-	-	362
City of Arlington	-	268	-	-	-	-	-	268
Tarrant Regional Water District	-	293	-	-	-	-	-	293
Fort Worth Independant School District	-	320	-	-	-	-	-	320
Arlington Independant School District	-	120	-	-	-	-	-	120
Harrison County	626	-	-	-	-	-	-	626
Carroll County	1,173	-	-	-	-	-	-	1,173
Birdville Independent School District	-	925	-	-	-	-	-	925
Tarrant County College	-	355	-	-	-	-	-	355
City of Grand Prairie	-	462	-	-	-	-	-	462
Kennedale Independant School District	-	393	-	-	-	-	-	393
Tarrant County AAAA	-	136	-	-	-	-	-	136
Columbiana County	191	-	-	-	-	-	-	191
<b>Total</b>	<b>7,442</b>	<b>19,544</b>	<b>4,862</b>	<b>1,640</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>33,488</b>
<b>Venezuela</b>								
<b>Payments per Project</b>								
Yucal Placer	104	-	-	-	-	-	-	104
<b>Total</b>	<b>104</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>104</b>
<b>Payments per Government</b>								
Fondo Nacional de Ciencia, Tecnologia e Innovacion	19	-	-	-	-	-	-	19
Republica Bolivariana de Venezuela	85	-	-	-	-	-	-	85
<b>Total</b>	<b>104</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>104</b>
<b>Yemen</b>								
<b>Payments per Project</b>								
Block 10	-	-	31,348 <sup>(1)</sup>	-	-	-	-	31,348
<b>Total</b>	<b>-</b>	<b>-</b>	<b>31,348</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>31,348</b>
<b>Payments per Government</b>								
Masila Petroleum Exploration	-	-	31,348	-	-	-	-	31,348
<b>Total</b>	<b>-</b>	<b>-</b>	<b>31,348</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>31,348</b>

(1) Payment related to the expiration of the Block 10 license, which was returned to the Yemeni authorities in 2015.

# Glossary

The terms “TOTAL” and “Group” as used in this document refer to TOTAL S.A. collectively with all of its direct and indirect consolidated companies located in or outside of France. The term “Company” as used in this report refers to TOTAL S.A., which is the parent company of the Group.

## Abbreviations

€:	euro
\$ or dollar:	U.S. dollar
ADR:	American Depositary Receipt (evidencing an ADS)
ADS:	American Depositary Share (representing a share of a company)
AMF:	<i>Autorité des marchés financiers</i> (French Financial Markets Authority)
API:	American Petroleum Institute
ERMI:	European refining margin indicator of the Group
FPSO:	floating production, storage and offloading
GHG:	greenhouse gas
HSE:	health, safety and the environment
IEA:	International Energy Agency
IFRS:	International Financial Reporting Standards
IPIECA:	International Petroleum Industry Environmental Conservation Association
LNG:	liquefied natural gas
LPG:	liquefied petroleum gas
OML:	oil mining license
NGL:	natural gas liquids
ROE:	return on equity
ROACE:	return on average capital employed
SEC:	United States Securities and Exchange Commission
UN:	United Nations

## Units of measurement

b	= barrel
B	= billion
boe	= barrel of oil equivalent
Btu	= British thermal unit
cf	= cubic feet
CO <sub>2</sub> eq	= carbon dioxide equivalent
/d	= per day
GWh	= gigawatt hour
k	= thousand
km	= kilometer
m	= meter
m <sup>3</sup>	= cubic meter
M	= million
MW	= megawatt
MWp	= megawatt peak (direct current)
t	= metric ton
TWh	= terawatt hour
W	= watt
/y	= per year

## Conversion table

1 acre	≈ 0.405 hectares
1 b	= 42 U.S. gallons ≈ 159 liters
1 b/d of crude oil	≈ 50 t/y of crude oil
1 Bm <sup>3</sup> /y	≈ 0.1 Bcf/d
1 km	≈ 0.62 miles
1 m <sup>3</sup>	≈ 35.3 cf
1 Mt of LNG	≈ 48 Mcf of gas
1 Mt/y of LNG	≈ 131 Mcf/d of gas
1 t of oil	≈ 7.5 b of oil (assuming a specific gravity of 37° API)
1 boe	= 1 b of crude oil ≈ 5,403 cf of gas in 2016 <sup>(1)</sup> (5,390 cf in 2015 and 5,400 cf in 2014)

(1) Natural gas is converted to barrels of oil equivalent using a ratio of cubic feet of natural gas per one barrel. This ratio is based on the actual average equivalent energy content of TOTAL's natural gas reserves during the applicable periods, and is subject to change. The tabular conversion rate is applicable to TOTAL's natural gas reserves on a Group-wide basis.

## A

### acreage

Areas in which mining rights are exercised.

### adjusted results

Results using replacement cost, adjusted for special items, excluding the impact of changes for fair value.

### API degrees

Scale established by the API to measure oil density. A high API degree indicates light oil from which a high yield of gasoline can be refined.

### appraisal (delineation)

Work performed after a discovery for the purpose of determining the boundaries or extent of an oil or gas field or assessing its reserves and production potential.

### asset retirement

Companies may have obligations related to well-abandonment, dismantlement of facilities, decommissioning of plants or restoration of the environment. These obligations generally result from international conventions, local regulations or contractual obligations.

### associated gas

Gas released during oil production.

### association/consortium/joint venture:

Terms used to generally describe a project in which two or more entities participate. For the principles and methods of consolidation applicable to different types of joint arrangements according to IFRS, refer to Note 1 to the Consolidated Financial Statements (point 7 of chapter 10).

## B

### barrel

Unit of measurement of volume of crude oil equal to 42 U.S. gallons or 158.9 liters. Quantities of liquid hydrocarbons in barrels are expressed at 60°F.

### barrel of oil equivalent (boe)

Conventional unit for measuring the energy released by a quantity of fuel by relating it to the energy released by the combustion of a barrel of oil.

### biochemical conversion

Conversion of carbon resources through biological transformation (reactions involving living organisms). Fermentation of sugar into ethanol is an example.

### biofuel

Liquid or gaseous fuel that can be used for transport and produced from biomass, and meeting criteria of reducing GHG compared to the fossil reference.

### biomass

All organic matter from vegetal or animal sources.

### Brent

Quality of crude oil (38° API) produced in the North Sea, at the Brent fields.

### brownfield project

Project concerning developed existing fields.

### buyback

Risk services agreement (the investments and risks are undertaken by the contractor) combined with an offset mechanism that allows the contractor to receive a portion of the production equivalent to the monetary value, with interest, of its investments and a return on its investment.

## C

### capacity of treatment

Annual crude oil treatment capacity of the atmospheric distillation units of a refinery.

### carbon capture, use and storage (CCUS)

Technologies designed to reduce GHG emissions by capturing (C) CO<sub>2</sub> and then compressing and transporting it either to use (U) it for various industrial processes (e.g., enhanced recovery of oil or gas, production of chemical products), or to permanently store (S) it in deep geological formations.

### catalysts

Substances that increase a chemical reaction speed. During the refining process, they are used in conversion units (reformer, hydrocracker, catalytic cracker) and desulphurization units. Principal catalysts are precious metals (platinum) or other metals such as nickel and cobalt.

### coal bed methane

Natural gas present in coal seams.

### cogeneration

Simultaneous generation of electrical and thermal energies from a combustible source (gas, fuel oil or coal).

### coker (deep conversion unit)

Unit that produces light products (gas, gasoline, diesel) and coke through the cracking of distillation residues.

### concession contract

Exploration and production contract under which a host country grants to an oil and gas company (or a consortium) the right to explore a geographic area and develop and produce potential reserves. The oil and gas company (or consortium) undertakes the execution and financing, at its own risk, of all operations. In return, it is entitled to the entire production.

### condensate

Light hydrocarbon substances produced with natural gas that exist – either in a gaseous phase or in solution – in the crude oil under the initial pressure and temperature conditions in the reservoir, and which are recovered in a liquid state in separators, on-site facilities or gas treatment units.

### consortium

Refer to the definition above of “association/consortium/joint venture”.

### conversion

Refining operation aimed at transforming heavy products (heavy fuel oil) into lighter or less viscous products (e.g., gasoline, jet fuels).

### cost oil/gas

In a production sharing contract, portion of the oil and gas production made available to the contractor (contractor group) and contractually reserved for reimbursement of exploration, development, operation and site reclamation costs (“recoverable” costs).



### **cracking**

Refining process that entails converting the molecules of large, complex, heavy hydrocarbons into simpler, lighter molecules using heat, pressure and, in some cases, a catalyst. A distinction is made between catalytic cracking and steam cracking, which uses heat instead of a catalyst. Cracking then produces ethylene and propylene, in particular.

### **crude oil**

A mixture of compounds (mainly pentanes and heavier hydrocarbons) that exists in a liquid phase at original reservoir temperature and pressure and remains liquid at atmospheric pressure and ambient temperature. "Crude oil" or "oil" are sometimes used as generic terms to designate crude oil plus condensates plus NGL.

## **D**

### **Dated Brent**

A market term representing the minimum value of physical cargoes of Brent, Forties, Oseberg, or Ekofisk crude oil, loading between the 10<sup>th</sup> and the 25<sup>th</sup> day forward. Dated Brent prices are used, directly and indirectly, as a benchmark for a large proportion of the crude oil that is traded internationally.

### **debottlenecking**

Change made to a facility to increase its production capacity.

### **desulphurization unit**

Unit in which sulphur and sulphur compounds are eliminated from mixtures of gaseous or liquid hydrocarbons.

### **development**

Operations carried out to bring an oil or gas field on stream, including in particular construction of the necessary infrastructures for oil and gas production.

### **distillates**

Products obtained through the atmospheric distillation of crude oil or through vacuum distillation. Includes medium distillate such as aviation fuel, diesel fuel and heating oil.

## **E**

### **effective tax rate**

$(\text{Tax on adjusted net operating income}) / (\text{adjusted net operating income} - \text{income from equity affiliates} - \text{dividends received from investments} - \text{impairment of goodwill} + \text{tax on adjusted net operating income})$ .

### **effect of changes in fair value**

The effect of changes in fair value presented as an adjustment item reflects, for some transactions, differences between internal measures of performance used by TOTAL's executive committee and the accounting for these transactions under IFRS. IFRS requires that trading inventories be recorded at their fair value using period-end spot prices. In order to best reflect the management of economic exposure through derivative transactions, internal indicators used to measure performance include valuations of trading inventories based on forward prices. Furthermore, TOTAL, in its trading activities, enters into storage contracts, the future effects of which are recorded at fair value in the Group's internal economic performance. IFRS precludes recognition of this fair value effect.

### **energy mix**

The various energy sources used to meet the demand for energy.

### **ERMI (European refining margin indicator)**

A Group indicator intended to represent the margin after variable costs for a hypothetical complex refinery located around Rotterdam in Northern Europe that processes a mix of crude oil and other inputs commonly supplied to this region to produce and market the main refined products at prevailing prices in this region. The indicator margin may not be representative of the actual margins achieved by the Group in any period because of TOTAL's particular refinery configurations, product mix effects or other company-specific operating conditions.

### **ethane**

A colorless, odorless combustible gas of the alkanes class composed of two carbon atoms found in natural gas and petroleum gas.

### **ethanol**

Also commonly called ethyl alcohol or alcohol, ethanol is obtained through the fermentation of sugar (beetroot, sugarcane) or starch (grains). Ethanol has numerous food, chemical and energy (biofuel) applications.

### **ethylene/propylene**

Petrochemical products derived from cracking naphtha and used mainly in the production of polyethylene and polypropylene, two plastics frequently used in packaging, the automotive industry, household appliances, healthcare and textiles.

## **F**

### **farm-in (or farm-out)**

Acquisition (or sale) of all or part of a participating interest in an oil and gas mining property by way of an assignment of rights and obligations in the corresponding permit or license and related contracts.

### **farnesane**

A hydrocarbon molecule containing 15 carbon atoms, which can be used to produce fuel or chemical compounds.

### **FEED studies (front-end engineering design)**

Studies aimed at defining the project and preparing for its execution. In the TOTAL process, this covers the pre-project and basic engineering phases.

### **fossil energies**

Energies produced from oil, natural gas and coal.

### **FPSO (floating production, storage and offloading)**

Floating integrated offshore unit comprising the equipment used to produce, process and store hydrocarbons and offload them directly to an offshore oil tanker.

## **G**

### **greenfield project**

Project concerning fields that have never been developed.

### **gross investments**

Investments including acquisitions and increases in non-current loans.

## H

### hydraulic fracturing

Technique that involves fracturing rock to improve its permeability.

### hydrocarbons

Molecules composed principally of carbon and hydrogen atoms. They can be solid such as asphalt, liquid such as crude oil or gaseous such as natural gas. They may also include compounds with sulphur, nitrogen, metals, etc.

### hydrocracker

A refinery unit that uses catalysts and extraordinarily high pressure, in the presence of surplus hydrogen, to convert heavy oils into lighter fractions.

## I

### inventory valuation effect

The adjusted results of the Refining & Chemicals and Marketing & Services segments are presented according to the replacement cost method. This method is used to assess the segments' performance and facilitate the comparability of the segments' performance with those of its competitors. In the replacement cost method, which approximates the LIFO (Last-In, First-Out) method, the variation of inventory values in the statement of income is, depending on the nature of the inventory, determined using either the month-end price differentials between one period and another or the average prices of the period rather than the historical value. The inventory valuation effect is the difference between the results according to the FIFO (First-In, First-Out) and the replacement cost.

## J

### joint venture

Refer to the definition above of "association/consortium/joint venture".

## L

### lignocellulose

Lignocellulose is the main component of the wall of plant cells. It can be sourced from agricultural and farming wastes or by-products of wood transformation as well as dedicated plantations and constitutes the most abundant renewable carbon source on the planet. This abundance and its composition (very rich in polymerized sugars) makes it an excellent choice to produce biofuels. As a result, its conversion, whether by thermochemical (e.g., gasification) or biochemical techniques, is widely studied.

### liquids

Liquids consist of crude oil, bitumen, condensates and NGL.

### LNG (liquefied natural gas)

Natural gas, comprised primarily of methane, that has been liquefied by cooling in order to transport it.

### LPG (liquefied petroleum gas)

Light hydrocarbons (comprised of butane and propane, belonging to the alkanes class and composed of three and four carbon atoms respectively) that are gaseous under normal temperature and pressure conditions and that are kept in liquid state by increasing the pressure or reducing the temperature. LPG is included in NGL.

## M

### mineral interests

Rights to explore for and/or produce oil and gas in a specific area for a fixed period. Covers the concepts of "permit", "license", "title", etc.

## N

### naphtha

Heavy gasoline used as a base in petrochemicals.

### natural gas

Mixture of gaseous hydrocarbons, composed mainly of methane.

### NGL (natural gas liquids)

A mixture of light hydrocarbons that exist in the gaseous phase at room temperature and are recovered as liquid in gas processing plants. NGL include very light hydrocarbons (ethane, propane and butane).

### net cash flow

Cash flow from operating activities before working capital changes at replacement cost – net investments (including other transactions with non-controlling interests).

### net financial debt

Non-current financial debt, including current portion, current borrowings, other current financial liabilities less cash and cash equivalents and other current financial assets.

### net-debt-to-equity ratio

(Net debt)/(adjusted shareholders' equity).

### net investments

Gross investments – divestments – repayment of non-current loans – other operations with non-controlling interests.

## O

### oil and gas

Generic term which includes all hydrocarbons (e.g., crude oil, condensates, NGL, bitumen and natural gas).

### olefins

Group of products (gas) obtained after cracking of petroleum streams. Olefins are ethylene, propylene and butadiene. These products are used in the production of large plastics (polyethylene, polypropylene, PVC, etc.), in the production of elastomers (polybutadiene, etc.) or in the production of large chemical intermediates.

### operating cash flow before working capital changes

Cash flow from operating activities before changes in working capital at replacement cost.

### organic investments

Net investments, excluding acquisitions, divestments and other operations with non-controlling interests.

### operated production

Total quantity of oil and gas produced on fields operated by an oil and gas company.

### operator

Partner of an oil and gas joint venture in charge of carrying out the operations on a specific area on behalf of the joint venture. A refinery is also said to be operated by a specific partner when the operations are carried out by the partner on behalf of the joint venture that owns the refinery.

## P

### permit

Area contractually granted to an oil and gas company (or a consortium) by the host country for a defined period to carry out exploration work or to exploit a field.

### petcoke (or petroleum coke)

Residual product remaining after the improvement of very heavy petroleum cuts. This solid black product consists mainly of carbon and can be used as fuel.

### polymers

Molecule composed of monomers bonded together by covalent bonds, such as polyolefins obtained from olefins or starch and proteins produced naturally.

### price effect

The impact of changing hydrocarbon prices on entitlement volumes from production sharing and buyback contracts. For example, as the price of oil or gas increases above certain pre-determined levels, TOTAL's share of production generally decreases.

### production plateau

Expected average stabilized level of production for a field following the production build-up.

### production sharing contract/agreement (PSC/PSA)

Exploration and production contract under which a host country or, more frequently, its national company, transfers to an oil and gas company (the contractor) or a consortium (the contractor group) the right to explore a geographic area and develop the fields discovered. The contractor (or contractor group) undertakes the execution and financing, at its own risk, of all operations. In return, it is entitled to a portion of the production, called cost oil/gas, to recover its costs and investment. The remaining production, called profit oil/gas, is then shared between the contractor (contractor group), and the national company and/or host country.

### project

As used in this document, "project" may encompass different meanings, such as properties, agreements, investments, developments, phases, activities or components, each of which may also informally be described as a "project". Such use is for convenience only and is not intended as a precise description of the term "project" as it relates to any specific governmental law or regulation.

### proved permit

Permit for which there are proved reserves.

### proved reserves (1P reserves)

Proved oil and gas reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations, prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation.

### proved developed reserves

Proved developed oil and gas reserves are proved reserves that can be expected to be recovered (i) through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and (ii) through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

### proved undeveloped reserves

Proved undeveloped oil and gas reserves are proved reserves that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion.

### proved and probable reserves (2P reserves)

Sum of proved reserves and probable reserves. 2P reserves are the median quantities of oil and gas recoverable from fields that have already been drilled, covered by E&P contracts and for which technical studies have demonstrated economic development in a long-term price environment. They include projects developed by mining.

## R

### refining

The various processes used to produce petroleum products from crude oil (e.g., distillation, reforming, desulphurization, cracking).

### renewable energies

An energy source the inventories of which can be renewed or are inexhaustible, such as solar, wind, hydraulic, biomass and geothermal energy.

### reserve life

Ratio of reserves at the end of the year to the production sold during the past year.

### reserves

Estimated remaining quantities of oil and gas and related substances expected to be economically producible, as of a given date, by application of development projects to known accumulations.

### reservoirs

Porous, permeable underground rock formation that contains oil or natural gas.

### return on average capital employed (ROACE)

Ratio of adjusted net operating income to average capital employed at replacement cost between the beginning and the end of the period.

### return on equity (ROE)

Ratio of adjusted consolidated net income to average adjusted shareholders' equity (after distribution) between the beginning and the end of the period. Adjusted shareholders' equity for a given period is calculated after distribution of the dividend (subject to approval by the Shareholders' Meeting).

## S

### seismic

Method of exploring the subsoil that entails methodically sending vibration or sound waves and recording their reflections to assess the type, size, shape and depth of subsurface layers.

### shale gas

Natural gas trapped in very compact, low-permeable rock.

### shale oil

Oil in a source rock that has not migrated to a reservoir.

### sidetrack

Well drilled from a portion of an existing well (and not by starting from the surface). It is used to get around an obstruction in the original well or resume drilling in a new direction or to explore a nearby geological area.

### silicon

The most abundant element in Earth's crust after oxygen. It does not exist in a free state but in the form of compounds such as silica, which has long been used as an essential element of glass. Polysilicon (or crystalline silicon), which is obtained by purifying silicon and consists of metal-like crystals, is used in the construction of photovoltaic solar panels, but other minerals or alloys may be used.

### special items

Due to their unusual nature or particular significance, certain transactions qualifying as "special items" are excluded from the business segment figures. In general, special items relate to transactions that are significant, infrequent or unusual. In certain instances, transactions such as restructuring costs or asset disposals, which are not considered to be representative of the normal course of business, may qualify as special items although they may have occurred in prior years or are likely to recur in following years.

### steam cracker

A petrochemical plant that turns naphtha and light hydrocarbons into ethylene, propylene, and other chemical raw materials.

## T

### thermochemical conversion

Conversion of carbon energy sources (gas, coal, biomass, waste, CO<sub>2</sub>) through thermal transformation (chemical reactions controlled by the combined action of temperature, pressure and often of a catalyst). Gasification is an example.

### train

Facility for converting, liquefying, storing and off-loading natural gas.

### turnaround

Temporary shutdown of a facility for maintenance, overhaul and upgrading.

## U

### unconventional hydrocarbons

Oil and gas that cannot be produced or extracted using conventional methods. These hydrocarbons generally include shale gas, coal bed methane, gas located in very low-permeable reservoirs, methane hydrates, extra heavy oil, bitumen and liquid or gaseous hydrocarbons generated during pyrolysis of oil shale.

### unitization

Creation of a new joint venture and appointment of a single operator for the development and production as single unit of an oil or gas field involving several permits/licenses or countries.

### unproved permit

Permit for which there are no proved reserves.

### upgrader

Refining unit where petroleum products, such as heavy oils, are upgraded through cracking and hydrogenation.







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