

CDP Climate Change Questionnaire 2018

Respondent: **Total**

C0 Introduction

Introduction

(C0.1) Give a general description and introduction to your organization.

Total, which has produced oil and gas for almost a century, is one of the largest international oil and gas companies and a major player in low carbon energies. It is present on five continents and in more than 130 countries.

Committed to better energy, over 98,000 employees help throughout the world to provide the Group's customers with products and services that are safer, more affordable, cleaner, more efficient, more innovative and accessible to the greatest number of people. The 2017 turnover was 171.5 billion USD.

As well as conducting its business according to the highest standards of professional behaviour, Total maintains an ongoing commitment to transparency, dialogue and respect for others. The company is strategically dedicated to meeting the challenges faced by all its businesses when developing natural resources, protecting the environment, integrating our operations into host country cultures, and dialoguing with civil society.

Total's activities are divided into 4 main business segments:

- Exploration & Production of oil and natural gas.
- Gas, Renewables & Power spearheads the Group's ambitions in low carbon energies. It comprises gas and electricity activities that are developed downstream of the gas chain all the way down to end-use consumers, including through LNG and power. Its activities include power generation, from gas and from renewables, solar, wind, and hydro, and power storage through batteries. They also include services for energy efficiency and energy access.

- Refining & Chemicals encompasses refining and petrochemical activities, renewable fuel and plastics from biomass and Hutchinson's operations. It also includes oil Trading & Shipping activities.
- Marketing & Services includes worldwide supply and marketing activities mainly of oil products and services , but also of renewables incorporated in oil products, and of gas used for mobility.

Energy is an essential resource for the development of human societies. In view of the major challenges faced by the world today, energy producers have a key role to play. It is by relying on the support provided by its governance and a diverse shareholder base that the Group will be able to fulfil its collective ambition to become a responsible energy major and to supply more reliable, more affordable, and cleaner energy to the greatest number of people. To reach this goal, Total leverages its integrated business model, which enables it to capture synergies between the different activities of the Group, its operational excellence, its technological expertise and its capacity to manage complex projects.

Total is following a clear strategy that is based on four main priorities and that integrates the challenges of climate change, using as a point of reference the 2°C Sustainable Development Scenario of the International Energy Agency (IEA):

- drive profitable and sustainable growth in Exploration & Production activities, with priority given to gas (the fossil fuel that emits the least amount of carbon dioxide) and with strict investment discipline to only develop cost competitive projects.
- Improve the competitiveness of major integrated refining and petrochemical platforms.
- increase the distribution of petroleum products, particularly in high-growth regions, and offer innovative solutions and services that meet the needs of customers above and beyond the supply of petroleum products.
- expand along the full gas value chain by unlocking access to new markets, and develop profitable low carbon businesses, in particular renewable energies and biofuels.

Total intends to strengthen its involvement in the circular economy and implement a program of innovative responsible actions, particularly in the following areas: purchasing, waste management, new ranges of polymers, solarization of its own industrial sites and service stations and improved energy efficiency.

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 climate change and supplying its clients with an energy mix featuring a progressively decreasing carbon intensity. Total also acknowledges the growing pressure on natural resources, including water which has been identified as a priority in the group's environmental management and R&D efforts. The need to reduce water use from natural environments, to minimize Total's water dependency and to lower emissions to water in compliance with local, national and international regulations is thus clearly part of the group's priorities.

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 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.

(C0.2) State the start and end date of the year for which you are reporting data.

01/01/2017 – 31/12/2017

Indicate if you are providing emissions data for past reporting years

Yes, 2 years

(C0.3) Select the countries for which you will be supplying data.

Rest of world

(C0.4) Select the currency used for all financial information disclosed throughout your response.

USD (\$)

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this value should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Operational control

Organizational activities: Chemicals

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Bulk organic chemicals

Lower Olefins (cracking)

Aromatics

Ethylene Oxide & Ethylene glycol

Ethanol

Methanol

Polymers

Adipic acid

Bulk inorganic chemicals

Ammonia

- Fertilizers
- Nitric acid
- Chlorine and Sodium hydroxide
- Carbon black
- Soda Ash
- Titanium dioxide
- Hydrogen
- Oxygen
- Other industrial gasses
- Other chemicals
- Specialty chemicals
- Specialty organic chemicals
- Other, please specify

Organizational activities: Oil and Gas

(C-OG0.7) Which part of the oil and gas value chain does your organization operate in?

- Upstream
- Downstream
- Chemicals

Other divisions

- Biofuels
- Grid electricity supply from gas
- Grid electricity supply from coal
- Grid electricity supply from renewables
- Carbon capture and storage/utilization
- Coal mining

C1 Governance

Board oversight

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

(C1.1a) Identify the position(s) of the individual(s) on the board with responsibility for climate-related issues.

Please complete the following table.

Position of individual(s)	Please explain
Board chair	Patrick Pouyanné, the Chairman of the Board and CEO of Total, is responsible for climate change strategy at the Group scale on the long-term. The chairman of the board is the highest level of the organization, and Group strategy is most significant for the success of the business, this role has therefore been assigned the oversight of these most critical responsibilities, whereby climate-related issues are fully integrated into. In 2016, Total's CEO has taken a decisive step by announcing the creation of a combined Strategy & Climate department because climate, a global concern, must be fully integrated into the Group's overarching strategy.
Board/Executive board	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. Total's Board of Directors ensures that climate-related issues are incorporated into the Group's strategy. Since 2008, these major issues for the Group have no longer been treated as one component of environmental risks, but rather on an independent basis. Patricia Barbizet as Lead Independent Director ensures efficient governance of the company in accordance with current practice. She's the Chairwoman of the Governance and Ethics Committee, member of the Compensation Committee and member of the Strategic & CSR Committee.

(C1.1b) Provide further details on the board’s oversight of climate-related issues.

Please complete the following table. You are able to add rows by using the “Add Row” button at the bottom of the table.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled - some meetings	<ul style="list-style-type: none"> ● Reviewing and guiding strategy ● Reviewing and guiding major plans of action ● Reviewing and guiding risk management policies ● Reviewing and guiding business plans ● Monitoring implementation and performance of objectives ● Overseeing major capital expenditures, acquisitions and divestitures ● Monitoring and overseeing progress against goals and targets for addressing climate-related issues 	<p>Every year, the Board of Directors reviews the main issues related to climate change in the strategic outlook review of the Group’s business segments, which are presented by the respective general management structures.</p> <p>Also, the Audit Committee does more specific work on the climatic and environmental reporting processes in the review of the performance indicators published by Total in its annual reports and audited by an independent third-party organization. Since 2016, the Compensation Committee also decided to introduce changes to the variable compensation of the Chairman and Chief Executive Officer to take better account of the achievement of Corporate Societal Responsibility (CSR) and HSE targets. The importance given to these aspects in the remuneration keeps growing, and the Compensation Committee of the Board reviews these criteria every year.</p> <p>Last, the Board of Directors is fully mobilized by the Climate issue in order to support the development of Total, and it approved the publication of the first Climate Report in March 2016. This report is updated every year.</p> <p>All these points of information and decisions were made during programmed Board’s meetings along the year.</p>

(C1.2) Below board-level, provide the highest-level management position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Other C-Suite Officer, please specify: President Innovation & Strategy	Both assessing and managing climate-related risks and opportunities	Annually
Risk committee	Both assessing and managing climate-related risks and opportunities	Annually

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored.

Total's Chairman and Chief Executive Officer deploys the Group's climate strategy in keeping with the long-term strategic guidelines defined by the Board of Directors. In 2016, Total's CEO has taken a decisive step by announcing the creation of a combined Strategy & Climate department because climate, a global concern, must be fully integrated into the Group's overarching strategy.

General Management calls on the President Strategy & Climate, who is the highest-ranking person in the organization with a day-to-day responsibility for issues related to climate change. In particular, this includes the development of the climate road map for the Group, its implementation and the definition of targets to reduce the carbon footprint. He reports directly to the President Strategy & Innovation, who sits on Total's Executive Committee (refer to the Group organization chart in chapter 1).

The Executive Committee relies on the work done by the Group Risk Management Committee to have a map of the climate-related risks to which the Group is exposed, and to make sure that the risk management measures in place are efficient. The Group Risk Management Committee is chaired by a member of the Executive Committee, the Group's Chief Financial Officer, and includes the Senior Vice Presidents of the corporate functions together with the chief administrative officers or chief financial officers of the business segments. The Chief Financial Officer attends all meetings of the Board of Directors' Audit Committee, thus strengthening the link between the Group Risk Management and the Audit Committee. Moreover, the Risk Committee (CORISK) assesses investment projects, the risks and the corresponding climate-related issues (flaring, greenhouse gas emissions, sensitivity to CO₂ prices) before they are presented to the Executive Committee. Monitoring processes are implemented at different levels of the Group's organisation.

Finally, the President Climate chairs the Climate-Energy steering committee, which includes cross-cutting corporate functions and representatives of Strategy and HSE management from the various business segments. The mission of this committee consists of structuring the Group's approach to the climate, and in particular of:

- developing and periodically adjusting the Group's climate-energy roadmap;
- proposing the targets that the Group sets itself (in terms of energy efficiency, GHG emission reductions, etc.);
- keeping a watch of the existing or emerging CO₂ markets;
- initiating or driving the technological roadmaps corresponding to these subjects (energy efficiency, capture and storage of CO₂, for example).

Employee incentives

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.

Please complete the following table.

Who is entitled to benefit from these incentives?	Types of incentives	Activity incentivized	Comment
Board Chair	Monetary reward	Emissions reduction target	<p>Board Chairman and CEO: in 2013, the Board of Directors of Total decided to add a new criterion for the attribution of the Chief Executive Officer's variable remuneration portion, based on the Corporate Social Responsibility (CSR) performance (CO₂ emissions, energy efficiency,...) for the determination of the personal contribution made by the Chief Executive Officer (see Total's 2017 Registration Document, p. 140-155 and slides 16-22 of Total's 2018 General Annual Shareholder Meeting presentation). In 2015, the portion relating to the HSE/CSR performance criteria taken into account when calculating Mr. Pouyanné's variable compensation was set at a maximum of 16% of his base salary. For 2016 and 2017 the Board of Directors increased this portion to 30%, with 20% tied to safety performance and 10% to CSR performance. For 2018, the importance attached to these criteria continues to increase, with CSR performance rising from 10% to 15%. The CSR performance is measured based on the achievement of targets for carbon emissions, energy efficiency and Total's position in the rankings published by non-financial rating agencies.</p> <p>Executive officers are generally incentivized on their ability to communicate on climate change issues, whereas business unit managers and facility managers are incentivized on the achievement to meet emission reduction targets.</p> <p>Total's remuneration system for management and senior executives comprises a variable component, which is linked to individual performance and the achievement of individually agreed performance targets. Depending on the responsibilities, individual targets of Total management relate to environmental or climate related issues (e.g. refinery and plant managers). Employee performance is assessed in a compulsory annual appraisal review.</p>
Board / Executive Board	Monetary reward	Emissions reduction target	
Corporate executive team	Monetary reward	Emissions reduction target	
Executive officer	Monetary reward	Emissions reduction target	
Business unit manager	Monetary reward	Emissions reduction target	
Facilities manager	Monetary reward	Energy reduction target	

Who is entitled to benefit from these incentives?	Types of incentives	Activity incentivized	Comment
Environment / Sustainability manager	Monetary reward	Emissions reduction target	<p>Total's HSE performance recognition policy is used by Total managers throughout the Group. This HSE performance recognition policy was designed to drive improvement in three areas:</p> <ul style="list-style-type: none"> • How management exercises its HSE responsibilities. • How individual performance is rewarded and/or sanctioned. • How collective performance is rewarded. <p>Managers are assessed on the basis of the specific KPIs (Key Performance Indicators) pertaining to their function and business unit or corporate department. Attainment of GHG emissions reduction targets is part of the KPIs for senior managers with relevant responsibility in that area.</p>

C2 Risks and opportunities

Time horizons

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

Please complete the following table:

Time horizon	From (years)	To (years)	Comment
Short-term	0 (N.B. = 2017)	3 (N.B. = 2020)	Excerpt of Total's 2017 Registration Document (p. 190): The risks and opportunities related to climate change are analyzed according to different timescales: short term (until 2020), medium term (until 2030) and long term (beyond 2030).
Medium-term	4 (N.B. = 2021)	13 (N.B. = 2030)	Excerpt of Total's 2017 Registration Document (p. 190): The risks and opportunities related to climate change are analyzed according to different timescales: short term (until 2020), medium term (until 2030) and long term (beyond 2030).
Long-term	14 (N.B. = 2031)	23 (N.B. = 2040)	Excerpt of Total's 2017 Registration Document (p. 190): The risks and opportunities related to climate change are analyzed according to different timescales: short term (until 2020), medium term (until 2030) and long term (beyond 2030).

Management processes

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management process

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying, and assessing climate-related risks.

Please complete the following table:

Frequency of monitoring	How far into the future are risks considered?	Comment
Six-monthly or more frequently	> 6 years	<p><u>Group Risk Management Committee</u>: the Group's CO₂ achievements and objectives are presented once a year to Total's executive committee.</p> <p><u>Risk Committee</u>: prior to the presentation to / approval by the Executive Committee of each new project, a dedicated Risk Committee verifies the analysis of the various project-related risks, in particular on GHG emissions.</p> <p><u>Climate-Energy steering committee</u>: in order to implement Total's strategy and in line with the "One Total" company project, a new Strategy-Innovation corporate division was put in place in 2016, which includes a Strategy & Climate division tasked with incorporating climate issues into the Group's strategy. This division reports to the Chairman and CEO. Within this division, a Climate Steering Committee exists at the management level, which includes representatives of diverse divisions such as HSE, Strategy & Climate (at corporate and business segments levels); it meets four times a year.</p>

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

The Group implements a risk-management system that is an essential factor in the deployment of its strategy, based on responsible risk-taking. This system relies on a continuous process, at company and asset level, of identifying and analyzing risks in order to determine those that could prevent the attainment of Total's goals.

Climate risks are therefore assessed in the same manner as other types of risk, by considering their materiality in terms of substantive financial impact, reputational impact, physical impact, legal impact etc. Any investment, sale or financial commitment is subject to different levels of decision-making based on financial thresholds. Substantive change is defined as the amount of CAPEX involved in the particular project under analysis, based on "financial significance" thresholds, risks will be assessed through different processes and undergo different levels of validation, these thresholds are segment-specific.

At company level:

The Group Management Risk Committee (GRMC) meets six times a year. At each meeting, the participants share any potential risks they have identified and presentations are given on one or more risk-related topics, during which the members of the GRMC are invited to cast a critical eye over the subject, question the work done and, if applicable, provide additional information or clarification in order to enhance the understanding of the risk and improve the risk management systems. Its objective is a better integration of risk management through a coordinated approach, and to:

- identify cross-functional or emerging risks – including climate risks, both mitigation and adaptation - and assess residual risks on existing processes and, when appropriate, elaborate proposals for additional processes so that they stand at levels deemed acceptable, risk are assessed from low risk to very high risk, based on the potential consequences and timeframes;
- ensure that risks and relevant processes for addressing them are effectively handled by managers appointed within the organization;
- approve the corporate communication plan concerning the global risk management framework - including climate related risks - and its further development.

The Board of Total has reassessed the importance of climate change in the Group's strategy. From 2008, climate issues were treated as completely separate environmental risks, but they have now fully integrated into the company's business and strategic vision. Total's processes cover in particular regulatory risks and customer behavioural changes.

At asset level:

Similarly, for all the Group's assets, emerging risks – including climate risks - are identified by asset managers, who assess residual risks on existing processes and, when appropriate, elaborate proposals for additional processes so that they stand at levels deemed acceptable.

Management: for all important projects, Environmental and Social Baseline Studies and Impact Assessments are systematically conducted in the early stages of these projects, under the responsibility of the project manager.

The Risk Committee verifies the analysis of the various project-related risks in six main areas: environment (GHG emissions, water withdrawal, soil, etc,...), societal aspect, social aspects, health, industrial safety and security.

For each new project, the criteria for determining materiality are defined in the “Corisk” checklist, which needs to be completed before submission to the Risk Committee, prior to the presentation to / approval by the Executive Committee.

Priorities are defined by the Executive Committee depending on the importance of the project, based on a number of parameters (e.g. geopolitical situation or risks in the country, oil price, gas price, forecast of the price evolution,...). All these parameters are analyzed and updated each year in the long-term plan documents (10 year forecast) prepared by each operational entity within the Group.

The Group's Industrial Safety Guideline No. 8 defines the management process of technological risks of Total's operations. This risk management aims at reducing the risks for inside and for outside Total's industrial sites to a level as low as reasonably practicable. The prioritization processes are the following:

1. Identification and characterization of hazards (substances, equipment, processes).
2. Preliminary evaluation of risks: definition and inventory of all possible accident scenarios resulting from identified hazards.

3. Detailed study of the causes of the selected accident scenarios and of the risk-reducing measures taken when the facilities were designed, and quantification of the probability of occurrence of the selected scenarios, of the possible impact and of the severity of potential damages; identification and evaluation of additional risk-reducing measures. This leads to prioritize risks through the use of a risk matrix, with a severity which can be low / moderate / high / very high.
4. Mitigation plan.

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

Please complete the following table:

Risk type	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Total's main emitting sites located in Europe are complying with the European carbon market (EU-ETS). The risk for Total is a loss of competitiveness on the international scale, in particular towards competitors located outside the European Union, which are not subject to similar regulation. Twice a year, the CO ₂ price impact is presented to the management and associated mitigations measures are identified. The market's evolution is continuously monitored.
Emerging regulation	Relevant, always included	More and more countries are likely to adopt carbon taxes to accelerate the low carbon transition.
Technology	Relevant, always included	Because of the effects of global warming, many countries will increasingly be looking to develop alternative energy sources, or technologies which enable alternative energy sources development, such as renewable energy sources, energy storage solutions, etc. Through its venture capital company Total Energy Ventures, the GRP segment ensures a continuous new technologies assessment, business review are then organised for potential new investment.
Legal	Relevant, always included	Since 2016, there has been some legal cases involving oil and gas companies: some cases argue that some oil industry or other major fossil fuel producers should be held accountable for climate impacts. Other cases involve cities or local governments asking O&G companies to pay a fair share of their local climate change costs.
Market	Relevant, always included	If the world is to have a chance of not exceeding global warming of 2°C, a carbon budget should not be exceeded. This has led some analysts to consider that coal and a part of the oil and gas reserves of publicly listed companies are 'unburnable' – the so-called stranded assets.
Reputation	Relevant, always included	Operational accidents in the oil and gas sector may cause the release of high quantities of pollutants / GHG emissions. The degraded reputation may result in a lack of confidence from investors and/or poor acceptability from stakeholders. A similar situation in terms of reputation may result from a slow reaction of the company to the energy transition.

Risk type	Relevance & inclusion	Please explain
Acute physical	Relevant, always included	The effect of extreme events due to climate change may impact the robustness of our infrastructures or surrounding environment. In addition to assessing the vulnerability of Oil and Gas existing facilities, there is also a need to assess the vulnerability of nearby infrastructures (such as access roads), of surrounding populations (which include companies' employees) etc. An example is the effect of severe flooding in Houston, TX. in 2017.
Chronic physical	Relevant, always included	The effect of slowly changing physical parameters (such as ambient temperature) due to climate change may impact the longer-term robustness of our infrastructures or surrounding environment. For instance, when it comes to the use of cooling water for process systems.
Upstream	Relevant, sometimes included	An oil and gas company is dependent on a number of suppliers, for instance involved in project engineering, design and construction or in maintenance of existing infrastructures. Should these suppliers be severely impacted by the effects of climate change, it may induce some delay in operations or production shut-down.
Downstream	Relevant, sometimes included	Energy, an essential resource, accompanies the development of society. In view of the major challenges faced by the world today, energy producers have a key role to play. Failure of energy supply can have severe consequences on citizens' lives.

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

With regard to risks related to climate issues, Total, in accordance with its Safety Health Environment Quality Charter, is committed to managing its energy consumption and develops processes to improve its energy performance and that of its customers.

In its decision-making process, the risks and associated climate issues (flaring, greenhouse gas emissions, CO₂ price sensitivity) are assessed prior to the presentation of the new projects (both upstream and downstream) to the Executive Committee, For each new project, the criteria for determining materiality are defined in the "Corisk" checklist, which needs to be completed before submission to the Risk Committee, prior to the presentation to / approval by the Executive Committee.

Priorities are defined by the Executive Committee depending on the importance of the project, based on a number of parameters (e.g. geopolitical situation or risks in the country, oil price, gas price, forecast of the price evolution,...). All these parameters are analyzed and updated each year in the long-term plan documents (10 year forecast) prepared by each operational entity within the Group.

For all important projects, Environmental and Social Baseline Studies and Impact Assessments are systematically conducted in the early stages of these projects, under the responsibility of the project manager.

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 CO₂ price of 30 to 40 USD per ton (depending on the price of crude), or the actual price of CO₂ 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 CO₂.

In addition, Total takes into account the Sustainable Development Scenario (2°C) 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. It also identifies key areas in the energy transition where the Group can have a role to play. A few examples are the recent acquisitions of Saft (energy storage), Greenflex (energy efficiency), Eren RE (renewable energy production), Direct Energy (sale of gas and electricity to residential consumers, electricity generation from gas and from renewables) demonstrate the ability and the will of the Group to seize opportunities of new businesses in order to reduce the transition risk.

Risk disclosure

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Please complete the following table.

Identifier	Where in the value chain does the risk driver occur?	Risk type	Primary climate-related risk driver	Type of financial impact driver	Company- specific description	Time horizon	Likelihood
Risk 1	Direct operations	Transition risk	Policy and legal: Mandates on and regulation of existing products and services	Policy and legal: Write-offs, asset impairment, and early retirement of existing assets due to policy changes	Some investors may divest from Total if they consider that some of our assets are stranded. For instance those with high carbon intensities (coal, oil sands, etc.) Indeed, the UNFCCC Paris Agreement has set a clear 2°C objective for the world, and has engaged countries to take action in order to reach this objective. If the world is to have a chance of not exceeding global warming of 2°C, a carbon budget should not be exceeded. This has led some analysts to consider that coal, oil and gas reserves of publicly listed companies are 'unburnable' – the so-called stranded assets.	Short-term	Likely

Magnitude of impact	Potential financial impact	Explanation of financial impact	Management method	Cost of management	Comment
Medium-Low	5 billion USD	<p>To ensure the viability of Total's projects and our long-term strategy with regard to climate change issues, Total applies an internal CO₂ price of 30 to 40 USD / ton, depending on the oil price scenario or the actual price if it is higher in a given country, when evaluating our investments. This is consistent with Total's support for mechanisms to replace coal with gas in power generation and our investment in R&D on low-carbon technologies.</p> <p>A global carbon price would have some impact on the overall financial situation of Total: studies have shown that a long-term CO₂ price of USD 40 per ton (effective from 2021, or the current price if higher in a given country) applied worldwide would have an impact of around 5% on Total's discounted present value (upstream and downstream assets), i.e more than 5 GUSD. Total's portfolio can therefore be considered resilient under such a scenario.</p>	<p>Patrick Pouyanné, the Chairman of the Board and CEO of Total, has taken a decisive step by creating a combined Strategy & Climate department, because climate, a global concern, must be fully integrated into the Group's overarching strategy.</p> <p>The management method by Total's Board is clearly set:</p> <ol style="list-style-type: none"> 1. Divestment from assets which are no longer consistent with this strategy. An example is that, 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. Similarly, the Group has also decided to retrieve from the CTO project (Coal To Olefins) in China in August 2016. 2. Selection of new oil and gas projects by focusing on low break-even costs, while meeting the highest standards of safety and environmental stewardship: an example is the use by Total of a merit curve for any new development. 3. Focus more on gas than on oil, by deploying an aggressive natural gas strategy. Gas emits half as much of GHG than coal. Our ambition is "60% gas in our production mix in 20 years' time." 4. Development of Carbon Capture, Utilisation and Storage (CCUS). 5. Another example is that Total continues to increase its presence in the renewable sector and low carbon sector. In 2016, Total acquired SAFT + Lampiris + creation of Total Solar. In 2017, it entered the capital of Eren RE and Direct Energy. 	2 M€	To take care of these topics: cost estimated at 1 M€ to 2 M€ (which represents 10 FTEs of the Climate team + preparation/participation of business segments to Board meetings, "Corisk" meetings, and Climate-Energy Steering Committee meetings).

Identifier	Where in the value chain does the risk driver occur?	Risk type	Primary climate-related risk driver	Type of financial impact driver	Company- specific description	Time horizon	Likelihood
Risk 2	Direct operations	Transition risk	Policy and legal: Increased pricing of GHG emissions	Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)	More and more countries are likely to adopt carbon taxes to accelerate the low carbon transition, which could have an impact on Total's activities.	Medium-term	Likely
Magnitude of impact	Potential financial impact	Explanation of financial impact	Management method		Cost of management	Comment	
Medium-High	5 billion USD	The price on carbon has some impact on the overall financial situation of Total: studies have shown that a long-term CO ₂ price of USD 40 per ton (effective from 2021, or the current price if higher in a given country) applied worldwide would have an impact of around 5% on Total's discounted present value (upstream and downstream assets), i.e more than 5 GUSD. Total's portfolio can therefore be considered resilient under such a scenario.	To ensure the viability of its projects and its long-term strategy with regard to climate change issues, Total applies an internal CO ₂ price of 30 to 40 USD per ton, depending on the oil price scenario or the actual price if it is higher in a given country, when evaluating our investments. This is consistent with our support for mechanisms to replace coal with gas in power generation and our investment in R&D on low-carbon technologies. A price between 30 and 40 USD per ton would be enough to encourage a switch from coal to gas, steer investment toward the technologies required to reduce emissions. Total is part of the World Bank Carbon Pricing Leadership Coalition (CPLC) which helps anticipating these changes. As an example, Total E&P Kazakhstan are already stress-tested against the potential future CO ₂ costs by evaluating the impact on the Net Positive Value of CO ₂ prices of 30 to 40 USD per ton.		1 M€	To take care of these topics: cost estimated at 0.5 M€ to 1 M€ (which represents 3 FTEs of resources dedicated to carbon pricing mechanisms + support to the Climate Economy Chair, an academic initiative).	

Identifier	Where in the value chain does the risk driver occur?	Risk type	Primary climate-related risk driver	Type of financial impact driver	Company- specific description	Time horizon	Likelihood
Risk 3	Direct operations	Transition risk	Policy and legal: Increased pricing of GHG emissions	Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)	The financial risk related to the foreseeable purchase of CO ₂ emission allowances on the market is expected to rise due to the effects of the ongoing reform of the EU-ETS. Total's main emitting sites located in Europe are complying with the European carbon market (EU-ETS). The risk for Total is a loss of competitiveness on the international scale, in particular towards competitors located outside the European Union, which are not subject to similar regulation. The implementation of the Market Stability Reserve which will come into effect in 2019, will reduce the amount of auctioned quotas in an attempt from the European Commission to drive the EU-ETS price up.	Medium-term	Likely
Magnitude of impact	Potential financial impact	Explanation of financial impact		Management method	Cost of management	Comment	
Medium-High	160 M€	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 (25% of scope 1 and 2 emissions in Europe) and at least 30% during the period 2021-2030. At year-end 2017, the price of CO ₂ emission allowances stood at approximately 7.5€/t CO ₂ . The forecast for 2020 indicates that the price could rise to approximately 15€/t CO ₂ due to the establishment of a "market stability reserve" as from 2019. The Group believes that the price of CO ₂ emission allowances could rise to at least 30€/t during phase 4 (2021-2030).		<ul style="list-style-type: none"> • Related investments made in installations (in particular in refineries and petrochemical plants in Europe) to mitigate our exposure risk, by advancing new technologies to limit GHG emissions through the improvement of energy efficiency, with clear goals set for the Group (-1% per year). 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. • The use of energy savings certificates in Europe (fuel sales). • The use of a 30 to 40 USD / tCO₂ shadow price in all of our investment decisions, to make sure our assets are resilient even in a CO₂ priced environment. • Compliance with the EU ETS, through a close monitoring of positions, improvement projects and, when necessary, market transactions. Preparations to deal with phase III (2013-2020) of the EU ETS are currently under way via the "comitology" process. 	1 M€	To take care of these topics: cost estimated at 0.5 M€ to 1M€ (which represents 3 FTEs of resources dedicated to carbon pricing mechanisms + support to the Climate Economy Chair, an academic initiative).	

Identifier	Where in the value chain does the risk driver occur?	Risk type	Primary climate-related risk driver	Type of financial impact driver	Company- specific description	Time horizon	Likelihood
Risk 4	Direct operations	Physical risk	Acute: Increased severity of extreme weather events such as cyclones and floods	Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)	<p>The tendency observed in recent years shows that hurricanes tend to become stronger than in the past. This could have an impact on the continuity of Total's operations, especially in Exploration and Production, and Refining and Petrochemicals, in particular in cyclone-prone areas.</p> <p>These physical risks could affect Total's business and value chain in the following way:</p> <ul style="list-style-type: none"> The utilization rate of the production capacity could be less than expected in the event of major physical incident. The other consequences would be the repair costs to restore a normal situation and resume production, and a loss of revenue during the downtime. <p>Geographical areas considered as highly exposed to hurricanes are the Gulf of Mexico and South-East Asia. In the USA, Total operates a refinery and a chemical plant in Port Arthur, Texas, and has some petrochemical plants in Texas.</p>	Medium-term	Very likely
Magnitude of impact	Potential financial impact	Explanation of financial impact			Management method	Cost of management	Comment
Medium-low	5 million USD	<p>For Total, the financial implications are generally estimated on the basis on a number of days of lost production on a site and the corresponding loss of revenue (products not sold to customers during the downtime). For example, in average, a production stop of one month of a refinery would represent an operational loss of about 30 MUSD (one month corresponds to the average production stop faced during the last hurricanes in the USA).</p> <p>The potential financial implications of physical risks are limited when considering our global activities in 130 countries, so any weather-related event in a given country would only affect a small proportion of our activities at a given time.</p> <p>Given their locations, E&P production sites operated by Total have so far suffered relatively limited exposure to extreme weather events.</p> <p>Geographical areas considered as highly exposed to hurricanes are the Gulf of Mexico and South-East Asia.</p>			<p>Total has implemented an active process in order to regularly conduct vulnerability studies of our facilities, and our internal procedures specifically call for the systematic assessment of the possible repercussions of climate change on future projects. In-depth studies are carried out when the potential risk is significant relative to the existing safety margin. Our analyses take into account the life span of our projects and their capacity to gradually adapt. To date, these studies have not identified any facilities that cannot withstand the consequences of climate change. For instance, the effect of climate change on the evolution of tropical cyclones offshore Australia has been accounted for to design Ichthys LNG development.</p>	1 M€	<p>For Upstream activities in particular, there is a dedicated team, coordinating specific studies for all assets: the annual cost (FTE + external studies) is approximately 1 M€, excluding additional costs potentially due to specific site surveys. Dealing with physical risks attached to new projects in more exposed areas is integrated into the engineering and economic characteristics of the projects.</p>

Opportunity disclosure

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Please complete the following table.

Identifier	Where in the value chain does the opportunity occur?	Opportunity type	Primary climate-related opportunity	Type of financial impact	Company-specific description	Time horizon	Likelihood
Opp1	Direct operations	Products and services	Development and/or expansion of low emission goods and services.	Increased revenue through demand for lower emissions products and services	With the effects of global warming, many countries may increasingly be looking to develop alternative energy sources. For some 15 years, Total has been committed to developing renewable energies, including solar, wind, batteries etc.	Short-term	Very likely
Magnitude of impact	Potential financial impact	Explanation of financial impact	Strategy to realize opportunity		Cost to realize opportunity	Comment	
Medium	2 billion USD	Renewables energies will gradually increase in Total's portfolio. Low carbon activities could represent 20% of Total's activities 20 years from now, this could represent a potential financial benefits of 2 billion USD.	Gradual development in low carbon businesses, i.e. Saft, Total EREN, Direct Energie, Engie Total Eren, will enable the Group to boost its development in solar energy and break into wind power. The acquisition of Engie's upstream LNG business offered Total an opportunity to speed up its integrated gas chain strategy. Direct Energie (acquired in 2018) will allow the Group to accelerate its downstream integration along the full gas and power value chain and to reach critical mass in the French and Belgium markets.		5 billion USD	5 billion USD were spent in the last 2 years. Further spending will take place in the next years.	

Identifier	Where in the value chain does the opportunity occur?	Opportunity type	Primary climate-related opportunity	Type of financial impact	Company-specific description	Time horizon	Likelihood
Opp2	Direct operations	Products and services	Development and/or expansion of low emission goods and services.	Increased revenue through demand for lower emissions products and services	Once efficient mechanisms to support the development of Carbon Capture and Storage (CCS) are implemented, Total will be in a favorable position to take a significant part to this development because of its extensive knowledge on this topic (this knowledge will come from its R&D program (which will make Total competitive), its experience in geosciences (needed for CO ₂ storage), and its business development capacities). The development of carbon capture, utilization 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). Total tends 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.	Medium-term	About as likely as not
Magnitude of impact	Potential financial impact	Explanation of financial impact			Strategy to realize opportunity	Cost to realize opportunity	Comment
Medium	2.5 billion USD	The CCUS market is estimated to develop dramatically in the next 30-35 years, with worldwide CAPEX of around 65 G\$/year and OPEX growing from 0 to more than 250 G\$ / year. This market must first become profitable before such development. Total can play a significant role in this market (1% of market share of 250 GUSD, i.e 2.5 billion USD). Through the OGCI-CI (Climate Investments), Total will invest 5 million USD on CCUS.			Total is developing an R&D roadmap for CCUS and additionally Total is ready to implement a large scale CCS project whenever it will be possible technically and economically viable. Total answered a call for tender and was selected in 2017 to participate in a CCUS project in Norway (Northern Light). This project is potentially a milestone in the development of CCS in Europe as it is based on industrial emissions from cement and maybe waste to energy, and it paves the way to a development of CO ₂ storage infrastructure for industries and power generation.	60 MUSD	To that end, Total will allocate up to about 50 to 60 MUSD/year of R&D spending for CCUS.

Identifier	Where in the value chain does the opportunity occur?	Opportunity type	Primary climate-related opportunity	Type of financial impact	Company-specific description	Time horizon	Likelihood
Opp3	Direct operations	Products and services	Development and/or expansion of low emission goods and services.	Increased revenue through demand for lower emissions products and services	Developing energy storage activities: the acquisition of Saft Groupe in 2016 shall enable the integration of activities related to electricity storage solutions, which are essential to the development of renewables.	Short-term	Very likely
Magnitude of impact	Potential financial impact	Explanation of financial impact	Strategy to realize opportunity		Cost to realize opportunity	Comment	
Medium	1 billion USD	In 2017, Saft achieved sales of 744 million €. The value of this company could double to more than 1 billion USD.	The acquisition of 100% of the shares of Saft, completed in August 2016 following a successful voluntary takeover bid, is fully in line with Total's goal to develop in low-carbon businesses, particularly renewable energies. Saft is a French company founded in 1918 specializing in the design, manufacture and marketing of high technology batteries for industry. Saft develops 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 field of energy storage. Building on its technological expertise, Saft is well positioned to benefit from growth in renewable energies beyond its current activities.		1 billion USD	As of year-end 2017, Saft is present in 18 countries, and has over 4,000 employees.	

Identifier	Where in the value chain does the opportunity occur?	Opportunity type	Primary climate-related opportunity	Type of financial impact	Company-specific description	Time horizon	Likelihood
Opp4	Direct operations	Products and services	Development and/or expansion of low emission goods and services.	Increased revenue through demand for lower emissions products and services	Consumers will require products that emit less CO ₂ for the same use. Total developed a label, Ecosolutions, that helps its customers (consumers, businesses, manufacturers and communities) to offer efficient, innovative, lower-energy solutions that are more respectful of its shared environment.	Short-term	Very Likely
Magnitude of impact	Potential financial impact	Explanation of financial impact	Strategy to realize opportunity		Cost to realize opportunity	Comment	
High	170 M€	In Marketing, our objectives are to change the customer relationship by bringing in more and more services (e.g. to move from selling fuel products to providing advice on how to best heat the home) in order to gain new customers and retain them. Other financial implications are additional market share and attraction of new customers. Total Ecosolutions Products represented about 10% of total net operating revenues of Marketing & Services business segment in 2017 (approximately 170 M€).	Total has introduced products labelled Ecosolutions in 2009. At the end of 2017, there were 93 products. To manage this label, Total has set up a steering committee for Total Ecosolutions, where new labels are audited by an external consultant, and then submitted to steering committee approval: in 2017, the Total Ecosolutions Steering Committee met 4 times.		30 K€	External verification costs of the labelled products (30 K€/year).	

Identifier	Where in the value chain does the opportunity occur?	Opportunity type	Primary climate-related opportunity	Type of financial impact	Company-specific description	Time horizon	Likelihood
Opp5	Direct operations	Products and services	Development and/or expansion of low emission goods and services.	Increased revenue through demand for lower emissions products and services	Developing an offer on energy efficiency through the affiliates TENAG GmbH, BHC Energy and Greenflex 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. In 2017, the Group also acquired Greenflex, in a move to speed up the development of its offer on the energy efficiency market.	Short-term	Very Likely
Magnitude of impact	Potential financial impact	Explanation of financial impact		Strategy to realize opportunity	Cost to realize opportunity	Comment	
High	1 billion USD	Energy efficiency for both individuals and companies is becoming increasingly important; therefore Total is expecting significant revenues from this activity. Sales should more than double within 5 years, to 1 billion USD.		In 2017, Total's Management Committee of the new business segment GRP (mentioned earlier) met several times to steer the activities of TENAG, BHC and Greenflex. The Group offers its customers solutions (products and services) for responsible energy use.	2 M€	About 5 FTEs/year in Total + external support (approximately 1-2M€/year) + all staff from TENAG / BHC.	

Identifier	Where in the value chain does the opportunity occur?	Opportunity type	Primary climate-related opportunity	Type of financial impact	Company-specific description	Time horizon	Likelihood
Opp6	Direct operations	Products and services	Development and/or expansion of low emission goods and services.	Increased revenue through demand for lower emissions products and services	Total is providing solar energy solutions to low income customers in emerging countries and facilitate access to energy to a large number of people. The distribution channels 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.	Short-term	Very likely

Magnitude of impact	Potential financial impact	Explanation of financial impact	Strategy to realize opportunity	Cost to realize opportunity	Comment
Medium	1 million USD	<p>This new business segment could potentially bring several millions of USD of benefits. However, Total's Access to energy program is a social business and profitability is not the main driver.</p> <p>Beyond the extra financial values (social impact), this business unit could bring substantial financial benefits to the group (potentially estimated at more than 1 MUSD/year in 5 years).</p>	<p>Total is engaged in the sector through institutional partnerships (International Finance Corporation, Global Off-Grid Lighting Association) and is in contact with institutions to undertake joint initiatives (United Nations Development Program, and World Bank). Economic profitability is required to sustain the business and ensure its long-term impact. Social impact: lamp sold impacts 4.4 people (source World Bank), which means that more than 10 million people have benefited from Total Access to energy activities since launch in 2011 (by the end of 2017, 2.3 million lamps and solar kits had been sold). Resellers benefit from the project, through the training they receive (product knowledge, selling skills) and through the revenue generated by the lamps sold. The promotional campaigns and tools go a long way towards raising people's awareness about the use of solar products.</p> <p>Total's strategy is to: draw on the resources and assets of an international group (local affiliates with an extended network of service-stations and facilitated logistics), develop partnerships with international and local stakeholders in contact with off-grid communities, develop relevant activities throughout the value chain. To date, over 40 Total affiliates distribute solar solutions across Africa, Asia, and Latin America, with dedicated resources (budget and human resources).</p>	3 M€	6 FTEs at headquarters and 30 to 50 FTEs in the affiliates, which represents about 2 to 3 M€/year.

Business impact assessment

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

Please complete the following table:

Area	Impact	Description
Products and services	Impacted	Climate Change impacts clients' needs and behaviours, as well as other stakeholders' expectations. For instance, more and more of our clients ask us low carbon solutions to their needs, as well as services to help them improving their energy consumption. The impact is very important, in particular of the Company aims at becoming the Responsible Energy Major, and first amongst its peers. This lead Total to develop Total Ecosolutions products, but also to acquire new businesses in energy efficiency (Greenflex recently), in energy storage (Saft) etc.

Area	Impact	Description
Supply chain and/or value chain	Impacted	<p>The Group believes in the essential role of natural gas as one of the solutions to climate change issues. 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 strictly reduce the methane emissions associated with the production and transportation of gas, i.e. along the whole gas value chain.</p> <p>Total's methane emissions specifically associated with gas production are less than 0.3% 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 UN Environment and the non-profit organization Environmental Defense Fund. The Group also took several actions as part of the Oil & Gas Climate Initiative and signed the guiding principles on the reduction of methane emissions by the gas value chain.</p> <p>The impact is very important as it is critical for proving the role of gas.</p>
Area	Impact	Description
Adaptation and mitigation activities	Impacted	<p>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-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 lifespan of the projects and their capacity to gradually adapt. These internal studies have not identified any facilities that cannot withstand the consequences of climate change known today (in the sense that we have knowledge of changes to varying degrees of uncertainty through climate models but have not experienced). The impact is, so far, relatively limited.</p>
Investment in R&D	Impacted	<p>Climate Change influences more and more where the Group puts its efforts in terms of R&D and new investments. In particular, it has led to increasing the R&D budget associated to CCUS (Total intends to devote up to 10% of its R&D investments to CCUS).</p> <p>The Group relies on a dynamic R&D policy to conduct and develop its activities. There are two main priorities: developing activities and programs with a direct impact on Total's aim to become the responsible energy major; anticipating technological breakthroughs in order to seize opportunities for development relating to the evolution of the energy mix. The impact is indeed important.</p>
Operations	Impacted	<p>For more than a decade, Total has integrated climate changes issues in the way it operates. In particular, it has led the Group to reduce routine flaring in a proactive manner, as well as to introduce energy efficiency efforts wherever possible. Both topics are covered by Group objectives, which are actually translated in business units and assets objectives. The impact is very important.</p>

Financial planning assessment

(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.

Please complete the following table:

Area	Relevance	Description
Revenues	Impacted	Internal studies conducted by Total have shown that a long term CO2 price of 40 USD / ton applied worldwide would have a negative impact of around 5% on the discounted value of the Group's assets (upstream and downstream). In addition, the average reserve life of the Group's proved and probable reserves is approximately 20 years and the discounted value of proved and probable reserves with a reserve life of more than 20 years is less than 10% of the discounted value of the Group's upstream assets.
Operating costs	Impacted	Climate-related issues are at the heart of the strategic vision implemented by the company, on the basis of the International Energy Agency's Sustainable Development Scenario (2°C). The impact of the risks and opportunities related to climate change is reflected in Total's climate strategy by the following paths of action <ul style="list-style-type: none"> • Improving the carbon intensity of the hydrocarbon production mix with at least 60% of gas in 20 years, • Developing low-carbon activities to supply electricity, and • Improving energy efficiency.
Capital expenditures/capital allocation	Impacted	Climate-related issues are at the heart of the strategic vision implemented by the company, on the basis of the International Energy Agency's Sustainable Development Scenario (2°C). The impact of the risks and opportunities related to climate change is reflected in Total's climate strategy by the following paths of action <ul style="list-style-type: none"> • Improving the carbon intensity of the hydrocarbon production mix with at least 60% of gas in 20 years, • Developing low-carbon activities to supply electricity, and • Improving energy efficiency.

Area	Relevance	Description
Acquisitions and divestments	Impacted	<p>Climate-related issues are at the heart of the strategic vision implemented by the company, on the basis of the International Energy Agency's Sustainable Development Scenario (2°C). The impact of the risks and opportunities related to climate change is reflected in Total's climate strategy by the following paths of action:</p> <ul style="list-style-type: none"> • Improving the carbon intensity of the hydrocarbon production mix with at least 60% of gas in 20 years, • Developing low-carbon activities to supply electricity, and • Improving energy efficiency. <p>We have acquired low carbon activities (Eren RE, Direct Energie, Saft and Engie's LNG assets). 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.</p>
Access to capital	Impacted	<p>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 CO₂ price of 30 to 40 USD per ton (depending on the price of crude), or the actual price of CO₂ 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 CO₂.</p>
Assets	Impacted	<p>Internal studies conducted by Total have shown that a long term CO₂ price of 40 USD / ton applied worldwide would have a negative impact of around 5% on the discounted value of the Group's assets (upstream and downstream). In addition, the average reserve life of the Group's proved and probable reserves is approximately 20 years and the discounted value of proved and probable reserves with a reserve life of more than 20 years is less than 10% of the discounted value of the Group's upstream assets.</p>
Liabilities	Impacted	<p>Climate-related issues are at the heart of the strategic vision implemented by the company, on the basis of the International Energy Agency's Sustainable Development Scenario (2°C). The impact of the risks and opportunities related to climate change is reflected in Total's climate strategy by the following paths of action:</p> <ul style="list-style-type: none"> • Improving the carbon intensity of the hydrocarbon production mix with at least 60% of gas in 20 years, • Developing low-carbon activities to supply electricity, and • Improving energy efficiency.

C3 Business strategy

Business strategy

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

Yes, qualitative and quantitative

(C-OG3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.

Yes

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

i) How Total's business strategy is influenced - Internal processes:

Regulatory watch: after the Paris agreement, Total decided, early 2016, to fully integrate climate into its strategy and to take into account the implications of the 2°C scenario across its value chain. Total's objectives for the next 20 years are to contribute to building a low-carbon future that does not curb economic and social development, and that meets the challenges of demographic growth.

Watch on prospective aspects: Total's strategy incorporates the challenges of climate change using the IEA Sustainable Development prospective scenario (SDS) as a point of reference.

Total has also implemented a system to collect and monitor carbon data internally, a tool called Harpe.

External participations: Total is a member of OGCI and IPIECA and is involved in different working groups and task forces that help companies focus on best practices to integrate climate risks and opportunities into their strategy.

ii) Examples of how the business strategy has been influenced:

All this helped to inform Total's board and top management's decision to publish a specific report on climate in 2016, updated in May 2017 - and to create a combined Strategy & Climate Division in the fall of 2016, because climate, a global concern, must be fully integrated into Total's overarching

strategy. Moreover, a new business segment called Gas, Renewables & Power (GRP) was created: it spearheads Total's ambitions in low-carbon businesses by expanding in downstream gas and renewable energies as well as in energy efficiency businesses.

In addition, following completion of the sale in 2015 of its subsidiary Total Coal South Africa, Total ceased its coal production activities and in 2016, ended its coal trading activities. Total also chose to withdraw from China's coal-to-olefins (CTO) project for producing plastics from coal, since it was no longer consistent with Total's long-term strategy.

This business strategy is set by Total Executive Committee, and was clearly influenced by the global context of the energy transition. It is illustrated by the emissions reduction targets set by Total's Executive Committee on routine flaring and energy efficiency, as well as by the more overarching ambition to reduce Total's carbon intensity in agreement with the IEA's SDS scenario.

iii) The main aspects of climate change that influenced our strategy:

Regulatory changes: to ensure that investment projects are as profitable as anticipated in the desirable event that the international community agrees to put a cost on CO₂ emissions, investments have been valued since 2008 based on a cost of 25€/tCO₂. As of 2016, this cost has been raised to 30 to 40 USD/tCO₂ depending on the price scenario retained. This is consistent with the prices generally required to favour, on the one hand, gas over coal for producing electricity and, on the other hand, R&D in new low-carbon technologies.

Opportunity to develop green business: focusing and developing Total's gas business has been and is largely influenced by the climate change related need to accelerate the growth of the gas share in the energy mix to replace coal.

iv) Influence on short term strategy:

Total takes into account the challenges related to climate change and strives to improve the impact of its activities on the environment and the carbon intensity of its production mix, by setting its short-term climate strategy around the following focal points:

- Continue efforts in reducing GHG emissions. Total's new set of targets and commitments (defined at the beginning of 2016) illustrates its efforts in reducing its direct GHG emissions through:
 - a 80% reduction of operated routine flaring (according to the World Bank's Zero Routine Flaring initiative) over 2010-2020 with a view to eliminating it by 2030;
 - a 1% per year on average improvement in energy efficiency of operated installations over 2010-2020.
- Select new oil and gas projects by focusing on low break-even costs, while meeting the highest standards of safety and environmental stewardship.
- Improve the energy efficiency of its facilities and products. For example Total Ecosolutions program (93 different products and services labelled by end of 2017)
- Continue to grow in solar and wind energy: Total acquired a majority share in SunPower in 2011. In addition, Total 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 Group also acquired Eren in 2017.
- Total is also investing in biomass projects (e.g. La Mède biorefinery (France), Amyris, etc.).

v) Influence on long term strategy:

Through the integration of a CO₂ / carbon cost in all new capital expenditure decisions since 2008 all of its new projects / activities brought to Total's Excom directly integrate the impact of its future greenhouse gas emissions. Total strives to improve the impact of its activities on the environment and the carbon intensity of its production mix, by setting its long-term climate strategy around the following focal points:

- Focus more on gas than on oil, by deploying an aggressive natural gas strategy. Total's ambition is "More than 60% gas in our production mix in 20 years' time."
- Develop Carbon Capture, Utilisation and Storage (CCUS): up to 10% of its R&D spending;
- Grow in renewable energies and low-carbon businesses. Total's ambition is to have 20% of its portfolio in low-carbon businesses by 2035.

Total has decided in 2015 to invest up to 500 MUSD per year in low-carbon businesses.

vi) Paris Agreement influence:

In the wake of the Paris agreement, Total decided to implement a 2°C roadmap for its activities, to fully integrate climate change into its strategy and to create a new Gas, Renewables and Power division, whose director will be a member of the ExCom. In addition, for any new project, Total now considers how it might contribute to the local NDC.

vii) Strategic advantage:

Being at the same time one of the largest gas player and a world solar leader provides Total a key competitive advantage in the race to prepare for the future. Engaging in international initiatives and seeking continuous improvement also enables Total to develop additional profitability and to differentiate from its main competitors.

Within its ambition to develop new downstream activities, including distribution to individuals, Total has acquired Lampiris in 2016. Lampiris supplies gas, green power and energy services. Similarly in 2018, the Group acquired Direct Energie.

Moreover, the simultaneous growth of gas and renewables is encouraging Total to take a broader approach to the end-to-end electricity value chain. Total wants to develop a renewable power trading business and positions itself in energy storage with the acquisition of Saft.

viii) forward-looking scenario analyses:

Total has decided to use the IEA's SDS scenario as a reference to reshape the company.

(C3.1d) Provide details of your organization’s use of climate-related scenario analysis.

Please complete the following table.

Climate-related scenarios	Details
IEA Sustainable development scenario	<p>The Group’s strategy incorporates the challenges of climate change and adopts the International Energy Agency’s (IEA) Sustainable Development Scenario (2°C), which is compatible with limiting global warming to 2°C, as its reference framework. 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.</p> <p>Total focuses its action around the following priority areas: developing natural gas as the primary energy source due to its lower carbon intensity among fossil energies; given the carbon budget allocated in a 2°C scenario, 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 innovative solar energy solutions; stimulating initiatives in the oil and gas sector and supporting the implementation of an international framework on climate.</p>

(C-OG3.1e) Disclose details of your organization’s low-carbon transition plan.

Total is responsible for supplying available and clean energy at the best price to the greatest number, while controlling energy consumption and the corresponding emissions. Beyond the reorganization of the Group, the impact of the risks and opportunities related to climate change is reflected in Total’s climate strategy by the following paths of action:

1. Improving the carbon intensity of the hydrocarbon production mix with at least 60% of gas in 20 years:
 - Developing an offensive strategy for gas, while limiting methane emissions. In 2017, Total has announced the acquisition of the LNG assets portfolio of Engie,
 - Selecting and developing hydrocarbons projects that are amongst the most competitive in terms of meeting the highest safety and environmental standards (reduction of exposure in oil shale in Canada; no oil exploration or production activities under sea ice in polar areas),
 - Progressing in CO₂ capture, utilization and storage technologies: up to 10% of R&D investments dedicated to CCUS and the work done by the OGCI (marketability issues, capture technologies and worldwide storage capacities),
 - Supporting the introduction of carbon pricing mechanisms: since 2008, Total has incorporated a long-term CO₂ price of \$30 to 40/t in the economic assessment of its investments, according to the crude oil scenario, or the applicable price, if higher in a given country,
 - Halt of coal activities in 2016.
2. Developing low-carbon activities to supply electricity. Total intends that the low-carbon activities that contribute in particular to the production of electricity, will account for almost 20% of its portfolio in 20 years. This includes the downstream gas-electricity chain, renewables and energy storage. Total also promotes the use of biofuels.

The objectives are:

- To continue developing renewable energies. Total has developed solar energy since 2011, through SunPower. Since 2016 the acquisition of Lampiris supports the strategy to develop gas and electricity marketing activities. In 2017, signature of an agreement with EREN Renewable Energy continues this approach,
 - Developing energy storage activities: the acquisition of Saft Groupe in 2016 shall enable the integration of activities related to electricity storage solutions, which are essential to the development of renewables,
 - Developing bioenergies: Total has been producing bioenergy for more than 20 years and is the leading distributor in Europe. With the start-up of La Mède, the Group will have a world-scale biorefinery (500,000 t/year). Total has also set up a JV with Corbion Plastics (100% biodegradable polymers from renewable sources),
 - Favoring access to energy: Total has deployed an affordable solar lamps offer since 2011. The aim of the Group is to provide access to electricity to 25 million people in Africa by 2020;
3. Improving energy efficiency:
- Continuing the drive to cut greenhouse gas emissions from the Group's facilities
 - Providing responsible energy usage solutions for customers (acquisition of GreenFlex in 2017).

In parallel to these three paths of action, Total is actively committed to these issues in international organizations and initiatives, and in particular the OGCI, which has an ambitious working program for the years to come. OGCI Climate Investments is a one-billion-dollar fund set up by the members of the OGCI, who wanted to make a concrete commitment to the climate together. They represent 20% of worldwide production of oil and gas and 10% of worldwide energy production. This fund was set up to support projects and technologies that can significantly cut emissions. Priority will go to the capture, utilization and storage of CO₂, the reduction of methane emissions and energy efficiency.

C4 Targets and performance

Targets

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Please complete the following table:

Target reference number	Scope	% emissions in Scope	% reduction from base year	Base year	Start year	Base year emissions covered by target (metric tons CO2e)	Target year
Abs1	1	15	80	2010	2016	8,140,000	2020
Is this a science-based target?	% achieved (emissions)	Target status	Please explain				
No, but we anticipate setting one in the next two years	100	Underway	<p>Total's new set of Group targets and commitments (defined at the beginning of 2016) illustrates our efforts in reducing our direct GHG emissions through, in particular, a 80% reduction of operated routine flaring (according to the World Bank's Zero Routine Flaring initiative) over 2010-2020 with a view to eliminating it by 2030. It is assumed that 1 Mm³/day of flaring is equivalent to 1.1 Mt CO₂ per year.</p> <p>This objective was reached in 2017. The global flaring continued to decline sharply in 2017 (-24% compared to 2016) and routine flaring has decreased by 40% in 2017. The flaring reduction is mainly due to a significant improvement in West of Africa, particularly in Angola where compression upsets have been solved. The volumes of routine flared gas totaled 1.0 Mm³ / d in 2017. Total has decreased routine flaring by 87% since 2010, thus the target is 100% completed in emissions reduction.</p>				

Target reference number	Scope	% emissions in Scope	% reduction from base year	Base year	Start year	Base year emissions covered by target (metric tons CO2e)	Target year
Abs2	1	15	100	2010	2016	8,140,000	2030
Is this a science-based target?	% achieved (emissions)	Target status	Please explain				
No, but we anticipate setting one in the next two years	87	Underway	<p>Total's new set of Group targets and commitments (defined at the beginning of 2016) illustrates our efforts in reducing our direct GHG emissions through, in particular, a 80% reduction of operated routine flaring (according to the World Bank's Zero Routine Flaring initiative) over 2010-2020 with a view to eliminating it by 2030.</p> <p>It is assumed that 1 Mm³/day of flaring is equivalent to 1.1 Mt CO₂ per year. Total is currently on track to reach the Zero Routine Flaring target.</p>				

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Please complete the following table:

Target reference number	Scope	% emissions in Scope	% reduction from baseline year	Metric	Base year	Start year	Normalized baseline year emissions covered by target (metric tons CO2e)	Target year
Int1	1+2: location based	100	10	Other: based on energy consumed	2010	2016	100	2020
Is this a science-based target?	% achieved (emissions)	Target status	Please explain			% change anticipated in absolute Scope 1+2 emissions		% change anticipated in absolute Scope 3 emissions
No, but we anticipate setting one in the next two years	100	Underway	<p>Total's new set of Group targets and commitments (defined at the beginning of 2016) illustrates our efforts in reducing our direct GHG emissions through, in particular, a 1% per year on average improvement in energy efficiency of operated installations over 2010-2020.</p> <p>The Group's Energy efficiency index results of the EE indices from Upstream and Downstream activities, and is generally expressed as the consumed energy, divided by production. It is not straightforward to express it in terms of CO₂ emissions, but this target covers the whole activities of Total, therefore the whole emissions of Total.</p> <p>Total has set a corporate-wide energy efficiency target of 1% per year in average between 2010 and 2020 (Scope 1+2).</p> <p>The percentage indicated here is not fully relevant as Energy Efficiency cannot be translated in emission reduction as such.</p> <p>The objective is set in terms of energy efficiency and NOT in a reduction of CO₂ emissions. Total believes that an energy efficiency target is more relevant for its businesses. Nevertheless, Total has indicated here that the Group Energy Efficiency Index has decreased by 14% from 2010 to end of 2017, the objective of 10% for the period 2010-2020 was reached in 2017.</p>			0	0	

Other climate-related targets

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

Please complete the following table:

Target	KPI – Metric numerator	KPI – Metric denominator (intensity targets only)	Baseline year	Start year	Target year	KPI in baseline year	KPI in target year	
Methane reduction target	Methane emissions	Natural gas produced	2017	2017	2025	0.3	0.2	
% achieved (emissions)	Target status	Please explain	Part of emissions target				Is this target part of an overarching initiative?	
100	Underway	<p>In 2017, methane emissions represent 6% of the Group's GHG emissions (CO₂-eq) and approximately 30% are related to flaring. The methane intensity of the Total's operated scope is below 0.3% of the natural gas produced in 2017, the target is to hold it below 0,2%.</p> <p>The target is related to upstream CH₄ emissions which represent 99% of the Group methane emissions in 2017.</p>	<p>Total's new set of Group targets and commitments (defined at the beginning of 2016) illustrates our efforts in reducing our direct GHG emissions through, in particular, a 80% reduction of operated routine flaring (according to the World Bank's Zero Routine Flaring initiative) over 2010-2020 with a view to eliminating it by 2030.</p> <p>By targeting a zero routine flaring in 2030, Total is also engaged to reduce methane emissions. The Oil & gas Climate Initiative (OGCI) has announced in 2017 a commitment to reduce methane emissions by setting a target for OGCI companies upstream activities by September 2018.</p> <p>Total is acting to disseminate good practices, especially in terms of transparency. At the end of 2017, the Group signed with other oil & gas companies, as well as non-governmental and scientific organizations, guidelines on the responsible management of methane at the operational level, R&D and sustainable regulations (Methane Guiding Principles).</p>				<p>Other: Oil & Gas Climate Initiative (OGCI)</p>	

(C-OG4.2a) Explain, for your oil and gas production activities, why you do not have a methane-specific emissions reduction target or do not incorporate methane into your targets reported in C4.2, and forecast how your methane emissions will change over the next five years.

Not applicable (see response to question C4.2).

Emissions reduction initiatives

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

(C4.3a) Identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

Please complete the following table:

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tons CO2e (only for rows marked *)
Under investigation	100+	
To be implemented*	3	1,000,000
Implementation commenced*	5	3,000,000
Implemented*	1	2,700,000
Not to be implemented	0	

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Please complete the following table:

Activity type	Estimated annual CO2e savings (metric tons CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency, as specified in C0.4)	Investment required (unit currency, as specified in C0.4)	Payback period	Estimated lifetime of the initiative	Comment
Other: Valuation of flared gas (power gen.)	2.7 Mt CO ₂	1	Voluntary	80,000,000 USD	400,000,000 USD	21-25 years	Ongoing	Monetary savings are estimated on the basis of Total's internal carbon price. Based on externally available literature and internal studies, the investment required lies between 30 and 300 USD per ton of CO ₂ .

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Please complete the following table:

Method	Comment
Compliance with regulatory requirements / standards	EU ETS, Carbon Pollution Reduction Scheme (CPRS – Australia)
Dedicated budget for energy efficiency	In Exploration & Production and the Refining & Chemicals divisions
Dedicated budget for low carbon product R&D	Approximately 25% of the Group's R&D budget dedicated to low carbon technologies
Dedicated budget for other emission reduction activities	Total Ecosolutions program, and dedicated budget for CCS (CO ₂ capture and storage) R&D
Employee engagement	Under consideration; projects are being defined
Internal price on carbon	As of 2017, new investments projects presented to the Executive Committee are evaluated using a long-term cost of 30 to 40 USD per ton of CO ₂ emitted depending on the oil price scenario retained, or the actual price if it is higher in a given country.
Partnering with governments on technology development	In particular, with the French agency ADEME, and also through the participation in R&D JIPs (Joint Industry Projects) in Canada and Australia

Low-carbon products

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

(C4.5a) Please provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Please complete the following table:

Level of aggregation	Description of product/ Group of products	Are these low-carbon product(s) or do they enable avoided emissions?	Taxonomy, project, or methodology used to classify product(s) as low-carbon or to calculate avoided emissions	% revenue from low-carbon product(s) in the reporting year	Comment
Group of products	<p>1/Total Ecosolutions labelled products: our Total Ecosolutions offer encompasses products or services that provide a significant competitive advantage in terms of environmental impacts reduction (reducing consumption of energy, water and other resources or environmental impact) when compared with the market standard. It represents 93 products and services as of the end of 2017. Among these products: Fuel Eco lubricants, motor fuels, bitumen, special fluids and solvents, polymers, resins, solar panels... The sales in 2017 of Total Ecosolutions products and services avoided 1.85 million metric tons of carbon dioxide.</p> <p>2/White Certificates (or Energy Efficiency Certificates) exist in various European countries (Italy, UK, Denmark, France, etc.). In France, Total's compliance with energy efficiency certificate requirements has led to 50 TWhc/year of energy savings during the last tree years. Avoided emissions related to White Certificates are estimated to 2Mt CO2 eq per year. This estimation is based on an average ratio calculated by ADEME (Agence de l'Environnement et de la Maîtrise de l'Energie)</p> <p>In 2017, the acquisition of Greenflex will enable the Group to speed up the development of its offerings on the energy efficiency market, alongside the growth of its subsidiaries BHC Energy (France) and Tenag (Germany).</p>	Avoided emissions	Other	10	<p>1/ This Total Ecosolutions program is focusing on excellence products with a quantifiable environmental benefit compared to the market reference. The labelling process is based on international ISO 14020 and 14021 standards governing environmental claims, particularly the accuracy of these claims, and the compliance of the labeling process with these standards is verified by an external independent auditor.</p> <p>Total follows also the % of our main markets offering at least one Total Ecosolutions offer to its customers.</p> <p>Total Ecosolutions Products represented about 10% of total net operating revenues of Marketing & Services business segment in 2017.</p> <p>2/ White Certificates (or Energy Efficiency Certificates) exist in various European countries. It is quantified only for France.</p>

Level of aggregation	Description of product/ Group of products	Are these low-carbon product(s) or do they enable avoided emissions?	Taxonomy, project, or methodology used to classify product(s) as low-carbon or to calculate avoided emissions	% revenue from low-carbon product(s) in the reporting year	Comment
Group of products	<p>3/ In August 2016, Total has acquired 100% interest in SAFT Group, a world leading designer of and manufacturer of advanced technology batteries for the industry. Though this acquisition, Total is gaining development capacities of electricity storage that is essential for the development of renewable energies and for the reduction of emissions in the transport sector in particular.</p> <p>4/ Within its ambition to develop new downstream activities, including distribution to individuals, Total has acquired Lampiris in 2016. Lampiris supplies gas, green power and energy services such as insulation, furnace maintenance, wood and pellets for heating, and smart thermostats. Lampiris, which currently supplies more than a million accounts in Europe. In 2017, Total launched its new Total Spring natural gas and green electricity offer for private individuals in France. In April 2018, Total entered into an agreement for the proposed acquisition of Direct Energie, to accelerate its ambition in gas and electricity in France and Belgium.</p> <p>5/ 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.</p> <p>6/ On the other hand, Total is increasing its share of gas production, which emits half as much of GHG than coal. In addition, in emerging countries, which cumulate a growing need of electricity and high stakes in GHG reduction, Total reinforces access to a more and more competitive gas by operating new Floating Storage and Regasification Units (FSRU).</p>	Avoided emissions	Other	10	<p>3/ An avoided emission calculation methodology is currently under development</p> <p>4/ An avoided emission calculation methodology is currently under development.</p>

Level of aggregation	Description of product/ Group of products	Are these low-carbon product(s) or do they enable avoided emissions?	Taxonomy, project, or methodology used to classify product(s) as low-carbon or to calculate avoided emissions	% revenue from low-carbon product(s) in the reporting year	Comment
Group of products	<p>1/ SunPower photovoltaic solar panels: SunPower, operates over the entire solar power value chain. It designs, manufactures and supplies cells as well as the highest-efficiency crystalline silicon based solar panels, and is active in the design and construction of large turnkey power plants and in the marketing of integrated solar solutions for decentralized electricity generation PV panels.</p> <p>2/ In 2017, Total maintained its policy of investing in low-carbon businesses by taking an indirect stake in EREN Renewable Energy. This company, which has been renamed Total Eren, will enable the Group to boost its development in solar energy and break into wind power.</p> <p>3/ Biomass to fuels - production of biofuels; in particular, La Mède refinery is transformed as a bio-refinery, expected to begin work in 2018 with a planned production capacity of almost 500 kt / y of biofuel, mainly high-quality biodiesel (HVO), but also biojet and petrochemical bio-feedstocks.</p> <p>4/ In May 2017, Total acquired the Dutch company PitPoint B.V., Europe's third-largest provider of natural gas vehicle fuel (NGV).</p> <p>5/ Polymers for the car industry: Total commercializes polymers of its own, which can reduce material thicknesses and thus reduce vehicle weight and improve their energy efficiency.</p>	Low carbon product	Other	10	<p>Most low carbon businesses are under the responsibility of the new Gas, Renewables & Power (GRP) segment. The revenues from sales of GRP represented approximately 10% of the Group revenues from sales in 4Q2017 and 1Q2018.</p> <p>1/ Cumulated GHG emission of additional SunPower PV plant installed are compared to cumulated GHG emission of equivalent local electricity mix (kg CO₂eq, over 30 years lifetime). The avoided emissions corresponding to SunPower PV plants installed by end of 2016 are estimated to 6Mt CO₂ /year. For the 2017 sales only, these are estimated to 1.1 Mt/year.</p> <p>3/ La Mède capacity: 500 kt / y of biofuel.</p> <p>4/ network of 450 natural gas vehicle fueling stations worldwide.</p>

Methane reduction efforts

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from oil and gas production activities.

For over thirty years, the Group has made the methane emissions reduction one of its priorities, originally for safety reasons. As part of its inspection and maintenance programs, as soon as a leak is detected, it is systematically analyzed, repaired and the follow-up documented.

For over thirty years, Total has made the methane emissions reduction one of its priorities, originally for safety reasons. As part of its inspection and maintenance programs, as soon as a leak is detected, it is systematically analyzed, repaired and the follow-up documented.

Since 2006, Total has implemented a Methane emissions reporting, which is verified yearly by a third party. This very detailed reporting system operates at each site level, more accurately at each emitter type level, and the data are aggregated at each level up to the corporate level. The details of this reporting system were published through Society of Petroleum Engineers paper n°179288-MS. Since 2006, LDAR surveys are performed and Total has developed a dedicated Methane R&D program.

The methane intensity of the Total's operated scope is below 0.3% of the natural gas produced in 2017. In 2017, methane emissions represents 6% of the Group's GHG emissions (CO₂ eq) and approximately 30% are related to flaring. Total is acting to eliminate routine flaring by 2030 as part of the World Bank's Global Gas Flaring Reduction, and thus to reduce the unburned Methane from flaring.

As part of the Climate and Clean Air Coalition, the Group participates in the Oil & Gas Methane Partnership, a partnership between oil companies, governments and NGOs that promotes the measurement, control and reporting of methane emissions.

With the OGCI, for which the reduction of methane emissions is one of the main objectives, Total contributes to improving the knowledge of these emissions. The OGCI provides technical and financial support for two global studies for which the complementary approaches (knowledge of global methane emissions and life cycle analysis across the entire gas chain) will help focusing investments.

Total is acting to disseminate good practices, especially in terms of transparency. At the end of 2017, the Group signed with other oil & gas companies, as well as non-governmental and scientific organizations, guidelines on the responsible management of methane at the operational level, R&D and sustainable regulations (Methane Guiding Principles).

Leak detection and repair

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

Since 2006, Total has engaged comprehensive leak detection and repair LDAR campaigns based on the use of Infra-Red cameras in most of its major upstream assets (Angola, Nigeria, UK, Netherland, ...) and approximatively 65% of upstream affiliates are equipped with Infra-Red cameras (other affiliates using contracted services). The frequency of campaigns either performed by affiliates or contractors varies according to the materiality of the emissions.

Total's Refining operated sector is also completely covered by regular LDAR surveys using recognized methodologies.

Flaring reduction efforts

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

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 mm³ /day. This objective is reached in 2017.

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.

C5 Emissions methodology

Base year emissions

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Please complete the following table:

Scope	Base year start	Base year end	Base year emissions (metric tons CO2e)	Comment
Scope 1	01.01.2010	31.12. 2010	51,600,000	
Scope 2 (location-based)	01.01.2010	31.12. 2010	5,400,000	

Emissions methodology

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

IPIECA's Petroleum Industry Guidelines for reporting greenhouse gas emissions, 2nd edition, 2011

C6 Emissions data

Scope 1 emissions data

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO₂e?

	2017	2016	2015
Scope 1 emissions (metric tons CO ₂ e)	36,200,000	39,400,000	41,800,000

Comment

Since 2010, the Group has reduced the GHG emissions produced by its operated activities by 30%. This reduction entails reducing gas flared and improving energy efficiency.

Total's new set of Group targets and commitments (defined at the beginning of 2016) illustrates our efforts in reducing our direct GHG emissions through, in particular, a 80% reduction of operated routine flaring (according to the World Bank's Zero Routine Flaring initiative) over 2010-2020 with a view to eliminating it by 2030 and a 1% per year on average improvement in energy efficiency of operated installations over 2010-2020.

Scope 2 emissions reporting

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Please complete the following table:

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting Scope 2, location-based figure.	We have operations where we are able to access electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure.	

Scope 2 emissions data

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Please complete the following table:

Scope 2, location-based - 2017	Scope 2, location-based - 2016	Scope 2, location-based - 2015	Comment
4,000,000	4,000,000	4,000,000	Scope 2 emissions: indirect emissions attributable to energy consumption by site.

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Not applicable

Scope 3 emissions data

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Please complete the following table:

Sources of Scope 3 emissions	Evaluation status	Metric tons CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Capital goods	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Upstream transportation and distribution	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Waste generated in operations	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Business travel	Not relevant, calculated	50,000	This figure is provided by Total's global business travel agencies (it's a legal obligation in France).	100	In 2017, Total pledged to offset carbon emissions from all company plane travel with the GoodPlanet Foundation. The follow-up of business travel emissions and the implementation of offsetting programs increase employees' awareness of their carbon footprint and ways of reducing it.

Sources of Scope 3 emissions	Evaluation status	Metric tons CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Employee commuting	Not relevant, calculated	62,000	Total has 98,277 employees at the end of 2017 and, on average, according to the French Statistics Bureau INSEE, the average consumption is 0.64t CO ₂ per annum.	100	Total has 98,277 employees at the end of 2017 and, on average, according to the French Statistics Bureau INSEE, the average consumption is 0.64t CO ₂ per annum.
Upstream leased assets	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Downstream transportation & distribution	Relevant, calculated	4,500,000	The methodology is based on the emission factors (in tons*km) and estimates.	100	The detailed figures are collected for time charter and spot contracts, for sea, and river transport.
Processing of sold products	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Use of sold products	Relevant, calculated	400,000,000	The Group follows the Oil & Gas industry reporting guidelines published by IPIECA and which conform to the GHG Protocol methodologies. Emissions 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.	100	
End of life treatment of sold products	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.

Sources of Scope 3 emissions	Evaluation status	Metric tons CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Downstream leased assets	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Franchises	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Investments	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Other (Upstream)	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.
Other (Downstream)	Not relevant, explanation provided				This percentage of Scope 3 emissions is not significant, in particular compared to emissions related to the use of sold products and to Downstream transportation and distribution.

Carbon dioxide emissions from biologically sequestered carbon

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

Emissions intensities

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO₂e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Please complete the following table:

Intensity figure	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change	Reason for change
0.14	17,100,000 metric tons of CO ₂	Other: tons of oil equivalent	125,000,000	Location-based	15	Decreased	This intensity is calculated with the emissions scope 1 and 2 of the E&P segment divided by the SEC hydrocarbon combined production in tons oil equivalent. The decrease in emissions is mainly explained by a reduction of global flaring, which continued to decline sharply in 2017.
0.25	22,550,000 metric tons of CO ₂	metric ton of product	89,000,000	Location based	0	No change	This intensity is calculated with the emissions scope 1 and 2 of the R&C segment divided by the Total refinery throughput. Throughput data includes equity share of refineries in which the Group holds a direct or indirect interest.

Emissions intensities: Oil and gas

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO₂e) per unit of hydrocarbon category.

Please complete the following table:

Unit of hydrocarbon category (denominator)	Metric tons CO ₂ e from hydrocarbon category per unit specified	% change from previous year	Direction of change	Reason for change	Comment
Other: hydrocarbon combined production in tons oil equivalent	0.14	15	Decreased	The decrease in emissions scope 1 is mainly explained by a reduction of global flaring, which continued to decline sharply in 2017.	This intensity is calculated with the emissions scope 1 of the E&P segment divided by the SEC hydrocarbon combined production in tons oil equivalent.

Unit of hydrocarbon category (denominator)	Metric tons CO2e from hydrocarbon category per unit specified	% change from previous year	Direction of change	Reason for change	Comment
Other: thousand barrels of refinery throughput	0.21	0	No change	The decrease in emissions scope 1 is mainly explained by a reduction of global flaring, which continued to decline sharply in 2017.	This intensity is calculated with the Scope 1 emissions of the R&C segment divided by Total's refinery throughput. Capacity, throughput and production data include equity share of refineries in which the Group holds a direct or indirect interest.

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

Response options

Please complete the following table:

Oil and gas business division	Estimated total methane emitted expressed as % of natural gas production or throughput at given division	Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division	Comment
Upstream	0.3		The methane intensity of Total's operated scope is below 0.3% of the natural gas produced in 2017.

C7 Emissions breakdown

Scope 1 breakdown: GHGs

(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?

Yes

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type providing the used global warming potential (GWP), and the source of each GWP.

Please complete the following table:

Greenhouse gas	Scope 1 emissions (metric tons of selected GHG, in CO2e)	GWP Reference
CO ₂	33,500,000	IPCC Fourth Assessment Report (AR4 – 100 years)
CH ₄	2,100,000	IPCC Fourth Assessment Report (AR4 – 100 years)
N ₂ O	400,000	IPCC Fourth Assessment Report (AR4 – 100 years)
Other: HFCs, PFCs, SF ₆ , NH ₃	200,000	IPCC Fourth Assessment Report (AR4 – 100 years)

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

Please complete the following table:

Emissions category	Gross Scope 1 carbon dioxide emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Total gross Scope 1 GHG emissions (metric tons CO2e)
Fugitives (Oil: Total)	2,501,500	38,000	3,367,000
Fugitives (Oil: Venting)	1,500	20,500	500,000
Fugitives (Oil: Flaring)	2,500,000	11,000	2,710,000
Fugitives (Oil: E&P excluding venting and flaring)	0	6,500	143,000
Fugitives (Oil: All other)	0	0	14,000
Fugitives (Gas: Total)	2,501,500	38,000	3,367,000
Fugitives (Gas: Venting)	1,500	20,500	500,000
Fugitives (Gas: Flaring)	2,500,000	11,000	2,710,000
Fugitives (Gas: E&P excluding venting and flaring)	0	6,500	143,000
Fugitives (Gas: Midstream)	0	0	0

Emissions category	Gross Scope 1 carbon dioxide emissions (metric tons CO2)	Gross Scope 1 methane emissions (metric tons CH4)	Total gross Scope 1 GHG emissions (metric tons CO2e)
Fugitives (Gas: All other)	0	0	14,000
Combustion (Oil: Upstream, excluding flaring)	4,800,000	2,500	5,000,000
Combustion (Gas: Upstream, excluding flaring)	4,800,000	2,500	5,000,000
Combustion (Refining)	12,400,000	0	12,620,000
Combustion (Chemicals production)	0	0	0
Combustion (Electricity generation)	0	0	0
Combustion (Other)	500,000	0	660,000
Process emissions	6,000,000	3,000	6,200,000
Emissions not elsewhere classified	0	0	0

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Europe	18,700,000
Africa	10,200,000
Americas	3,900,000
C.I.S. and Asia	3,400,000

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

Select all that apply from the following options:

- By business division
- By facility
- By activity

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Please complete the following table:

Business division	Scope 1 emissions (metric tons CO2e)
Upstream	16,900,000
Refining & Chemicals	19,100,000
Marketing & Services	200,000

Scope 1: sector production activities

(C-OG7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

Sector production activity	Gross Scope 1 emissions, metric tons CO2e
Chemicals production activities	0
Oil and gas production activities (upstream)	16,900,000
Oil and gas production activities (downstream)	19,300,000

Scope 2 breakdown: country

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Americas	1,250,000	0	650,000	0
Africa	50,000	0	370,000	0
Asia	300,000	0	1,600,000	0
Europe	2,400,000	0	14,000,000	3,400,000
Rest of World	1,000	0	4,000	0

Scope 2: business breakdowns

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division (CC10.2a)

Please complete the following table:

Business divisions	Scope 2, location-based emissions, metric tons CO ₂ e	Scope 2, market-based emissions, metric tons CO ₂ e
Upstream	200,000	0
Gas, Renewables & Power	200,000	0
Refining & Chemicals	3,450,000	0
Marketing & Services	150,000	0

Scope 2: sector production activities

(C-OG7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO₂e.

Please complete the following table:

Sector production activity	Scope 2, location-based, metric tons CO ₂ e	Scope 2, market-based (if applicable), metric tons CO ₂ e	Comment
Chemicals production activities	0	0	
Oil and gas production activities (upstream)	200,000	0	E&P business segment
Oil and gas production activities (downstream)	3,800,000	0	All Total's business segments excluding E&P (same breakdown for Scope 1 emissions)

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Please complete the following table:

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

Please complete the following table:

	Sales, metric tons	Comment
CO ₂		
CH ₄		
N ₂ O		
Others: HFCs, PFCs, SF ₆ , NH ₃		

Emissions performance

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

Please complete the following table:

Reason	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	0	No change	0	

Reason	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Other emissions reduction activities	3,400,000	Decreased	- 8%	Total's Scope 1+2 greenhouse gas emissions (operated scope) were 43.4 MtCO ₂ -eq in 2016 and 40.0 MtCO ₂ -eq in 2017 (therefore a decrease of approx. 8% = $(43.4-40/43.4)*100$, i.e 3.4 MtCO ₂ -eq) The decrease in emissions is mainly explained by a reduction of global flaring, which continued to decline sharply in 2017 (-24% compared to 2016, $24\%=(7.1-5.4/7.1)*100$) and routine flaring which has decreased by approximately 40% in 2017. The flaring reduction is mainly due to a significant improvement in West of Africa, particularly in Angola where compression upsets have been solved.
Divestment	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Acquisitions	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Mergers	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Change in output	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Change in methodology	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Change in boundary	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Change in physical operating conditions	0	No change	0	Although all our emissions are reported in our H@rpe system, we are not entering into that kind of details in the present report.
Unidentified	0	No change	0	
Other	1,900,000	Decreased	-24%	Global flaring continued to decline sharply in 2017 (-24% compared to 2016, $24\%=(7.1-5.4/7.1)*100$) and routine flaring has decreased by approximately 40% in 2017 ($40\%=(1.7-1/1.7)*100$). The flaring reduction is mainly due to a significant improvement in West of Africa, particularly in Angola where compression upsets have been solved. The volumes of routine gas flared gas totaled 1.0 Mm ³ / d in 2017. It's assumed that 1 Mm ³ /day of flaring is equivalent to 1.1 Mt CO ₂ per year.

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8 Energy

Energy spend

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 50% but less or equal to 55%

Note: Energy accounts for more than half of our refineries' operating costs.

Energy-related activities

(C8.2) Select which energy-related activities your organization has undertaken.

Please complete the following table:

Activity	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

Please complete the following table:

Energy carrier	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (MWh's in LHV)	LHV (lower heating value)	0	0	22,000
Consumption of purchased or acquired electricity	N/A	0	0	7,000,000
Consumption of purchased or acquired heat	N/A	0	0	5,200,000
Consumption of purchased or acquired steam	N/A	0	0	3,300,000
Consumption of purchased or acquired cooling	N/A	0	0	0
Consumption of self-generated non-fuel renewable energy	N/A	0	N/A	0
Total energy consumption	N/A	0	0	15,522,000

(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

Please complete the following table:

Energy carrier	Heating value	Total MWh
Consumption of fuel (MWh's in LHV)	LHV (lower heating value)	7,000
Consumption of purchased or acquired electricity	N/A	3,200,000
Consumption of purchased or acquired heat	N/A	29,000
Consumption of purchased or acquired steam	N/A	1,600,000
Consumption of purchased or acquired cooling	N/A	0
Consumption of self-generated non-fuel renewable energy	N/A	0
Total energy consumption	N/A	4,836,000

(C8.2b) Select the applications of your organization's consumption of fuel.

Please complete the following table:

Fuel application	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Please complete the following table:

Fuels	Heating value	Total MWh consumed by the organization	MWh consumed for the generation of electricity	MWh consumed for the generation of heat	MWh consumed for the generation of steam	MWh consumed for the generation of cooling	MWh consumed for cogeneration or trigeneration
Natural gas	LHV (lower heating value)	104,000,000	104,000,000	0	0	0	0
Other: Liquid fuels	LHV (lower heating value)	4,600,000	4,600,000	0	0	0	0
Other: Solid fuels	LHV (lower heating value)	10,600,000	10,600,000	0	0	0	0

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Please complete the following table:

Fuels	Emission factor (in units of metric tons CO ₂ e per MWh)	Unit	Emission factor source	Comment
Natural Gas	2.7	metric tons CO ₂ -e / metric ton	EU ETS Monitoring reporting guidelines	When required (e.g. EU ETS), fuel analyses are used. Such analyses are progressively extended throughout all our operations worldwide and are performed based on the frequency required by the quality control of the analysis of fuel components. Otherwise, Total uses standard emission factors (as stated in the European Guidelines and the API Guidelines where relevant).
Other: Liquid fuels	3.1	metric tons CO ₂ -e / metric ton	EU ETS Monitoring reporting guidelines	When required (e.g. EU ETS), fuel analyses are used. Such analyses are progressively extended throughout all our operations worldwide and are performed based on the frequency required by the quality control of the analysis of fuel components. Otherwise, Total uses standard emission factors (as stated in the European Guidelines and the API Guidelines where relevant).

(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

Please complete the following table:

Energy Carrier	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	4,600,000	4,600,000	10,900	10,900
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

(C-CH8.2e) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

Please complete the following table:

Energy Carrier	Total Gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	140,000	140,000
Heat	0	0
Steam	0	0
Cooling	0	0

(C8.2f) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

Please complete the following table:

Basis for applying a low-carbon emission factor	Low-carbon technology type	MWh consumed associate with low-carbon electricity, heat, steam or cooling	Emission factor (in units of metric tons CO2e per MWh)	Comment
Other: Power emission factor: grid - France	Nuclear	3,400,000	0.04	France has a high level of nuclear power in its power generation mix (75%). Nevertheless, Total does not use a specific low carbon emission factor in its corporate reporting, as a unique averaged emission factor is used for the whole Group.

(C-CH8.3) Disclose details on your organization's consumption of feedstocks for chemical production activities.

Chemical feedstocks derive from 94% of oil primary resources, and 6% of natural gas.

(C-CH8.3a) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

Please complete the following table:

	Percentage of total chemical feedstock (%)
Oil	94
Natural gas	6
Biomass	0.08
Waste	0.05

C9 Additional metrics

Other climate-related metrics

(C9.1) Provide any additional climate-related metrics relevant to your business.

Please complete the following table:

Description	Metric value	Metric numerator	Metric denominator (intensity metric only)	% change from previous year	Direction of change	Please explain
Waste	52	% of waste recycled or valorized	Total waste	10	Decreased	The evolution of the valorization rate is due to the excavation of 97.5 kt of unpolluted soil as part of the Port Arthur ethane cracker project. These exceptional non-hazardous wastes have been used as a cover for a waste storage facility and are considered by regulation to not be valorized.

Description	Metric value	Metric numerator	Metric denominator (intensity metric only)	% change from previous year	Direction of change	Please explain
Other: SO ₂ emissions	44	Kt	N/A	10	Decreased	In 2010, SO ₂ emissions totaled 99 kt, and the target for 2020 is to remain below 49.5 kt, a level reached in 2016. The improvement in 2017 is linked to the shutdown of the La Mède refinery (France).
Other: NOx emissions	68	Kt	N/A	10	Decreased	Sites use various reduction systems that include organizational measures (such as using predictive models to control peaks in emissions based on weather forecast data and the improvement of combustion processes management, etc.) and technical measures (wastewater treatment plants, using low NOx burners and electrostatic dedusters, etc.).
Other: HC content of water discharges, offshore	17.7	mg/l	N/A	0	No change	The Group's target is to maintain hydrocarbon content of water discharges below 30 mg/l for offshore sites. The hydrocarbon content is well below 30mg/l, and 100% of sites have meet the target.
Other: HC content of water discharges, onshore	2.4	mg/l	N/A	25	Decreased	The Group's target is to maintain hydrocarbon content of water discharges below 15 mg/l for onshore sites. The hydrocarbon content is well below 15mg/l, and 100% of sites have meet the target.

1P Oil and gas reserves and production

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

Please complete the following table:

Hydrocarbon category	Year-end net production	Comment
Crude oil and condensate, million barrels	490 million barrels	Equity share domain according to the United States Securities & Exchange Commission.
Natural gas liquids, million barrels	0	

Hydrocarbon category	Year-end net production	Comment
Oil sands, million barrels (includes bitumen and synthetic crude)	0	
Natural gas, billion cubic feet	2,500 billion cubic feet	Equity share domain according to the United States Securities & Exchange Commission

1P Methodologies

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries, please explain this.

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 is 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. The average reserve life of the Group's proved and probable reserves is approximately 20 years.

2P and 3P reserves are not disclosed as it is confidential information. As of December 31, 2017, 1P reserves are 11,475 Mboe for hydrocarbons, 5,450 Mboe for liquids and 32,506 BCF for Gas.

Estimated total reserves 2P & 3P

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million BOE), including the total associated with subsidiaries and equity-accounted entities.

Please complete the following table:

Estimated total net proved + probable reserves (2P) (million BOE)	Estimated total net proved + probable + possible reserves (3P) (million BOE)	Estimated net total resource base (million BOE)

Percentage split for 2P, 3P reserves

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

Hydrocarbon category	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)
Crude oil / condensate / Natural gas liquids			
Natural gas			
Oil sands (includes bitumen and synthetic crude)			

Percentage split for 1P, 2P, 3P production

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.

Development type	In-year net production (%)	Net proved reserves (1P) (%)	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)	Comment

Total refinery throughput

(C-OG9.3a) Disclose your total refinery throughput capacity in the reporting year in million barrels per year.

Please complete the following table:

Total refinery throughput capacity	Throughput (Million barrels per year)
Capacity	738

Feedstocks used in refinery

(C-OG9.3b) Disclose feedstocks processed in the reporting year in million barrels per year.

Please complete the following table:

Feedstock	Throughput (Millions barrels)	Comment
Oil	648	Includes equity share of refineries in which the Group holds a direct or indirect interest.
Other feedstocks	19	Includes equity share of refineries in which the Group holds a direct or indirect interest.
Total	667	Includes equity share of refineries in which the Group holds a direct or indirect interest.

Refinery products and net production

(C-OG9.3c) Are you able to break down your refinery products and net production?

Yes

(C-OG9.3d) Disclose your refinery products and net production in the reporting year in million barrels per year.

Please complete the following table:

Product produced	Refinery net production (Million barrels)*not including products used/consumed on site
Gasolines	103
Other: Aviation fuels	72
Other: Diesel and heating oil	265
Other: Heavy fuels	42
Other: Other products	160

Chemicals production

(C-OG9.3e) Please disclose your chemicals production in the reporting year in thousand metric tons.

Please complete the following table:

Product produced	Production, thousand metric tons	Capacity, thousand metric tons
Other: Olefins		7,379
Other: Aromatics		6,909
Other: Polyethylene		2,357
Other: Polypropylene		2,950
Other: Polystyrene		1,745
Other: Others		63

Low-carbon investments: Coal / Electric utilities / Oil & gas

(C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.

Please complete the following table:

Investment start date	Investment end date	Investment area	Technology area	Investment maturity	Investment figure	Low-carbon investment percentage	Please explain
01/01/2017	31/12/2017	R&D	Other: Low carbon technologies	Applied research and development	225,000,000	21-40%	R&D at Total focuses on two major areas prioritizing the development of activities and programs that directly impact Total's objective of becoming the responsible energy major; and anticipating technological breakthroughs in order to seize opportunities for development relating to the evolution of the energy mix. 225 MUSD corresponds to 25% of the 2017 R&D budget of Total.

Breakeven price (US\$/BOE)

(C-OG9.7) Disclose the breakeven price (US\$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX.

30 USD / boe

Transfers & sequestration of CO₂ emissions

(C-OG9.8) Is your organization involved in the sequestration of CO₂?

No

C10 Verification

Verification

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

Please complete the following table:

Scope	Verification/assurance status
Scope 1	Third party verification or assurance process in place
Scope 2 (location-based)	Third party verification or assurance process in place
Scope 3	Third party verification or assurance process in place

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Please complete the following table:

Scope	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported emissions verified (%)
Scope 1	Annual process	Complete	Moderate assurance	Total's 2017 Registration document (Chapter 5)	See pages 207-208	ISAE 3000	100
Scope 2 (location-based)	Annual process	Complete	Moderate assurance	Total's 2017 Registration document (Chapter 5)	See pages 207-208	ISAE 3000	100

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Please complete the following table:

Scope	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard
Scope 3 – at least on applicable category	Annual process	Complete	Moderate assurance	Total's 2017 Registration document (Chapter 5)	See pages 207-208	ISAE 3000

Other verified data

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Please complete the following table:

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Progress against emissions reduction target	French law Grenelle II section 225	Total's 2017 Registration document - See pages 169-208. The external auditor EY verifies the 42 items (social and environmental information) French companies have to report on as by the Grenelle II section 225 law.
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2)	French law Grenelle II section 225	Total's 2017 Registration document - See pages 169-208. The external auditor EY verifies the 42 items (social and environmental information) French companies have to report on as by the Grenelle II section 225 law.
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	French law Grenelle II section 225	Total's 2017 Registration document - See pages 169-208. The external auditor EY verifies the 42 items (social and environmental information) French companies have to report on as by the Grenelle II section 225 law.
C7. Emissions breakdown	Year on year change in emissions (Scope 1 and 2)	French law Grenelle II section 225	Total's 2017 Registration document - See pages 169-208. The external auditor EY verifies the 42 items (social and environmental information) French companies have to report on as by the Grenelle II section 225 law.
C8. Energy	Other: Energy efficiency	French law Grenelle II section 225	Total's 2017 Registration document - See pages 169-208. The external auditor EY verifies the 42 items (social and environmental information) French companies have to report on as by the Grenelle II section 225 law.
C9. Additional metrics	Other: Waste, water	French law Grenelle II section 225	Total's 2017 Registration document - See pages 169-208. The external auditor EY verifies the 42 items (social and environmental information) French companies have to report on as by the Grenelle II section 225 law.

C11 Carbon pricing

Carbon pricing systems

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

(C11.1b) Complete the following table for each of the emissions trading systems in which you participate.

Please complete the following table:

System name	% of Scope 1 emissions covered by the ETS	Period start date	Period end date	Allowances allocated	Allowances purchased	Verified emissions in metric tons CO2e	Details of ownership / Comment
EU-ETS	98%	01/01/2017	31/12/2017	15,000,000	n.c. (confidential information)	20,000,000	Facilities owned and operated by Total (mainly in the Refining & Chemicals business segment).

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

Total's overall strategy and plans include:

- reducing GHG emissions resulting from our own operations and optimize energy efficiency, and
- optimizing CO₂ quotas management.

In Europe specifically, Total is fully organised to optimise compliance with the EU ETS, through a close monitoring of positions, improvement projects and, when necessary, market transactions: a dedicated organisation dealing with emissions trading and quota management was set up in 2005 consisting of operational desks in each business unit, and a centralized trading desk which intervenes in the open market on their behalf. Through this organisation, positions are monitored on a regular basis with a view to ensure optimised compliance by the end of each calendar year.

Total participates in the market, and the value of CO₂ is routinely taken into account in operational decisions of the business units participating in the scheme (such as power generation, energy project evaluation or refining optimisation). In addition, a cost of 30 to 40 USD per ton of CO₂, according to different crude oil price scenarios is used in the economic calculations for all new projects worldwide.

Total anticipates participating in trading schemes other than the EU ETS in the coming years (in China, USA, Canada, Kazakhstan, South Korea, Australia), depending on emerging regulatory issues.

Project-based carbon credits

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

Internal price on carbon

(C11.3) Does your organization use an internal price on carbon?

Yes

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Please complete the following table:

Objective for implementing an internal carbon price	GHG Scope	Application	Actual price(s) used (Currency /metric ton)	Variance of price(s) used	Type of internal carbon price	Impact & implication
<ul style="list-style-type: none"> • Change internal behavior • Drive low-carbon investment • Stress test investments 	Scope 1	To ensure that investment projects are as profitable as anticipated in the desirable event that the international community agrees to put a cost on CO ₂ emissions, investments have been valued since 2008 generally based on a cost of 25€ per ton of CO ₂ emitted. As of 2016, new investments projects presented to the Executive Committee are evaluated using a long-term cost of 30 to 40 USD per ton of CO ₂ emitted depending on the oil price scenario retained, or the actual price if it is higher in a given country. This cost bracket is consistent with the prices generally required to favour, on the one hand, gas over coal for producing electricity and, on the other hand, R&D in new low-carbon technologies.	30-40 USD / ton	30-40 USD / ton	Shadow price	Taking into account for investment project decision.

C12 Engagement

Value chain engagement

(C12.1) Do you engage with your value chain on climate-related issues?

- Yes, our suppliers
- Yes, our customers
- Yes, other partners in the value chain

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Not applicable.

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Please complete the following table:

Engagement category	Engagement type	Size of engagement	% Scope 3 emissions as reported in C6.5	Please explain the rationale for selecting this group of customers and scope of engagement	Impact of engagement, including measures of success
Collaboration & innovation	Other – please provide information in column 5		10	<p>Our Strategy, R&D and Marketing teams have constant interaction with customers in order to assess changes and emerging needs. The Total Ecosolutions program, which was launched in 2009, streamlines the work and exchanges between the Strategy, R&D, Innovation and Marketing teams, in order to design and promote new products and services to help our customers (both businesses and consumers) to reduce their environmental footprint such as energy consumption.</p> <p>Total's priority targets are our main B2B (business to business) customers.</p>	<p>At the end of 2017, 93 different products and services had received the Total Ecosolutions label. According to our estimates, based on a comparison with reference products and services offering an equivalent outcome for the customer, the use of Total Ecosolutions products and services sold in 2017 avoids 1,850,000 metric tons of carbon dioxide emissions (on the whole life cycle).</p> <p>White Certificates (or Energy Efficiency Certificates) exist in various European countries (Italy,UK, Denmark, France, etc.). In France, Total's compliance with energy efficiency certificate requirements has led to:</p> <ul style="list-style-type: none"> ○ Around 100 direct and indirect jobs being created.

Engagement category	Engagement type	Size of engagement	% Scope 3 emissions as reported in C6.5	Please explain the rationale for selecting this group of customers and scope of engagement	Impact of engagement, including measures of success
					<ul style="list-style-type: none"> ○ 100,000 energy efficiency operations annually, involving insulation solutions and furnace upgrades. ○ An enhanced customer relationship that can stimulate new solutions. ○ Participation in car pooling initiatives involving 150,000 drivers. ○ Actions that encourage 40,000 Total employees to cut their energy use at home.

(C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.

Our shipping division closely monitors our contractors' emissions performance. In 2014, time-chartered ships navigated to economic speed as often as possible and thus reduced emissions. In addition, an effort is made to improve the energy efficiency of the fleet when the units are renewed.

Public policy engagement

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

- Direct engagement with policy makers
- Trade associations
- Funding research organizations
- Other

(C12.3a) On what issues have you been engaging directly with policy makers?

Please complete the following table:

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
European Union 2020 objectives	Support	Total supports the greenhouse gas emission reduction targets and the provisions approved in December 2008 in the European Energy and Climate Change package for 2020.	Total advocates that the implementation of the directives has to be as global as possible, and progressive, in order not to undermine the competitiveness of the companies concerned.
European Union 2030 objectives	Support with minor exceptions	Total supports one single GHG reduction target for Europe, as described in January 2014 in the European Energy and Climate Change package for 2030.	Total is in favor of one single EU-wide GHG emissions reduction target. Total advocates that the implementation of the directives have to be as global as possible, and progressive.
Cap and Trade	Support with minor exceptions	Total supports market-driven carbon emission reduction systems.	Strengthen international agreement for the limitation of GHG emissions through carbon market implementation and industry protection.
Mandatory carbon reporting	Support with major exceptions	Regarding the French "Grenelle II" Law / section 75: "GHG emissions balance", Total advocates to avoid overlapping regulations, as Total is already reporting emissions through multiple mandatory and voluntary channels.	Harmonize the reporting methodology among various reporting schemes. Limit mandatory industry reporting to Scope 1 and Scope 2 emissions.
Flaring reduction	Support	In 2014, Total joined the initiative launched by the World Bank and made a commitment to eliminate routine flaring from its operations by 2030.	Total advocates the emergence of local regulations in producing countries in order to stimulate infrastructures and gas to power projects that would help to reduce flaring.
Carbon tax / Paying for carbon	Support	In 2014, Total decided to join the call of the United Nations Global Compact, which encourages companies to consider a CO ₂ price internally and publicly support the importance of such a price via regulation mechanisms suited to the local contexts. Total now also helps to deploy the World Bank's Carbon Pricing Leadership Coalition (CPLC).	Total advocates the introduction of carbon pricing frameworks in all countries.

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Please complete the following table:

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you influenced, or are you attempting to influence the position?
IPIECA	Consistent	In support to the UNFCCC's work, IPIECA has launched, in November 2016, a report called "Exploring low-emissions pathways: Advancing the Paris Puzzle". This publication builds on IPIECA's 2015 Paris Puzzle, providing perspective on the common elements and enablers of pathways to meet a low-emissions future.	Florent Journet-Cuenot (Total) was co- chair of the Climate Change working group of IPIECA, who produced these two papers.
OGCI (Oil & Gas Climate Initiative)	Consistent	Launched in early 2014, the Oil and Gas Climate Initiative currently has 10 members, BP, Eni, Pemex, Reliance, Repsol, Saudi Aramco, Shell, Sinopec, Statoil and Total. The vision for the OGCI is to become a more recognized and ambitious provider of practical solutions to climate change mitigation. The values of the OGCI are based upon a bottom-up, voluntary, industry-led initiative that encourages a wide range of actors in the oil and gas industry to work in a collaborative manner to deliver a tangible, credible, transparent and integrated contribution to climate change solutions.	Patrick Pouyanné (CEO of Total) is an active member of the OGCI CEOs Steering Committee. Jérôme Schmitt (Total) is the chair of the Executive Committee of OGCI. Several people of Total's corporate Strategy & Climate team are very active in this association.
CEFIC (European Chemical Industry)	Mixed	The European chemical industry supports the fight against climate change and the Commission's ambition to transform the EU into a competitive low carbon economy. The EU Emissions Trading System (ETS) is a key instrument in the implementation of this common ambition. The ETS reform provides a real opportunity to create a dynamic, flexible system for carbon leakage protection that would retain the current incentives while fostering companies who wish to invest and grow in the EU.	Bernard Pinatel, Head of the Refining & Chemicals division of Total, is a CEFIC Board and Executive Member. Total also participates in various CEFIC working groups on Energy and Climate. CEFIC is working on a 2050 roadmap.
Fuels Europe	Mixed	Fuels Europe recognizes that climate change is a global challenge, which requires global actions.	Total participates in the Working Groups on Transportation issues (how to best mitigate and reduce GHG emissions of the transport sector): Work on the low emission transport 2050 vision.
IOGP	Consistent	IOGP supports the international community's commitment to address the global challenge of climate change. IOGP also believes that the Oil and Gas industry is very much a part of the solution to this challenge and that it can be addressed while meeting society's future energy needs.	Total is an active member of the Energy & Climate working Group of IOGP.

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

Yes

(C12.3e) Provide details of the other engagement activities that you undertake.

Total actively engages with policy makers on climate change related issues and other topics through a number of either worldwide, European or national (i.e. French) trade organizations (IPIECA, IOGP, WBCSD, AFEP, ERT, MEDEF, UFIP, CEFIC, EUROPIA, CONCAWE, IDDRI...), and also as an individual company. For instance, in 2016, Total continued to sponsor, at the Paris Dauphine University in France, a chair on the economics of climate.

Total also supports the following organizations and initiatives:

- The World Bank's Zero Routine Flaring by 2030 initiative;
- The Climate and Clean Air Coalition's Oil & Gas Methane Partnership;
- The U.N. Global Compact's Caring for Climate initiative;
- The World Bank's Carbon Pricing Leadership Coalition
- The Paris Pledge for Action to limit the average global temperature rise to less than 2°C;
- The French Business Climate Pledge, a commitment by 39 French companies to combat climate change;
- A Coalition to Contribute to Universal Access to Energy, bringing together 25 international businesses and organizations;
- The Terrawatt Initiative, which brings together key players in the private sector to promote affordable solar energy around the world.
- The Climate Leadership Council, which promotes a carbon dividends framework as a pragmatic solution to tackle climate change.

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Total has adopted a lobbying ethics charter that is published on its website (www.total.com). It governs Total's practices and ensures that our publicly stated positions are consistent with those conveyed through our lobbying, either directly or indirectly, through professional organizations or associations. The consensus required by these organizations does not always reflect our position. In such cases, Total believes that it is preferable to promote its ideas from within by working to convince its peers of to adopt its position, rather than leave the discussions. Total's participation in these organizations, beneficial in many ways including sharing of best practices, does not prevent us from publicly defending our positions, even when they differ from those of the organizations to which Total belongs. In the event of a difference, Total's position prevails. Mindful of the need to be fully transparent on climate-related issues, Total is committed to publishing a list of all of the professional organizations and associations of which Total is a member.

The Climate-Energy steering committee is a cross-functional committee, under the responsibility of the Director of the Strategy & Climate division and which includes representatives of diverse divisions such as HSE, Strategy & Climate (at corporate and business segments levels). Its aim is to coordinate, streamline and optimize the Group's climate change positions and engagement and the overall management of CO₂ policies around the world as well as to contribute to improving the energy efficiency of our installations by setting objectives and following the achievements. The Climate-Energy steering committee meets at least two times per year. It prepares the set of objectives for the Group in terms of emissions reduction. Then these objectives are approved by the Executive Committee.

The Climate-Energy steering committee is Total's main tool to ensure that our activities that influence policy are consistent with our overall climate change strategy.

Total's participation in these organizations, beneficial in many ways including sharing of best practices, does not prevent the company from publicly defending its positions, even when they differ from those of the organizations to which Total belongs. In the event of a difference, Total's position prevails.

Communications

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Please complete the following table:

Publication	Status	Attach the document	Content elements
In mainstream reports in accordance with TCFD recommendations	Complete	Total's 2017 Registration Document	<ul style="list-style-type: none"> • Governance • Strategy • Risks & opportunities • Emissions figures • Emission targets • Other metrics
In other regulatory filings	Complete	Total's 2017 Form 20-F document	<ul style="list-style-type: none"> • Governance • Strategy • Risks & opportunities • Emissions figures • Emission targets • Other metrics
In voluntary communications	Complete	Total's Climate report - May 2017	<ul style="list-style-type: none"> • Governance • Strategy • Risks & opportunities • Emissions figures • Emission targets • Other metrics

C14 Signoff

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

Please complete the following table:

Job title	Corresponding job category
Patrick POUYANNÉ - Chief Executive Officer	Board chair

End of 2018 CDP Climate Change questionnaire
