

C0. Introduction

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C0.1

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

Galp is an integrated energy operator with activities that span from exploration and production of oil and natural gas to refining and marketing oil products and biofuels, natural gas marketing and sales and power generation. To accomplish success, its customer-oriented organisational structure is vital, not only for meeting customers' needs but also for respecting integrity and transparency principles.

Our mission is to create value for all our stakeholders (customers, employees, shareholders, suppliers and business partners), acting in energy markets with ambition, innovation and competitiveness, promoting respect for the principles of ethics and sustainability. The activity of our Company is also based on key pillars, such as: trust; partnership; agility; innovation and sustainability. Our activities are expanding strongly worldwide and are predominantly located in Portugal, Spain, Brazil and Africa.

Galp is currently focused on the development of its upstream projects, especially following the world-class oil and gas discoveries in the pre-salt Santos basin in Brazil and in the Rovuma basin in Mozambique. The Exploration & Production (E&P) business is anchored in these two countries alongside Angola, although Galp's diversified portfolio spans across six countries and over 50 E&P projects. Galp is expected to deliver production growth that is unparalleled in the industry based on discoveries already made, with the E&P business being the Company's current primary growth driver.

Galp is a leading player in Iberia, operating across refining, distribution and oil marketing activities. It operates an integrated refining system comprising two refineries in Portugal with a total processing capacity of 330 thousand barrels of oil per day (kbpd), and a distribution network including approximately 1,459 service stations. Refined products are primarily marketed in the Iberian Peninsula but also in Africa, with total sales to direct clients hitting 8.8 mton in 2018. While the Refining & Marketing (R&M) business is centred in Iberia, the Company continues to expand its marketing of oil products activity in selected markets in Africa.

Through its Gas & Power (G&P) business, Galp distributes and supplies natural gas both in Iberia and in the broader international market, where it has been consolidating the trading activity. In Iberia, where Galp is a relevant player, it has also been consolidating the power business in order to increase integration. Galp is currently an Iberian operator with a triple offering of oil products, natural gas and electricity and is also developing solar power generation projects. Galp sold in 7.6 bcm of natural gas/LNG and 5,191 GWh of electricity.

For further information about GALP please visit our corporate website, at: [www.galp.com/corp](http://www.galp.com/corp) and our Annual Report 2018, at:

[https://www.galp.com/corp/Portals/0/Recursos/Investidores/SharedResources/Relatorios/EN/Galp\\_Integrated\\_Report\\_2018.pdf](https://www.galp.com/corp/Portals/0/Recursos/Investidores/SharedResources/Relatorios/EN/Galp_Integrated_Report_2018.pdf)

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1 2018	December 31 2018	No	<Not Applicable>

C0.3

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

- Brazil
- Cabo Verde
- Guinea-Bissau
- Mozambique
- Namibia
- Portugal
- Spain
- Swaziland

C0.4

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

EUR

C0.5

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

Operational control

C-OG0.7

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

Row 1

Oil and gas value chain

- Upstream
- Downstream

Other divisions

- Biofuels
- Grid electricity supply from gas

C1. Governance

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C1.1

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

Yes

C1.1a

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(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board-level committee	The Board of Directors (BoD) defines, monitors and supervises the strategic guidelines related to Climate Change (CC), in the context of the Business Plan and in line with the company's CC Policy, approved by them. The Sustainability Committee and the Risk Management Committee support the BoD in the definition, monitoring and supervision of the strategic guidelines related to Climate Change (CC). Both board-level committees, composed by executive and non-executive directors, meet quarterly and directly report to the BoD. The Executive Committee (EC), appointed by the BoD, is directly responsible for developing and implementing the strategic objectives and guidelines related to CC. The EC monitors and supervises the main risks and opportunities identified, including CC, as well as, follows the execution of critical projects from a risk perspective.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding annual budgets</p> <p>Reviewing and guiding business plans</p> <p>Setting performance objectives</p> <p>Monitoring implementation and performance of objectives</p> <p>Overseeing major capital expenditures, acquisitions and divestitures</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<p>In accordance with the Regulations of the Board of Directors (BoD), GALP's BoD meets periodically, and at least quarterly, to review and guide the company's strategy, monitoring implementation of strategic guidelines and performance of objectives. Annually, the BoD approves the company annual Budget and Business Plan. The BoD approves strategic investments/divestitures and those greater than 75M€. According to the key long-term variables approved by the BoD to assess investments, valuations must embed a long-term carbon price assumption. Regarding the Executive Committee (EC), the respective meetings are held on a weekly basis for reviewing and guiding plans of action, risk management policies, setting performance objectives, among others, including to approve investments below 75M€, also considering the same long-term carbon price assumption. Climate change issues are a relevant part of the company's strategy and are discussed whenever relevant, as Galp's strategy remains focused on developing a resilient upstream portfolio, embedded with an efficient and competitive downstream business, supported by innovative and differentiating solutions that promote the transition into a lower carbon economy. Also, quarterly, the Sustainability Committee and Risk Management Committee reports to the BoD its main decisions and its activity on monitoring and overseeing the performance of goals and targets, in particular for addressing climate-related issues.</p>

**C1.2**

**(C1.2) Provide the highest management-level 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
Chief Financial Officer (CFO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Chief Risks Officer (CRO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Chief Sustainability Officer (CSO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Risk committee	Both assessing and managing climate-related risks and opportunities	Quarterly
Sustainability committee	Both assessing and managing climate-related risks and opportunities	Quarterly
Business unit manager	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Environment/ Sustainability manager	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly
Risk manager	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

**C1.2a**

**(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 (do not include the names of individuals).**

The Chief Risk Officer (CRO) and Chief Sustainability Officer (CSO) is currently the same person and member of the Board of Directors (BoD) and of the Executive Committee (EC), thus ensuring that discussions of the risk topics including related to Climate Change (CC) are consistent and effective at all levels.

The CRO/CSO is also the Chair of the Risk Management Committee which mission is to support and monitor the development and implementation of Galp's risk management strategy and policy, jointly with the Risk Management Department and the heads of the Company's management units, which comprise of the executive director, who is responsible for the risk management Department (CRO), the Head of the Internal Audit Department, the Head of the Risk Management Department and the CFO.

The CRO/CSO is also member of the Sustainability Committee which mission is to support the BoD in integrating sustainability principles (including CC) in the management process of the group companies, promoting best practices in all business areas and corporate services with a view to long-term value creation. The Sustainability Committee meets quarterly and directly reports to the EC and BoD. It's chaired by the independent Vice-Chairman of the Board of Directors and composed of the following permanent members: CEO, Executive Director, responsible for the EQS and Sustainability (CSO) and Risk Management (CRO) Divisions, CFO, Head of the Corporate Division on Environment, Quality, Safety and Energy (EQSE) (SC Secretary) and the Top Managers of the Operational Units. In 2019, two more non-executive directors will be part of the Sustainability Committee, reinforcing the commitment of the BoD with this committee.

In order to ensure the integration and alignment of risks and opportunities related to CC, in the process of formulating annual strategic guidelines for integration in the Business Plan for discussion and approval by the BoD, several alternative future scenarios are considered depending on a set of critical uncertainties for Galp's business models, including the scenario aligned with the Paris Agreement, ensuring the construction of a portfolio that contributes to the reduction of climate-related impacts and is more resilient in different contexts.

At the organizational level, climate-related issues are also managed and/or addressed by the business unit managers, which incorporate climate-related issues in their management decisions (e.g. when acquiring power generated through renewables or when implementing energy efficiency and water use minimization in the refining processes), by the procurement manager, in the procurement and contracting processes in order to reduce climate-related impacts in the materials, equipment and solutions used by the Group, by the corporate affairs manager within the stakeholder management processes and guidelines, by the risk manager in the risk assessment processes, such as in the case of investments. This evidences that climate-related topics are transversal to the organization at different levels, which include strategy definition, policy approval, strategy and policy implementation, business management, business implementation, stakeholder management and risk assessment.

Climate Change risks and opportunities are part of the Company's strategic formulation process. In this process, top management is supported by the Sustainability Committee, the Risk Management Committee and the Strategy and Market Intelligence team along with other business units. We take into account the key macro trends and context, including developments carbon market and also new trends in terms of energy consumption. After identifying the main issues, Galp assesses risks on the basis of probability and impact, and opportunities based on their relevance, defining priority lines of action and setting strategic axes. Galp established a risk radar, including for relevant developments and regulatory changes, measuring potential impacts and defining risk mitigating actions.

### C1.3

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

Yes

### C1.3a

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**(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).**

**Who is entitled to benefit from these incentives?**

Board/Executive board

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction project

**Comment**

The corporate bodies' Remuneration Policy for 2018 approved by the General Shareholders Meeting aims at reinforcing values, skills, abilities and behaviours, in view of the Company's long-term interest, culture and strategy. The remuneration policy is guided by four principles, one of which is to reward environmental sustainability and energy efficiency in the material activities of the Company, through incentives related with the execution of objectives and targets, within the context of the appropriate management of the respective carbon intensity. Accordingly, 35% of the annual and tri-annual variable remuneration incorporates a bonus or malus, as a result of executive officers performance in relation to the execution of objectives and targets related with environmental sustainability and energy efficiency of activities material for the Company, within the context of the appropriate management of the respective carbon intensity. Across the organization, the Company allocates a part of its results to distribute to all employees on the basis of their individual performance assessment, which includes an independent factor, to compensate or penalize the management of environmental, quality and safety, which includes climate-related targets and objectives. Starting from 2019, the indicators defined by the Remuneration Committee to determine the annual variable remuneration (Remuneration Policy 2019), in addition to the economic dimension, incorporate the achievement of objectives and targets related to safety and environmental sustainability of activities material to the company, in the context of the proper management of their respective carbon intensity, namely through the Total Recordable Injury Rate and the Carbon Intensity Index.

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**Who is entitled to benefit from these incentives?**

Board/Executive board

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

The corporate bodies' Remuneration Policy for 2018 approved by the General Shareholders Meeting aims at reinforcing values, skills, abilities and behaviours, in view of the Company's long-term interest, culture and strategy. The remuneration policy is guided by four principles, one of which is to reward environmental sustainability and energy efficiency in the material activities of the Company, through incentives related with the execution of objectives and targets, within the context of the appropriate management of the respective carbon intensity. Accordingly, 35% of the annual and tri-annual variable remuneration incorporates a bonus or malus, as a result of executive officers performance in relation to the execution of objectives and targets related with environmental sustainability and energy efficiency of activities material for the Company, within the context of the appropriate management of the respective carbon intensity. Across the organization, the Company allocates a part of its results to distribute to all employees on the basis of their individual performance assessment, which includes an independent factor, to compensate or penalize the management of environmental, quality and safety, which includes climate-related targets and objectives. Starting from 2019, the indicators defined by the Remuneration Committee to determine the annual variable remuneration (Remuneration Policy 2019), in addition to the economic dimension, incorporate the achievement of objectives and targets related to safety and environmental sustainability of activities material to the company, in the context of the proper management of their respective carbon intensity, namely through the Total Recordable Injury Rate and the Carbon Intensity Index.

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**Who is entitled to benefit from these incentives?**

All employees

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

In order to strengthen the commitment towards environment, quality, safety and sustainability (EQSS) issues (including climate change) and promote continuous improvement, all Galp employees have the EQSS Factor attached to its performance evaluation. This EQSS factor influences the performance appraisal and variable remuneration. This Factor includes emissions reduction targets and energy reduction targets as basic KPI, together with some more proactive KPI like the level of fulfillment of improvement action plans. This EQSS Factor is monitored every quarter and is followed by the Board of Directors, as well as the EQSS report, quarterly issued. Therefore, there is a clear incentive to integrate climate matters into the business strategy and decision-making processes. Part of the employees have specific KPI's related to the strategy achievement, e.g. Sustainability Strategy and Electric Mobility. In 2019, KPI's related to Low Carbon Portfolio Development and Green Projects were developed.

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**Who is entitled to benefit from these incentives?**

Business unit manager

**Types of incentives**

Monetary reward

**Activity incentivized**

Emissions reduction target

**Comment**

Financial incentives for senior management take into account the risk appetite/limits defined for the Group. Financial incentives/KPI's ensure that management goals' are aligned with strategy execution, including making sure that the Company is successful in implementing innovative and differentiating solutions in a scenario of decarbonisation. The Directors of the Sines and Matosinhos refineries of GALP have variable remuneration attached to the performance related to several KPI associated to energy efficiency and GHG emissions reduction, namely: KPI reduction of Energy Intensity Index (EII) and KPI emissions performance - reduction of CO2/CWT. These KPI are also applicable to all directors of the different areas of the Refining segment, as well as to the employees of the same areas. Other general managers have specific KPI's related to the strategy achievement, e.g. Sustainability Strategy and Electric Mobility. In 2019, KPI's related to Low Carbon Portfolio Development and Green Projects were developed.

## C2. Risks and opportunities

### C2.1

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

	From (years)	To (years)	Comment
Short-term	0	1	Annual strategic budget
Medium-term	1	5	General strategy cycle
Long-term	5	30	Long term strategy cycle

### C2.2

**(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 processes

### C2.2a

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

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	Galp conducts regular risk reappraisals. The implementation level of projects and actions with significant impact on climate change and energy decarbonisation context and compliance with targets are monitored through BSC and reported to the Executive Committee on a quarterly basis, as well as to the Risk Management Committee. In the analysis and identification of risks related to climate change, the participation and commitment of representatives of the top management ensure that these risks are fully addressed and considered in the company's business strategy.

### C2.2b

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

Galp has in place a decision-making process that incorporates a risk assessment for all strategic decisions. To assure independence and objectiveness in the analysis, this exercise is conducted by the Risk Management Department and is addressed to the Chief Risk Officer, that is an executive board member, and to the Risk Management Committee.

In addition, the Audit Board requests an annual report from the Risk Management Department to be aware of the Company's value@risk, taking into account the expected evolution of Galp's business and the business context (including the climate change risks and opportunities) over a five-year period (budget and plan 2019-2023). Such as the Sustainability Department that evaluates the variation of the carbon intensity of the business, taking into account the same 5-year expected evolution and surrounding context, in order to ensure a positive evolution of this intensity over time. Besides relevant risks and opportunities, relevant climate-related uncertainties are also embedded in the risk analysis. This risk assessment incorporates a quantitative analysis typically supported by a Monte-Carlo simulation and a qualitative analysis that includes an evaluation of the risk response strategy regarding relevant risk sources. A substantive change (financial impact) can be described as one that can directly affect the Company, e.g. financially - changes in EBITDA (e.g. up to 10%). Although these analysis are usually fitted for the medium and long-term periods (>6 years), if a relevant short term potential impact exists, it is included in the assessment to assure that the senior management is incorporating in its decision all the relevant information.

Regarding its current activities, Galp implemented the three lines of defence framework that enables a consistent relationship between risk management activities developed at different levels and of different periodicity. It assures that any relevant climate-related risk (or other) identified by a business manager is analysed and assessed at a business unit level by the respective Local Risk Officer that periodically informs the corporate risk department.

The first line of defence is responsible for the daily activities of internal control and risk management. It must identify and understand the risk environment, assess and communicate the value of risk potential exposure, determine and implement the best way to capture or mitigate such risk exposure.

It is up to the second line of defence the standardization and monitoring of risk and controls in the Group's processes. It should monitor corporate risk, define risk standards and periodically communicate the risk and status of the action plans to the Risk Management Committee, the Executive Committee, the Audit Board and the Board of Directors, depending on the topic.

The third line of defence is responsible for strategic and corporate risk oversight and the internal control system. It shall supervise and evaluate the effectiveness of risk management and the internal control process, using internal and external independent entities.

### C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Current laws and regulations (related to climate topics or others) are a risk factor of extreme importance for investment and/or divestment decision-making, as they affect, for example, the locations that can be exploited, the form of exploitation, the means used and the repatriation of capital. For example, Galp is subject to existing EU legislation (e.g. EU-ETS, Renewable Energy Directive, Fuels Quality Directive, among others) covering the industrial facilities (e.g. Refineries and Cogenerations of Sines and Matosinhos are covered by EU-ETS) and Galp Business units (e.g. New Energies BU, at Enerfuel plant in Sines, is affected by RED). Thus, current legislation (related to climate topics or others) are an integral part of the Risk Assessment carried out by the Risk Management Department, included in the Country Risk Profile (under "Regulatory Risk"). Furthermore, this risk is included in the top 10 risk matrix monitored by the Risk Management Department (as "Regulatory Changes and Compliance").
Emerging regulation	Relevant, always included	Emerging laws and regulations (related to climate topics or others) are a risk factor of extreme importance for investment and/or divestment decision-making, as they can affect, for example, the locations that can be exploited, the form of exploitation, the means used and the repatriation of capital. The approval of international agreements and/or new regulations, encouraging the use of low-carbon energies is an additional risk factor for Galp, as the company needs to update its current portfolio. Thus, current and emerging legislation (e.g. related to low-carbon energies) are an integral part of the Risk Assessment carried out by the Risk Management Department, included in the Country Risk Profile (under "Regulatory Risk"). One of Galp's strategic goals is to build an innovative and differentiated lower carbon business through a CAPEX allocation of 5-15%. Furthermore, this risk is included in the top 10 risk matrix monitored by the Risk Management Department (as "Regulatory Changes and Compliance").
Technology	Relevant, always included	The development of technology and/or the emergence of disruptive technologies can impact on Galp's performance as a result of: compliance risk, if these technologies derive from legal impositions to which Galp is subject - namely in terms of GHG emissions and carbon capture, sequestration and use (CCUS) - and/or risk of competition if Galp is unable to keep up with its peers in terms of innovation, especially in the E&P segments in Brazil and Angola. Galp currently has 7 CCUS projects in Brazil. In addition, under the PhD Programme in Refining, Petrochemical and Chemical Engineering (EngIQ), in partnership with Portuguese universities, we are developing projects that aim to extract more value from our sourcing, refining and logistics activity. Thus, development of technology is an integral part of the Risk Assessment carried out by the Risk Management Department, included in the Partner Risk Profile (under "Technology Expertise"). This risk is furthermore included in the Risk Matrix monitored by the Risk Management Department (as "Competition" and "Regulatory Changes and Compliance").
Legal	Relevant, always included	Galp's activities, especially downstream activities in Iberia are subject to legal and regulatory risks. In fact, any changes in these levels can have an impact on the business context in which the Company operates. Any significant change in the rules in force at the time investment projects are selected, can put at risk operation continuity, and may cause a negative impact in assets value (e.g. refineries in Sines and Matosinhos, given their characteristics) and Group's results. Thus, legal risks (e.g. related to climate topics) are an integral part of the Risk Assessment carried out by the Risk Management Department, included in the Country Risk Profile (as "Political and Legal/Regulatory"). Furthermore, this risk is included in the top 10 risk matrix monitored by the Risk Management Department (as "Regulatory Changes and Compliance").
Market	Relevant, always included	The dynamics of supply and demand in the market affect the prices of oil, natural gas, LNG and petroleum products, variables that influence Galp's performance. In this context, the potential impact on demand for oil and gas, due to changes in consumption patterns, namely by higher demand for low carbon intensity solutions, is a major risk for Galp. In that sense, one of Galp's strategic goals is to build an innovative and differentiated lower carbon business through a CAPEX allocation of 5-15%. In line with this, Galp is developing solar power generation projects, starting in Iberia. On the other hand, the increase in prices of oil or natural gas may affect the value and profitability of Galp's assets. Even though the prices that the Company charges its clients reflect market prices, they may not be adjusted immediately, and may not entirely reflect the changes in market prices. Thus, market is one of the top 10 risks included in the Risk Matrix monitored by the Risk Management Department (as "Price and Market Volatility").
Reputation	Relevant, always included	Galp is subject to negative impacts on its reputation as a result of a lack of (actual or perceived) compliance with laws and regulations. Particularly in a context of increasing stakeholder influence, the shift in consumer preference towards lower carbon energy may lead to stigmatization of the Oil & Gas sector and imposes on Galp an increasingly prominent reputation risk. If Galp fails in this purpose, there might be reputational risks associated, regarding negative perception of the company by its stakeholders. Negative perception about the Galp's climate change strategy, management and performance may reduce investors' interest in the company (as we are an integrated energy player). Besides, the increased awareness of global society about climate change may lead to a change in consumer behaviour, increasing the consumer's preference for alternative fuels (e.g. biofuels) and renewable energy (low carbon electricity). Currently, Galp is already facing this risk, being visible a change in the consumption pattern, as our customers are more informed and aware of climate change. Thus, reputation is one of the top 10 risks included in the Risk Matrix monitored by the Risk Management Department (as "Regulatory Changes and Compliance").
Acute physical	Relevant, always included	The risk of exposure to events of a disruptive nature is identified and is analysed in the context of the Risk Assessments carried out by the Risk Management Department. Acute physical risks are included in this category, which refer to changes in weather patterns and acute physical hazards related to events, including natural disasters, such as extreme weather events (cyclones, floods, among others). The nature, technical complexity and diversity of Galp's operations, e.g. upstream (E&P segment) and downstream (R&D segment) means that this type of events have a very high potential impact on the execution and operations conditions. Main industrial facilities of Galp (e.g. refineries of Sines in the South and Matosinhos in the North of Portugal) are located in the Atlantic Ocean coast and are threatened by these events (e.g. floods). Similarly, extreme storms can affect the capacity of refineries and that could compromise the supply of raw materials to these refineries through the sea terminals (In Sines and mainly Matosinhos). This is particularly relevant as Galp processed in 2018 around 110 mmboe of raw materials. Thus, acute physical risks integrate the top 10 risks included in the Risk Matrix monitored by the Risk Management Department (as "Disruptive Risks").
Chronic physical	Relevant, always included	The risk of exposure to events of a disruptive nature is identified and is analysed in the context of the Risk Assessments carried out by the Risk Management Department. Chronic physical risks are included in this category, which refer to long-term changes in weather patterns (e.g. sustained higher temperatures) that may cause sea level rise or chronic heat waves. The nature, technical complexity and diversity of Galp's operations, e.g. upstream (E&P segment) and downstream (R&D segment) means that this type of events have a very high potential impact on the execution and operations conditions. Main industrial facilities of Galp (e.g. refineries of Sines in the South and Matosinhos in the North of Portugal) are located in the Atlantic Ocean coast and are threatened by these events (e.g. sea level rise). Similarly, extreme storms can affect the capacity of refineries and that could compromise the supply of raw materials to these refineries through the sea terminals (In Sines and mainly Matosinhos). This is particularly relevant as Galp processed in 2018 around 110 mmboe of raw materials. Thus, chronic physical risks integrate the top 10 risks included in the Risk Matrix monitored by the Risk Management Department (as "Disruptive Risks").
Upstream	Relevant, always included	Any of the above risks (emerging regulation, technology, legal, market, reputation) can occur at any stage in the life cycle of a project and should therefore be early identified and monitored throughout the cycle. In this context, Galp has implemented a governance structure of risk management based on the three lines of defence model that allows a consistent relationship between the various levels of the organization that carry out risk management activities. For example, technology and/or the emergence of disruptive technologies related risks are particularly relevant in the upstream business (E&P), as the technologies may appear from legal impositions to which Galp is subject - namely in terms of emission, capture, sequestration and use of carbon dioxide - and/or risk of competition if Galp is unable to keep up with its peers in terms of innovation, especially in the E&P segment in Brazil and Angola. Galp currently has 7 CCUS projects in Brazil. Also, under the PhD Programme in Refining, Petrochemical and Chemical Engineering (EngIQ), in partnership with Portuguese universities, we are developing projects that aim to extract more value from our sourcing, refining and logistics activity. These risks are an integral part of the Risk Assessment carried out by the Risk Management Department, included in the Partner Risk Profile. These risks are furthermore included in the Risk Matrix monitored by the Risk Management Department.
Downstream	Relevant, always included	Any of the above risks (emerging regulation, technology, legal, market, reputation) can occur at any stage in the life cycle of a project and should therefore be early identified and monitored throughout the cycle. In this context, Galp has implemented a governance structure of risk management based on the three lines of defence model that allows a consistent relationship between the various levels of the organization that carry out risk management activities at different times. For example, reputational risks are particularly relevant in the downstream business, in a context of increasing stakeholder influence, the shift in consumer preference towards lower carbon energy may lead to stigmatization of the Oil & Gas sector and imposes on Galp an increasingly prominent reputation risk. If Galp fails in this purpose, there might be reputational risks associated, regarding negative perception of the company by its stakeholders. Negative perception about the Galp's climate change strategy, management and performance could reduce investor interest in the company (as we are an integrated energy player). Besides, the increased awareness of global society about climate change may lead to a change in consumer behaviour, increasing consumer preference for renewable and alternative fuels (e.g. biofuels) and energy (low carbon electricity) that may also lead to reduced demand for conventional products. Currently, Galp is already facing this risk, being visible a change in the consumption pattern, as our customers are more informed and aware of climate change. These risks are an integral part of the Risk Assessment carried out by the Risk Management Department, included in the Partner Risk Profile. These risks are furthermore included in the Risk Matrix monitored by the Risk Management Department.

**C2.2d**

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

Galp integrates climate and sustainability risks and opportunities, through mechanisms and requirements that are considered in the decision-making processes connected to the various project development stages, throughout their life cycle. Strategy formulation is based on Scenario planning & sensitivity analysis considering climate change (CC) and environmental contexts, test potential effects and determine value at risk of the company. Galp measures volume and margin effects in four contrasting scenarios (aligned with the IEA scenarios, including the New Policies Scenario and the Sustainable Development Scenario). Galp identifies and assesses the risks and opportunities (R&O) associated with CC, taking into account the context and key trends, considering a benchmarking analysis, the political and socio-economic context, the regulatory and strategic analysis & carbon market and the expectations of stakeholders. The climate change and energy transition related R&O integrate the Company's strategic formulation processes and are overseen by the Board of Directors (BoD) and the Executive Committee (EC), with their members participating actively in specialized committees in these areas such as, the Sustainability Committee, Risk Management Committee, among others.

Galp assesses the CC-related R&O (transitional R&O) that can affect Galp as a whole (company level), such as reputational and market risks/opportunities, derived from poor/high performance (e.g. better performance of GHG emissions under EU-ETS) related to climate change or development of products with high/low carbon content (e.g. biofuels produced by our Enerfuel plant; energy efficiency services developed by our GSE unit; production of renewable energy – solar PV); regulatory risks, derived from international & EU policies (climate-energy policy contexts in relation to carbon fuels and O&G reserves). The control and adequate management of these R&O have been relevant for the solid growth and performance of Galp. The strategic guidelines defined reflect the operational chain and are unfolded in goals, targets and actions at BU and site-level.

The extent of the R&O related to physical climate parameters is particularly relevant at asset level. Thus, specific risk analysis are conducted considering bioclimatic parameters, location (e.g. local environment), vulnerability, infrastructure features and their respective value (regarding Galp's assets). Galp incorporates an assessment of infrastructure exposure (asset level) to the physical risk of CC into the decision-making process, analysing the exposure to this risk and draw up plans or adaptation measures. This process allows to identify R&O of CC and set priorities at assets level (e.g. Refineries, Terminals, Pipelines in Portugal).

Aware of the challenges from a transition to a low carbon economy, Galp has made a strategic commitment to gradually diversify the portfolio by integrating energy solutions that lead to lower carbon emissions and new business models. As an integrated energy player our current market presence puts us in a strong position to integrate current products with new services and business models during the decarbonisation of the economy.

Also, in assessing new opportunities, Galp incorporates carbon into its investment analysis, through two different mechanisms. We consider a carbon price (\$40/tonCO<sub>2</sub>e) in all investment decision-making processes, which together with a due diligence analysis of the activity's carbon intensity ensures the alignment of our assets and operations with a lower carbon economy.

Galp is conducting an in-depth analysis of the financial impacts of its main risks, in line with the industry best practices.

## C2.3

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### (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

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

#### Identifier

Risk 1

#### Where in the value chain does the risk driver occur?

Direct operations

#### Risk type

Transition risk

#### Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

#### Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

#### Company- specific description

Galp recognizes the importance of climate change and the challenge it represents for companies and Governments. Galp's refineries (Sines and Matosinhos) in Portugal are included in the European Union Emission Trading System (EU ETS) and their GHG emissions verified by a third party. In 2013, the third phase established under the EU ETS began, and it will run until 2020. During this period, free allowances are allocated by benchmarking and the eventual deficit has to be covered by acquisition, through auction. Under the EU-ETS, Galp estimates that will be awarded, in 2019, with free allowances totalling 2.0 Mt. Since the free allowances may be not sufficient to satisfy the Company's needs, once Galp is gradually approaching the best in class benchmark, the Company identifies a risk related to cap and trade schemes, as it will be necessary to buy additional emission allowances during the third phase of the EU-ETS, for these two facilities (Sines, Matosinhos).

#### Time horizon

Short-term

#### Likelihood

Virtually certain

#### Magnitude of impact

Medium

#### Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

#### Potential financial impact figure (currency)

17200000

#### Potential financial impact figure – minimum (currency)

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The third phase established by the EU-ETS began in 2013 and will run until 2020. During this period, the CO2 will be allocated primarily by benchmarking or purchases made through auction. GALP will need to purchase emission allowances on the market, with an estimated purchase of around 1.13 million tonnes for 2019. Under this scenario and considering the expected average price of carbon for Phase III (2013-2020) in 2018 would be €15.21/t CO2 (source: Annual GHG Market Sentiment Survey 2018 – IETA/PwC), the financial implication may reach €17.2 million. Galp may also need to purchase additional allowances to meet ETS obligations in subsequent years (until 2020).

**Management method**

Galp has an internal standard (NR-024) on GHG emission management, regarding ETS, defining the responsibilities in managing GHG data, to ensure compliance with applicable legal requirements and guarantee a fully informed and timely decision-making process, anticipating risk/opportunities related to the purchase/sale of allowances. This standard requires that managers of facilities covered by the ETS (two refineries in Portugal) to quarterly periodically report, to the Executive Committee, current and projected emissions, estimating deficits/surpluses. Galp also has an information system that tracks all regulatory changes, in order to be constantly update about all legislation with impact on the activities of Galp. Moreover, to reduce the need to purchase allowances, the relevant facilities of Galp covered by ETS have been reducing their specific emissions (CO2/CWT), approaching the sectorial benchmark (SR 31.0 kg CO2/CWT & MR 28.5 kg CO2/CWT in 2018). This is being accomplished through the improvements on what regards to energy efficiency, fuels portfolio and BAT implementation. In addition, Galp participates in international groups (e.g. FuelsEurope) where we discuss the impact of legislative proposals, ensuring the incorporation of these risks in their strategy and informing the legislators regarding its position. For example, Galp participates in the ETS TF of FuelsEurope, which specifically analyses and manages the risks related to regulatory aspects of ETS.

**Cost of management**

160000

**Comment**

Galp estimates that the costs associated with managing the identified risk, considering costs related to human resources, travelling, representation and fee memberships was around €160k in 2018.

**Identifier**

Risk 2

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Transition risk

**Primary climate-related risk driver**

Policy and legal: Mandates on and regulation of existing products and services

**Type of financial impact**

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

Galp may face some risks derived from the Renewable Energy Directive (RED) (2009/28/CE) as well as the Fuel Quality Directive (FQD) (2009/30/CE). RED defines a mandatory target for Member-States towards the introduction of 10% of renewable energy in the transport sector by 2020. At the same time, FQD , outlines a mandatory target of reducing GHG emissions per unit of energy from fuel and energy supplied by up to 10% by 31 December 2020. Galp as a refiner (Sines and Matosinhos refineries in Portugal) and fuel distributor (1459 service stations in Portugal, Spain and Africa) is committed towards meeting these targets as they represent both an opportunity and a challenge. Nevertheless, these mandates may pose risks towards the supplying biofuels to the European fuel markets where Galp operates in. The main risk is directly related to the lack of biofuels supply, in compliance with sustainability requirements, that can comprise both targets. Aware that it has to adapt its business to the long-term needs, in order to meet European targets, Galp is aiming to reduce the operational risks, through the production of biodiesel (FAME) in Portugal from waste feedstock (animal fats). This plant, located in Sines (south of Portugal) has an annual capacity of 27kt/year.

**Time horizon**

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

11380000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

Not complying with regulations would affect Galp, resulting in fines, loss of reputation and losses in revenues. The Portuguese Government set up fines of around €50k plus other sanctions for failure to accomplish the goals of biofuels incorporation. Also, reputational damage may be more severe, with potential brand depreciation. According to Brand Finance (2018), Galp brand, the second most valuable in Portugal, is currently worth €1,133 million. It is reasonable to assume a 1% brand depreciation, meaning a financial implication of about €11.33 million.

**Management method**

In order to manage this risk, Galp holds in its business portfolio, activities related to the production of biofuels. Belém Bioenergia Brasil (Galp's company) attained a total of 41k hectares planted of palm tree in 2018 which the yields increased from 18.6 kton produced in 2014 to approximately 242 kton in 2018. Besides, Galp has in place a unit to produce distilled biodiesel (FAME) with an annual capacity of 27kt/year of second generation biofuels, enhancing the recovery of cooking oils and animal fats, provided by waste management operators. In 2018 Enerfuel produced approximately 24 kton of FAME. As such, we contributed to an 83% reduction in GHG emissions from use of traditional mineral diesel fuel, which is replaced by biodiesel. Also, in 2018, Galp introduced around 337 m3 of biofuels (biodiesel; HVO; BIO-ETBE, 100% with proven sustainability) into the Iberian fuel market, allowing the GHG reduction of the third parties that purchases these fuels. According to the criteria of the RE Directive this

incorporation represents a potential reduction of GHG emissions of more than 444 kt CO<sub>2</sub>e/year.

**Cost of management**

15843000

**Comment**

Galp has made significant investments in biofuels. Main costs are associated to land prospecting in Brazil for the production of vegetable oils, plantations, fuel blending and introduction of biofuels in the Iberian market. The annual total amount invested (CAPEX). In 2018, was approximately €15.8 million (€15.7M for BBB and €192k for Enerfuel Plant).

**Identifier**

Risk 3

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

**Type of financial impact**

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

**Company- specific description**

Change in precipitation patterns may affect the geographic distribution of water resources, both at regional and at national level. This scenario of uncertainty can lead to the definition of tariff policies that may increase the cost associated to the purchase of water. At Galp, due to the location of several industrial facilities (specifically refineries in Sines and Matosinhos in Portugal) with non-negligible water consumption (around 9 million m<sup>3</sup>), the change (increase) in tariffs charged by water utilities may have a significant impact on the operating costs structure of these facilities. Given this scenario, it is likely that part of the control measures for water use will be reflected in its price, causing a significant rise of the water price and forcing society in general and industry in particular (industrial facilities of Galp previously referred), to optimize its use guaranteeing competitiveness.

**Time horizon**

Long-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

9834000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

Based on the data from the study 'Water Cost Index', from IBM and Waterfund, in the Global scenario water presents a cost of €1.60/m<sup>3</sup>, reflecting production costs and environmental and social externalities, associated with this scarce resource. In this context, comparing this value with the average water bill in the Refining segment (Sines and Matosinhos in Portugal), water-related expenses would increase from around 2% to over 6% of operating costs, representing a financial implication of around €9.8 million per year.

**Management method**

Galp develops analysis and monitors risk associated with water price variation, due to possible changes in physical climate parameters, and also on the level of exposure of its facilities to water scarcity (by geography). In 2018 the study covered 73 facilities (e.g. Matosinhos and Sines Refineries in PT; storage facilities in PT, Spain and Africa; Sea terminals; facilities of EP), 100% of the operating facilities and also the facilities where Galp is not yet physically operating, in all countries where Galp has activities. In this risk analysis, Galp measures water stress exposure through WBCSD Water Tool to manage water risks. Galp also developed (and updates every year) the Case Study - Refineries sensitivity to variation in water prices, in order to assess this risk. Considering the different scenarios and approaches assessed, Galp understands that water is acquiring a more significant importance in the company's cost structure (especially at the Sines and Matosinhos industrial units in Portugal – total water withdrawal of 9 million m<sup>3</sup>). Galp also follows up forums where these issues are discussed in order to develop studies and identify best practices to mitigate these risks, including WBCSD specialized working groups.

**Cost of management**

4071804

**Comment**

In 2018, for the Matosinhos and Sines refineries, costs related to the protection of water resources and groundwater amounted for around €4.1 million. For the development of the study about climate change-related water risks, the cost were mainly associated to human capital, being estimated at €2k. Besides, in 2018 costs associated to BCSD membership related to these issues amounted for €4k.

**Identifier**

Risk 4

**Where in the value chain does the risk driver occur?**

Direct operations

**Risk type**

Physical risk

**Primary climate-related risk driver**

Chronic: Rising sea levels

**Type of financial impact**

Reduced revenue from decreased production capacity (e.g., delayed planning approvals, supply chain interruptions)

**Company- specific description**

The rise of sea levels due to change in physical climate parameters may affect Galp's coastal facilities (specifically Refineries in Portugal, Seaports and Terminals) given that events such as floods can become more frequent. Main industrial facilities of Galp (e.g. refineries of Sines in the South and Matosinhos in the North of Portugal) are located in the Atlantic Ocean coast, being threatened by these extreme events. Similarly, extreme storms may affect the capacity of our refineries and compromise the supply of raw materials to these refineries through the sea terminals (in Sines and mainly Matosinhos). This is particularly relevant as Galp processed in 2018 around 100 mmboe of raw materials, with crude accounting for 92% of the total. Galp imported crude from 16 countries, with medium and heavy crude accounting for 85%.

**Time horizon**

Long-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

7565481

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

Given the two refineries of Galp and terminals are located in coastal areas (Atlantic Ocean), assuming a scenario of climate change extreme events (e.g. extreme precipitation or flooding by sea level rising), where the two refineries will have to interrupt its production for a week, due to lack of raw-materials supply or flooding, the financial implication (refining margins) of this risk may be over €7.6 million (calculation based on 2018 average refining margin, for reference purposes only).

**Management method**

For assessing the physical climate change (CC)-related risks at an asset level, Galp developed an Action Plan for CC Adaptation, where we considered the most significant infrastructures due to their relevant technical location, vulnerability and asset value. Galp considered variables such as temperature, rainfall, storm, wind and other criteria associated with the infrastructure. The results showed that some assets (Sea Terminals and Storage Parks in Portugal) may have a high risk related to severe precipitations and storms by 2060-2080. The CC lines of action for Refining & Distribution and EP, includes a strategic goal for the medium-term exposure to physical risks and the definition of a plan and adaptation measures. In this context, specific actions were identified (e.g. risk assessment for new infrastructure; training employees and partners). Another important instrument used by Galp for managing these risks is through insurance protection of its facilities against severe weather events. Galp subscribes a multirisk insurance policy covering all business facilities of Galp Group (e.g. Refineries, Sea terminals, Storage parks, Service stations, Pipelines), that includes specific clauses on extreme events, such as floods, storms, extreme precipitation, among others). Also, The Galp framework of the HSE Management System has an element (17th) related to mechanical integrity of facilities. The practices and procedures related with this topic are subject to internal audits.

**Cost of management**

100000

**Comment**

In the investment business plan there are several items with direct impact on the adaptation capacity to climate change. A €100k investment was related to equipment replacement in Leixões terminal, identified as a priority in the Action Plan. The Group multirisk insurance policy had an average capital value of insurance of around €15.2 billion, covering the insured facilities and potential operating losses in the event of a disaster.

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**Identifier**

Risk 5

**Where in the value chain does the risk driver occur?**

Customer

**Risk type**

Transition risk

**Primary climate-related risk driver**

Reputation: Shifts in consumer preferences

**Type of financial impact**

Other, please specify (Reduced brand value)

**Company- specific description**

Climate change perception is rising among general society. Nowadays, Stakeholders are more aware of the fact that energy should be produced and consumed in a more sustainable way. In this context, Galp must demonstrate that the Company is committed to climate change, helping to satisfy future energy needs and minimising its carbon intensity, producing and delivering cleaner fuels and lower carbon energy. If Galp fails in this purpose, there might be reputational risks associated, regarding negative perception of the company by its stakeholders. Negative perception about the Galp's climate change strategy, management and performance could reduce investors interest in the company (as we are an integrated energy player). Besides, the increased awareness of global society about climate change, may lead to a change in consumer behaviour, increasing consumer preference for renewable and alternative fuels (e.g. biofuels) and energy (low carbon electricity) that may also lead to reduced demand for conventional products. Currently Galp is already facing this risk, being visible a change in the consumption pattern, as our customers are more informed and aware of climate change. These challenges were described on last Galp's stakeholder consultation. For that purpose, Galp is committed to developing and selling more sustainable fuels and low carbon products and services, such as: cleaner diesel (hydrocracker diesel produced in Sines Refinery with a lower carbon content); biofuels (produced at the Enerfuel Plant and plantations in Brazil); energy efficiency services (developed by Galp Energy Solutions); and renewable energy projects (Wind farm projects, e.g. Ventinveste; solar PV projects in development; and sale of electricity from renewable sources - GalpPower).

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

11330000

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

The risks are associated with loss of brand value, consequently affecting Galp's operational performance and financial position. If Galp is perceived by stakeholders, as a company not committed with CC, it is reasonable to assume that the brand could lose up to 1% of its value. According to the last assessment of Brand Finance (2018), Galp's brand is the second most valuable in Portugal, and currently worth €1,133 million. Assuming a conservative scenario of 0-1% of brand depreciation, the financial implication may go up to €11.33 million.

**Management method**

In order to reinforce its commitment to CC issues, improve performance and reputation, Galp implemented several initiatives and concrete actions, demonstrating coherence of the company's positioning regarding CC. Many of these activities involve different segments of stakeholders (customers, partners, public institutions) that will contribute to positive brand awareness and reputation. Examples: educational campaigns for energy efficiency and partnerships with clients; development of Educational UP projects, about energy and CC at schools (more than 1M students impacted & 3.5k energy lessons). Furthermore, Galp is committed to developing and selling more sustainable fuels and low carbon products and services, such as (2018): cleaner diesel (hydrocracker diesel) from Sines Refinery with a lower carbon content; biofuels - produced at the Enerfuel Plant (24 kt produced and 337 thousand m3 incorporated in the Iberian market; 444 kt CO2 avoided); energy efficiency products/services (developed by GSE) and renewable energy projects, e.g. Wind farm projects (Ventinveste, 30 GWh produced, 8 kt CO2 avoided); Solar PV projects in development (Alcoutim PV Park) and sale of electricity from renewable sources by GalpPower; Sustainable mobility (36 electric fast-chargers and natural gas filling stations). Galp reports these initiatives in its IR 2018, corporate website and CDP questionnaire every year.

**Cost of management**

17509151

**Comment**

In 2018, Galp incurred in different costs (around €17.5M) associated to several projects, namely: sustainable mobility (Galp Electric, €38k; Sines Natural Gas Vehicle, €151k); Energy Efficiency products/services developed by Galp Energy Solutions (more than €877k); Enerfuel Plant (investment of €192k); Belém Bioenergia in Brazil (€15.7 million), Alcoutim Solar Photovoltaic Park (€599k) among others.

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

Opp1

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description**

Instruments to reduce emissions from the use of fuels/energy, such as Renewable Energy Directive (2009/28/CE) (RED) and Fuels Quality Directive (2009/30/CE) (FQD) provide incentives to develop cleaner fuels with lower carbon content. Taxes and regulatory constraints can incentive energy efficiency measures. Galp foresees specific opportunities, such as: the development of natural gas business (both in B2B and B2C business); opportunities to integrate renewable energy in the transportation system, mainly through biofuels (through the Enerfuel plant and plantations in Brazil); and opportunities to generate and sell electricity from renewable sources, mainly wind and solar (through the Ventinveste project; through Galp Energy Solutions; through photovoltaic Parks; and through GalpPower).

**Time horizon**

Current

**Likelihood**

Virtually certain

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

177000000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

The utilisation of cleaner fuels is an opportunity for Galp, particularly as it may sustain current dynamics on the international LNG market. It is expected that the business of Gas&Power may generate an EBITDA of €100-150 million/year for the next 5 years. Also, Galp estimates that the annual financial opportunity (revenues) for Enerfuel (biofuel plant) may be more than €27M per year.

**Strategy to realize opportunity**

Galp holds in its business portfolio, activities related to the production of biofuels. In 2018, Belém Bioenergia Brasil had planted more than 41k ha of palm trees. Yields were increased to 242 kton in 2018. Besides, Galp has in place a project to produce distilled biodiesel (FAME). In 2018 Enerfuel produced approximately 24 kton of FAME and Galp incorporated into the Iberian market 337k m3 of biofuels (444 kt CO2 avoided). Galp has also been increasing the percentage of NG in the upstream portfolio. Regarding the G&P business, Galp has been focusing on providing technical and EE services and continued its focus on the combined supply of NG and electricity. Galp is pursuing an active management policy for its different sources of supply, including the spot market. Galp supplies NG to the Iberian market, where it has steady demand for NG, and focuses efforts on increasing the activity's profitability. At the same time, Galp has intensified its trading operations in the international LNG market, and has been successful in capturing opportunities in markets such as Latin America and Asia. In 2018, Galp supplied 7615 mm<sup>3</sup> (2875 mm<sup>3</sup> of NG/LNG trading & 4740 mm<sup>3</sup> NG sales to direct clients). Galp is developing a portfolio aligned with the transition to a low-carbon economy. Galp expects that its investment in low-carbon and new business models will account for 5-15% of the CAPEX.

**Cost to realize opportunity**

24843000

**Comment**

Galp incurred in different costs associated to several projects, namely: Enerfuel Plant (investment of €192k); Belém Bioenergia in Brazil (€15.7 million), among others. CAPEX of Gas & Power segment amounted for €9 million in 2018. Costs associated with trading of natural gas are negligible (near zero) as they are related to administrative costs in which the company already incurred for other activities.

**Identifier**

Opp2

**Where in the value chain does the opportunity occur?**

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description**

Galp, as an integrated energy player sees in product efficiency regulations and standards an opportunity to offer energy efficiency as a service to its customer in order to prepare them to comply with future regulation. Particularly, Galp sees opportunities to help its customers to optimise their energy consumption by promoting energy efficiency and sustainable practices in its clients from industry, buildings and transportations sectors. Galp sees also opportunities to develop user-friendly systems to manage home energy for its customers. Through its specific unit 'Galp Energy Solutions', Galp is currently providing energy efficiency & renewable energy solutions to its customers, developing and implementing innovative solutions and processes improvements, such as installing photovoltaic panels and develop energy efficiency solutions. It is also an opportunity to develop new low carbon products and services, increasing the market share.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium-low

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

1900000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

Galp estimates that the annual financial opportunity (revenues) for Galp Energy Solutions may be €1.9M per year.

**Strategy to realize opportunity**

Galp, through its specific unit 'Galp Energy Solutions' (GSE), helps its customers to optimize their energy consumption by promoting energy efficiency and renewable energy solutions. It is based on the idea of capitalising the knowledge and expertise developed in projects of this nature, employing them in the marketplace. The activity is mainly directed to B2B markets: service, transport, and industrial buildings, sectors that represent the largest share of energy consumption in Portugal. Galp applies established and tested methodologies, including IPMVP – International Performance Measurement and Verification Protocol. Some concepts developed in 2018 were: 1)

Phase IV of Energy Efficient Hotel: Galp signed a contract of EE with Hotel Corinthia that include the reconversion of climate systems, recovery of thermal energy for water heating, replacement of lightning systems, installation of a solar system & cogeneration system. The air conditioning system reformulation took place (131 GWh electricity saved & 1,060 GWh natural gas saved; 427,557 kg CO2 avoided); 2) Efficient lighting project at Lisbon Towers: replacement of the lighting at the parking lot of the Towers of Lisbon complex (128 GWh electricity saved; 34,388 kg CO2 avoided); 3) Hotel Villa Batalha (Solar PV project; 148 GWh saved; 39,799 kg CO2 avoided); 4) COOPVAL (Solar PV project – ESCO model; 586 GWh saved; 157,505 kg CO2 avoided).

**Cost to realize opportunity**

876951

**Comment**

Galp incurred in more than €5 million until 2017 and €877k in 2018, associated to energy efficiency products/services developed by Galp Energy Solutions.

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**Identifier**

Opp3

**Where in the value chain does the opportunity occur?**

Direct operations

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Ability to diversify business activities

**Type of financial impact**

Increased revenue through demand for lower emissions products and services

**Company-specific description**

The increase in average temperature (higher temperatures in the summer and lower temperatures in the winter) may result in changes in demand of electricity and gas by clients for cooling of air conditioners or heating for other equipment, and electricity producers, allowing Galp through its Gas&Power segment to increase its revenues. Also, the decrease in average temperature in the winter (lower temperatures) may result in demand for natural gas and electricity for heating. This represents an opportunity to Galp, as the company sells natural gas and produces electricity from renewable sources, such as photovoltaic (e.g. in the Galp's service stations in Portugal), wind (e.g. Wind farm in Vale Grande), sell of lower carbon electricity (GalpPower from renewable sources and NG), and also acts in the market as a trader (both electricity and natural gas).

**Time horizon**

Long-term

**Likelihood**

More likely than not

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, an estimated range

**Potential financial impact figure (currency)**

<Not Applicable>

**Potential financial impact figure – minimum (currency)**

104000000

**Potential financial impact figure – maximum (currency)**

157000000

**Explanation of financial impact figure**

The electricity produced in VG Wind Farm represents a financial opportunity of €4.1-6.6 million/year, depending on the type of client that will use this electricity (residential or industrial). Electricity produced in service stations (Ecoposto concept: photovoltaic & energy efficiency) represents around €370k/year. The utilisation of cleaner fuels is an opportunity for Galp, especially LNG market. It is expected that the business of Gas & Power may generate an EBITDA of €100-150 million/year for the next 5 years.

**Strategy to realize opportunity**

For the production of electricity from renewable sources, Galp has a wind farm in Portugal (Vale Grande Project). By the end of 2018, the Company had an installed capacity of 12 MW in the wind farm. Vale Grande delivered, in 2018, 30.5 GWh and annual CO2 savings were 8 kt. Galp also produces electricity from photovoltaic panels at its service stations. The implemented measures achieve a reduction of electricity consumption of 3.3 GWh/year, as well as a reduction of billing by €370k/year. In 2018, Galp produced 3768 TJ of electricity and sold 2454 TJ, including the generation from cogenerations units at Sines & Matosinhos refineries (R&D segment), service stations (R&D segment) and Agroger cogeneration (G&P segment). Galp operates across the natural gas value chain, as well as a distribution system operator of regulated infrastructure. Galp's Supply & Trading business is currently centred on two pillars. The first is the Iberian market, where the Company maintains a stable demand and where it is focused on improving the profitability of operations. The second pillar is the international NG/LNG market, where Galp is working to further consolidate and develop operations and sustainably pursue new opportunities. In 2018, Galp sold 7515 mm<sup>3</sup> (2875 mm<sup>3</sup> of NG/LNG trading & 4740 mm<sup>3</sup> NG sales to direct clients).

**Cost to realize opportunity**

9000000

**Comment**

Capital expenditure of Gas & Power segment amounted for €9 million in 2018. Costs associated with trading of natural gas are negligible (near zero) as they are related to administrative costs in which the company already incurred for other activities.

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**Identifier**

Opp4

**Where in the value chain does the opportunity occur?**

Customer

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Shift in consumer preferences

**Type of financial impact**

Other, please specify (Increase brand value & increase revenues)

**Company-specific description**

Galp, as an integrated energy player, sees an opportunity to improve its reputation and to promote the shifting on consumer preferences by acting responsibly towards climate change and by communicating its practices to its stakeholders. The rising awareness and concerns of general society about climate change may be a driver to improve the reputation of the company. Galp addresses these concerns showing proactivity through the commitment to its long-term Climate Change Strategy and also by implementing several projects related to energy efficiency and cleaner fuels. Besides, changes in industry/commercial behaviour due to regulatory activity and increased stakeholders interest (e.g. investors, shareholders, clients), namely a focus on energy efficiency, offers an opportunity for Galp to engage with stakeholders (e.g. Educational UP projects, with more than 1M students engaged & 3.5k energy lessons) and develop new low-carbon products and services, which Galp is already commercializing. In this context, Galp has, among others, the 'Galp Energy Solutions' unit which aims to provide energy efficiency services to Galp's clients from industry, buildings and transportations sectors (e.g. Hotels), mainly in Portugal, helping to rationalize energy consumption, aligned with the technological development and the actual developments in EU regulation.

**Time horizon**

Medium-term

**Likelihood**

Likely

**Magnitude of impact**

Medium

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

13230000

**Potential financial impact figure – minimum (currency)**

<Not Applicable>

**Potential financial impact figure – maximum (currency)**

<Not Applicable>

**Explanation of financial impact figure**

As a company committed to climate change, it is reasonable to assume that the brand could increase up to 1% of its value if Galp were perceived as strongly committed to climate change adaptation and mitigation, and also if it shows a strong environmental performance. According to the last study of Brand Finance (2018), Galp's brand is worth €1,133 million. Assuming a scenario of 0-1% of brand valuation, the financial opportunity may go up to €11.33 million. Also, changes in consumer behaviour may increase demand for low-carbon products and services, increasing revenues. Galp estimates that the annual financial opportunity (revenues) for Galp Energy Solutions (GSE) may be €1.9M.

**Strategy to realize opportunity**

In order to reinforce Galp's commitment to CC issues which may lead to the improvement of its reputation, the company implemented several initiatives actions to attract the community's attention to this subject, through educational campaigns for EE and partnerships with clients, aligned with climate change and circular economy. Still regarding reputation, Galp developed the Educational UP projects (Missão UP; Power UP; Switch UP), 3 educational projects about EE and CC at schools (more than 1M students impacted; 3500 energy lessons). Besides, Galp is committed to develop and sell more sustainable fuels and low carbon products/services, such as: cleaner diesel (hydrocracker diesel in Sines Refinery) with a lower carbon content; Biofuels - produced at Enerfuel Plant (24 kton in 2018); 242kt CFF produced in Brazil; 337k m3 biofuels incorporated into the Iberian market (444 kt CO2 avoided); Energy efficiency products/services - developed by GSE, e.g. Hotel Villa Batalha (Solar PV project; 148 GWh saved; 39,799 kg CO2 avoided); COOPVAL (Solar PV project – ESCO model; 586 GWh saved; 157,505 kg CO2 avoided); Wind farm projects, e.g. Ventinveste – 30.5 GWh produced and 8 kt CO2 avoided. Galp reports these initiatives with more detail in its IR2018 and corporate website and responds to the CDP questionnaire annually.

**Cost to realize opportunity**

936951

**Comment**

In 2018, Galp incurred in different costs associated to several projects, namely: Energy Efficiency products/services by Galp Energy Solutions (more than €5 million until 2017 and €877k in 2018); Missão UP and Power UP (€238k); among others.

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C2.5

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

	Impact	Description
Products and services	Impacted	Climate change risks and opportunities has impacted Galp's products and services. As example, Galp has in place a business unit (Galp Energy Solutions) geared towards supporting Galp's customers in the implementation of energy efficiency and renewable energy solutions (revenues of around €1.9M). The business is based on the idea of capitalising the knowledge and expertise developed in project management of this nature at our own facilities, employing them in the marketplace. Our activity is mainly directed to B2B markets: services, transportation, and industrial buildings, which are sectors that represent the largest share of energy consumption in Portugal. Our business model is based on energy performance contracts, between our Company and the customer, that include planning, financing, and implementation of measures and project operation. The savings achieved throughout the project are divided between the company and its customers. Thus, our Company rewards them for the investment, which is felt from day one, without their need to invest. Savings are presented (measures), and the actual value observed is billed to Customers. Galp applies defined and tested methodologies, including IPMVP – International Performance Measurement and Verification Protocol. This is an international protocol developed for this purpose that can be downloaded free of charge on the website EVO – Efficiency Valuation Organization. The energy efficiency solutions implemented has been reducing energy consumption and avoiding CO2 emissions. In 2018, it was avoided 1,601,009 kWh of energy consumption and 292,053 kg CO2.
Supply chain and/or value chain	Impacted	Climate change risks and opportunities has affected Galp's supply value chain. Galp aims to play an active role in changing the energy paradigm, in particular by anticipating new trends, by adapting its portfolio to future needs, creating synergies with the present activity whenever possible, consolidating the Company's knowledge and enhancing asset diversification, with the corresponding risk reduction, namely through lower carbon intensity energy, as in the case of the use of natural gas as an alternative to coal for the transition to a lower carbon economy, among other lower carbon and new business solutions. Together with our partners in the development of Area 4 in Mozambique, we took the final investment decision (FID) regarding the Coral South project, the first commitment to start developing the large natural gas discoveries in the Rovuma basin. Coral South will produce liquefied natural gas (LNG) 3.4 million tonnes per annum (mtpa) through a floating unit (FLNG). The investment for upstream and midstream development is estimated at about \$7 bn and production is expected to start in 2022.
Adaptation and mitigation activities	Impacted	Climate change risks and opportunities has influenced Galp's adaptation and mitigation activities. As example, Galp set an internal price for CO2. In its investment decision-making process, the Company considers a long-term price on carbon (\$40/ton). Thus, on one hand, it intends to give more emphasis to the alternatives with lower CO2 emissions and, on the other hand, strives to build a portfolio suitable to the transition to a lower carbon economy. Also, Galp developed a future scenario planning. In order to ensure the sustainability of the Company, we test the resilience of our strategy to different scenarios, including a 2-degree compliant scenario. Anticipating the risks and opportunities related to every scenario is critical to maximise long-term value creation. Furthermore, in order to guarantee the full incorporation of Health, Safety, Social and Environmental (HSSE) criteria in the decision-making processes in each development stages of the full lifecycle of projects/assets/operations, Galp has 2 internal guidelines: the Company Standard (Requirements to guarantee the protection of people, environment and assets) and Manual (Integration of HSSE in Galp projects and assets lifecycle). One of the requirement established is to assess and manage climate change related risks, including the adaptation to climate change risks, in the investment decision-making process for projects development, expansion, upgrade or acquisition. The risks related to Climate Change must be considered in the risk assessment processes along with the project lifecycle, such as Due Diligence and Environmental, Social and Health Impact Assessments.
Investment in R&D	Impacted	Climate change risks and opportunities have influenced Galp's investment in R&D. In the last 4 years, Galp has invested €50 million in R&D and estimate to invest more than €90 million in R&D until 2021. Also, one of Galp's strategic goals is to build an innovative and differentiated lower carbon business supported by the allocation of 5-15% of our CAPEX. Galp actively promotes the research, development and implementation of technologies and solutions that contribute to the incorporation of sustainability principles into business models throughout its value chain. That is why we promote innovation and technological development, cooperation and shared knowledge, vital factors to maximise the value we extract from our portfolio, and also to the sustainability of the Company and the communities where we operate. To address the transformational challenges of the industry, we will continue to invest in the transition to a business model supported by digital, decarbonised and decentralised solutions. Thus, we are committed with our employees' development and we promote agile decision-making processes in a context of high complexity and uncertainty. We promote technological training and foster knowledge networks through partnerships. Innovation projects are developed in-house or in partnership with reference players or scientific and technological entities. The strategic agenda for R&D that we redefined was based on a scenario planning exercise from which we identified four major axes: Galp 4.0: We intend to adapt our assets to the new industry paradigms. To this end, we promote programmes which allow us to extract more from our businesses, particularly from upstream and refining, oriented to the future and to the transition to a low carbon economy; Galp in a smart world: seeks to explore the opportunities arising from profound technological changes. We adapt to the new trends of mobility and study the provision of services and solutions for future homes and cities: smart, comfortable, secure, digital and interconnected; Digital transformation: We execute our strategy, taking advantage of the opportunities that arise from digitisation at all levels of the Organisation; Businesses of the future: we explore opportunities that arise from new technologies and business models, adapting, strengthening and developing Galp beyond its borders.
Operations	Impacted	Climate change risks and opportunities has influenced Galp's operations. Galp's strategy remains focused on developing a resilient upstream portfolio, embedded with an efficient and competitive downstream business, supported by innovative and differentiating solutions that promote the transition to a lower carbon economy. One of Galp's strategic goals is to build an innovative and differentiated lower carbon business supported by the allocation of 5-15% of our CAPEX. Galp has a modern and complex integrated refining system, comprising the Sines and Matosinhos refineries, with a crude oil processing capacity of 330 kbpd. The system has a hydrocracking and fluid catalytic cracking (FCC) unit at the Sines refinery for the production of medium and light distillates, respectively, as well as a visbreaker unit and aromatics and base oils plants at the Matosinhos refinery. Galp is focused on improving the efficiency and conversion capabilities of its refining system. We continued to optimise our activities, increase energy efficiency in the refining process. In 2018, Galp has invested €13.5 million in operational eco-efficiency in refining. By 2023, we will invest €66 million in eco-efficiency projects, avoiding the emission of more than 150 kton CO2e. In the upstream, Galp continues to ensure the sustainability of its E&P portfolio, which should be competitive and profitable in any expected oil and carbon pricing scenario. Our strategy focuses on identifying new opportunities in geographies where we have a competitive advantage or a strategic angle, namely through exploration and discovered resources opportunities, in order to sustain the competitiveness of future production growth while maintaining a balanced exposure to natural gas. The main priorities will continue to be the disciplined execution of the existing projects and to extract more value from them.
Other, please specify	We have not identified any risks or opportunities	No other identified.

**C2.6**

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

	Relevance	Description
Revenues	Impacted	Climate change related risks and opportunities have factored our financial planning process, namely revenues. Through several companies in the group, Galp currently owns a renewable portfolio, consisting in wind energy (e.g. Ventinveste project), vegetable oil, FAME biodiesel (New Energies BU, with Enerfuel Industrial Plant in Sines), that have been generating revenues aggregating to Galp's global revenues, besides the solar energy projects in development. With the strategic decision to strengthen the lower carbon energies in the portfolio (solar energy, wind energy, biofuels, EV), the expectation is that the contribution of this area of activity to the group's EBITDA will gain importance over the next decade. Regarding biofuels, Galp operates an industrial unit in Sines, Enerfuel, focused on the transformation of waste oils and waste animal fats into second generation FAME (fatty acid methyl ester) biodiesel. In addition, we became producers of second generation biofuels by co-processing vegetable oil together with gasoil, obtaining a final diesel fuel undistinguishable from diesel of fossil origin. Regarding the introduction of biofuels in Iberia, in accordance with the goals established by the European Commission and the respective countries, Galp will continue to pursue the goal of incorporating 10% by 2020 in gasoline and diesel, using the various complementary renewable sources at its disposal. In 2018, Galp introduced around 357 thousand m <sup>3</sup> of biofuels in the Iberian market. Through the introduction of biofuels in the road market, we have contributed to prevent 444 kt CO <sub>2</sub> . The Company also has 12 MW installed capacity at a wind farm in Portugal. In 2018, we produced 30 GWh, which corresponds to 8.2 kt CO <sub>2</sub> avoided and between €4.1-6.6 million in avoided energy imports. Electricity sales to the grid were 1,326 GWh, following higher volumes sold in Portugal. Galp aims to be present in power generation from differentiated renewable activities that are competitive, particularly within a context of lower carbon intensity.
Operating costs	Impacted	Climate change related risks and opportunities have factored our financial planning process, namely operating costs. We seek to ensure the extraction of added value from the R&M business by boosting our competitiveness in the European refining industry and in the distribution of associated products and services in the Iberian Peninsula and Africa. It will be essential to integrate R&M activities more closely by aligning production profiles and volumes with sales of petroleum products in the area of influence of the refineries. Greater focus on the energy efficiency and operational optimization in our refineries, to enable cost reductions and an increase in returns on the capital deployed, will also be fundamental in maximising cash flow generation. At Galp, we continue to implement new actions to improve our refining eco-efficiency, even after implementing the global conversion project of the Matosinhos and Sines refineries – the most ambitious industrial project developed in Portugal. The goal of this project was to adapt the refining system to the new demand trends in fuel markets and improve the refining process to achieve significant improvements in energy efficiency, through the modernisation of facilities and processes. The implementation of these measures is also reflected in an energy efficiency plan for each refinery, to achieve the industry benchmarks in the short-term. Galp has been reducing the emissions in refining, making these operations and its products increasingly sustainable, through the implementation of the best available technologies to improve eco-efficiency of resource use and minimising the environmental impacts. In the last five years (2013-2018), we have reduced the consumption of direct energy by primary sources (-4%), the consumption of raw water (-5%). Regarding the energy intensity index (EII), Sines refinery reduce 7% and Matosinhos refinery reduce 4% from 2013 to 2018. The Matosinhos refinery has been in the first quartile of the Solomon reference on energy efficiency since 2015 and we have assumed that both refineries will reach this quartile in 2021. Since 2013, the adoption of eco-efficiency measures has led to savings and cost avoidance of more than €180 million.
Capital expenditures / capital allocation	Impacted	Climate change related risks and opportunities have factored our financial planning process, namely capital expenditure/allocation. Galp is focusing on improving the efficiency and conversion capabilities of its refining system. In 2018, Galp invested €13.5 million in eco-efficiency measures in the Refining segment. By 2023, we will invest €66 million in eco-efficiency projects, avoiding the emission of more than 150 kt CO <sub>2</sub> e. In addition, we became producers of second generation biofuels by co-processing vegetable oil together with gasoil (in our Enerfuel plant), obtaining a final diesel fuel indistinguishable from diesel of fossil origin. In 2018, Galp invested around €16.6M in several projects, namely: Enerfuel; NVG at Sines; Electric mobility, Solar PV development project and raw material plantations in Brazil for biofuels. In addition, together with our partners in the development of Area 4 in Mozambique, we took the final investment decision (FID) regarding the Coral South project, the first commitment to start developing the large natural gas discoveries in the Rovuma basin. Coral South will produce liquefied natural gas (LNG) 3.4 million tonnes per annum (mtpa) through a floating unit (FLNG). The investment for upstream and midstream development is estimated at about \$7bn and production is expected to start in 2022. Furthermore, Galp committed to allocate 5-15% of CAPEX in new businesses and low carbon solutions.
Acquisitions and divestments	Impacted	Climate change related risks and opportunities have factored our financial planning process, namely acquisitions/divestments. One of Galp's strategy pillars, is to build an innovative and differentiated portfolio that support the transition to a lower carbon economy, through the capitalization of existing capabilities. As preliminary recommendations were namely pointed out: an increasing exposure to renewables; the pursuing of investment opportunities in Iberia with innovative solutions; and screening emerging renewable technologies. In terms of acquisitions, it is foreseen a 5%-15% CAPEX allocation in Renewables, New Business Models and Disruptive Activities over the next 10 years (period average). In 2018, Galp acquired licenses for solar PV power generation, covering 4 solar parks in Portugal, with a total nominal power of 154 MW.
Access to capital	Impacted	Climate change related risks and opportunities have factored our financial planning process, namely access to capital. Galp has sought new opportunities for the implementation of development projects aligned with its strategy and create sustainable value for company and society, contributing to the Sustainable Development Goals (SDG). For the development of these projects, we have made use of the finance/funds available to leverage new Galp growth vectors. As examples, Galp has developed a new solution for mobility by increasing the electric vehicles fast-charging network. Galp strengthens leading position in electric vehicle fast charging, adding 18 new charging points to its network in 2018. Another 18 new fast chargers will be installed in 2019 in Portugal. This project (CIRVE) is co-financed (85%) by the European Union's Connecting Europe Facility (€740k). The partners of the consortium are Galp (Petrogal), Mobi.e and CEIIA. Galp also developed a low carbon business model to sustainable household energies (butane gas stoves) for the city of Bissau (€1M investment; 90% of European Union funding). This programme promotes the access to low cost solutions that facilitate the transition to the use of modern energy sources in particular LPG. Also the adoption of firing technologies, modern and efficient, to enable the inhabitants of the Bissau Region to sustainably benefit from the improvement of living conditions provided by one of the safest, cleanest and most efficient sources of domestic energy, while at the same time generating business revenues to Galp. The abandonment of biomass and charcoal burning in rudimentary stoves enables several environmental benefits identified by the programme until 2028, namely: 2.5 million of m <sup>3</sup> of forest wood saved; 100k hectares saved from deforestation; 553 kt CO <sub>2</sub> e avoided.
Assets	Impacted	Climate change related risks and opportunities have factored our financial planning process, namely assets. Galp's presents a post-2020 portfolio breakeven forecast of approx. \$25/bbl, resilient to lower oil price situations expected in fast transition scenarios. Moreover, the LNG gas project to be developed in Mozambique will promote a lower carbon portfolio. In assessing new opportunities, Galp incorporates carbon into its investment analysis, through two different mechanisms. We consider a carbon price (\$40/tonCO <sub>2</sub> e) in all investment decision-making processes, which together with a due diligence analysis of the activity's carbon intensity ensures the alignment of our assets and operations with a lower carbon economy. In this way, we contribute to the sustainability and resilience of our portfolio, which should be competitive, profitable and environmentally efficient and responsible.
Liabilities	Impacted	Climate change-related risks and opportunities have factored our financial planning process, namely liabilities. Our Sines and Matosinhos refineries and cogenerations are covered by the EU Emissions Trading Scheme (ETS). Galp makes analysis and estimates to calculate provisions for environmental matters such as CO <sub>2</sub> . Every year Galp is entitled to free allowances (EUA – Emission Unit Allowances) from the Portuguese Environment Agency in order to address greenhouse gas emissions. In case the free allowances are insufficient to address greenhouse gas emissions, Galp can acquire the EUAs or other equivalent/complementary allowances green certificates (ERU – Emission Reduction Units) in the market, giving rise to a cost, which is recorded in the caption "Other operational costs". However, if greenhouse gas emissions are above allowances and green certificates in the portfolio at the end of the year, costs are accrued based on the best estimate of the expense to be incurred at the market spot rate of the allowances and/or certificates. Emissions during the year 2018 amounted to 3,216,219 ton CO <sub>2</sub> , being the EUA's securities held by the Galp Group of 3,276,781 ton CO <sub>2</sub> , which are sufficient to meet Galp Group's commitments. In 2018, Galp had 60,562 surplus EUA's securities. Due to the acquisition of allowances to cover GHG emission liabilities, Galp recognised a cost of c. €18 million as an expense in the year. On December 31, 2018, greenhouse gas emission values were below the amount of allowances allocated and purchased, so there was no need to purchase additional allowances or costs other than those mentioned above.
Other	We have not identified any risks or opportunities	No other identified.

**C3. Business Strategy**

**C3.1**

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

Yes

**C3.1a**

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

Yes, qualitative and quantitative

**C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b**

**(C-AC3.1b/C-CE3.1b/C-CH3.1b/C-CO3.1b/C-EU3.1b/C-FB3.1b/C-MM3.1b/C-OG3.1b/C-PF3.1b/C-ST3.1b/C-TO3.1b/C-TS3.1b) Indicate whether your organization has developed a low-carbon transition plan to support the long-term business strategy.**

Yes

**C3.1c**

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

As an integrated energy company, Galp recognizes the importance of addressing Climate Change (CC) and integrates it into its business strategy. Over the years, Galp has developed a culture of sustainability, being CC a central topic in its approach, as an example, in 2010 Galp formalized and published its first CC Strategy. The strategy has been improved to the current date, with regard to the governance and risk management model, emissions inventory, GHG and climate metrics (both absolute and intensity metrics), implementation of emissions reduction actions/projects (covering scope 1, 2 and 3), and public disclosure. Moreover Galp revised it (currently our fourth sustainability commitment – Energy and Climate), from the perspective of continuous improvement, for the period 2018-2022. The CC strategy and goals reflects the commitment and the level of discussion of the top management, ensuring that the risks and opportunities (R&O) identified are fully addressed in the corporate business strategy.

As the energy paradigm is changing, Galp aims to play an active role in this transformation, through the execution of its strategy, namely by: adapting our portfolio to future needs, whenever possible and in synergy with the current business; diversification of our assets, with a consequent mitigation of risks resulting from its carbon intensity reduction; developing innovative and differentiating solutions that promote the transition into a low-carbon economy.

These main lines unfold in strategic goals and actions, such as (examples): from 2021 onward, we are committed to acquiring 100% renewable electricity in Portugal, expecting to reduce our total Scope 2 emissions to close to zero; By 2023, we will invest €66m in eco-efficiency projects, avoiding the emission of more than 150 kt CO<sub>2</sub>e; The investment in low-carbon energy and new business models through an allocation of 5% to 15% of total CAPEX; By 2022, we will cut the carbon intensity by 25% in Sines refinery and 15% in Matosinhos refinery (baseline: 2013); Scale new E&P projects to zero flaring under normal operating conditions; By 2021, put our entire refining system in the first Solomon reference quartile of Western Europe in energy efficiency; Reduce the consumption of electricity, resulting in a reduction of indirect CO<sub>2</sub>e emissions, in the oil products marketing business; BAT implementation (EE at service areas; Galp Energy Solutions; Enerfuel); setting of ambitious targets on carbon intensity (CO<sub>2</sub>/CWT for refineries) and EE; closer monitoring and active participation in legislative processes; promotion of R&D focused on CC adaptation and mitigation (Modelling of Carbonate Reservoirs); put a price on carbon (\$40/ton) to mitigate investment risks and maximise opportunities; endorse the Zero Routine Flaring by 2030 initiative; support the TCFD; among others.

The short-term strategy is already influenced by CC, such as: setting annual reduction targets related to CC (e.g. GHG reduction targets - CO<sub>2</sub>/CWT for the refineries, namely reduction targets for 2019: Sines: 31.0 kg CO<sub>2</sub>/CWT; Matosinhos: 27.1 kg CO<sub>2</sub>/CWT); implementation EE projects in house and in our clients; annual and public disclosure of the Galp's carbon footprint to stakeholders including all emissions scopes (1,2 and 3); definition and disclosure of a carbon intensity metric covering all the emissions scopes (1, 2 and 3) and energy considering the total life cycle of our company; incorporation of biodiesel (10% substitution for road transport in 2020); progressive changes in the fuels portfolio (cleaner fuels); implementation social projects related to CC (e.g. Power UP); among others

Regarding the medium and long-term perspective, Galp has been changing its core business focus, incorporating new technologies, such as development of renewable and low carbon energy projects, including solar, wind and bioenergy, e.g. biomethane; participation in International associations and studies on climate best practices; participation in public consultation in legislative processes and development of corporate initiatives related to CC with long-term goals (e.g. 2030, 2050); implementation of EE measures in a long-term scale; endorsed as E&P operators the Zero Routine Flaring by 2030; ; cut by 2022 the carbon intensity 25% in Sines refinery and 15% in Matosinhos refinery, based on 2013 (reduction targets for the refineries by 2022: Sines: 28.4 kg CO<sub>2</sub>/CWT; Matosinhos: 27.1 kg CO<sub>2</sub>/CWT); among others.

The strategy defined promotes the transition to lower carbon businesses contributing to Galp's growth. The opportunities identified and materialized, such as: production of electricity from renewable sources (wind, a Galp's stake in Ventinveste, and solar projects under development); investment in cleaner fuels (biofuels at Enerfuel); offer EE services to clients (e.g. Galp Energy Solutions); among others, represent a strategic advantage over competitors, since it allows Galp to offer innovative and differentiating solutions, engaging new clients and reputation, increasing revenues sources and deliver long-term value to all stakeholders, developing profitable and sustainable businesses. New revenues and monetary savings due to EE measures can be reinvested in the business, increasing competitiveness. Also, the fact that Galp analyses and integrates the R&O arising from CC into the business strategy, allows the company to have the right information to mitigate risks, adapt to CC and new trends, develop opportunities and face the new challenges upcoming.

Regarding specific business decisions, several actions were taken in 2018, namely: at the Refineries, we invested €13.5 M in eco-efficiency projects and our biofuel production unit in Sines produced 24 kt of 2nd generation FAME. As such, Galp contributed to an 83% reduction in GHG emissions from use of traditional mineral diesel fuel. Galp incorporated 337 thousand m<sup>3</sup> of biofuels (100% with proven sustainability) into the Iberian market, avoiding 444 kt CO<sub>2</sub>. Also, the Company produces palm oil in Brazil through a subsidiary (BBB), which includes a fresh fruit bunches production process, having produced 242 kton in 2018. Alongside with its clients, in 2018, Galp developed energy efficiency solutions which avoided emissions of 723 tonCO<sub>2</sub>e/year. Galp also employed €16.4M in renewable energy projects.

In order to guarantee the Company's sustainability, we test the resilience of our strategy to different scenarios of the future energy paradigm. Anticipating the R&O connected to every scenario is critical to maximising long-term value creation. We have built 4 contrasting but equally plausible scenarios, considering different levels of technological and political regulation disruption, and we deem these uncertainties critical for the energy sector. Galp's strategy remains focused on developing a portfolio that is supported by innovative and differentiating solutions responding to the challenges of the transition into a low-carbon economy.

**C3.1d**

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

Climate-related scenarios	Details
IEA Sustainable development scenario IEA NPS IEA CPS Other, please specify (Baseline scenario)	Galp developed a scenario planning process aimed at identifying long-term alternative outcomes for the energy sector. This exercise was coordinated by the Strategy Department and had the participation of more than 50 internal and external experts with different backgrounds, including executive and non-executive board members. We have built four contrasting scenarios, considering different levels of technological and political regulation disruption, as we deem these uncertainties critical for the energy sector. The scenarios were tested and discussed internally through interviews and multidisciplinary workshops. One of the scenarios is supported by the IEA SDS scenario data and its GHG emissions (tCO2e) curve is consistent with a long term global average temperature rise of 1.7-1.8 °C, in 2040 (time horizon, relevant for Galp as projections for energy sector are up to 2040), above pre-industrial levels. Galp crossed the scenario oil and gas total demand with a third party supply curves (adjusted to our scenario narrative) and forecasted oil price and gas price curves until 2040. Galp also reflected the total final consumption and energy mix on the market demand of our domestic markets in order to assess the potential impact on Galp’s present downstream businesses. As a result, Galp obtained total primary energy demand mix in 2040 (in bn toe) for each of the 4 scenarios. This scenario analysis has directly informed and influenced our business objectives and strategy, as the data allowed Galp to measure the potential impact of each scenario on the present value of the company, according to the existing strategy. It also allowed Galp to identify new potential businesses and strategic guidelines, which could increase the company’s resilience to an IEA SDS-like environment. In the decision-making process of new investments and large projects, the feasibility and resilience of each investment/project is evaluated against the 4 scenarios developed. For Galp to maintain a sustainable development in the various projected scenarios, in our strategy we reflect the main guidelines that aim at ensuring a resilient and agile organisation, prepared for a complex and uncertain world. Galp’s strategy remains focused on developing a portfolio that is supported by innovative and differentiating solutions, responding to the challenges of the transition into a low-carbon economy. One of Galp’s strategic goals is to build an innovative and differentiated lower carbon business allocating 5-15% of our CAPEX for that.

**C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e**

**(C-AC3.1e/C-CE3.1e/C-CH3.1e/C-CO3.1e/C-EU3.1e/C-FB3.1e/C-MM3.1e/C-OG3.1e/C-PF3.1e/C-ST3.1e/C-TO3.1e/C-TS3.1e) Disclose details of your organization’s low-carbon transition plan.**

Galp’s strategy involves the development of a competitive and diversified upstream portfolio, integrated with an efficient and competitive downstream business, constantly adapting to the needs of our clients and based on innovative and differentiating solutions to help support the gradual transition to a low carbon economy.

To achieve this commitment we have the objective to invest 5-15% of total CAPEX in low-carbon and new business models.

In the downstream, refining activity will continue to invest in eco-efficiency projects achieving carbon intensity reductions of 25% and 15% in Sines and Matosinhos refineries, respectively, by 2022. By 2023, we will invest €66 million in eco-efficiency projects, avoiding the emission of more than 150 kt CO<sub>2</sub>e. By 2021, put our entire refining system in the first Solomon reference quartile of Western Europe in energy efficiency. From 2021 onward, we are committed to acquiring 100% renewable electricity in Portugal, expecting to reduce our total Scope 2 emissions to close to zero.

In the upstream, Galp’s strategy is based on developing its current portfolio, extracting more value from it and identifying new opportunities ensuring a balanced exposure to gas.

As well as ensuring the sustainability of the E&P portfolio, which should be competitive and profitable in any expected oil and carbon pricing scenario. Also, scale new E&P projects to zero flaring under normal operating conditions.

**C4. Targets and performance**

**C4.1**

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

Both absolute and intensity targets

**C4.1a**

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

**Target reference number**

Abs 1

**Scope**

Scope 2 (market-based)

**% emissions in Scope**

92

**Targeted % reduction from base year**

100

**Base year**

2017

**Start year**

2018

**Base year emissions covered by target (metric tons CO2e)**

210278

**Target year**

2021

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

**% of target achieved**

0

**Target status**

New

**Please explain**

Galp has made the commitment to gradually acquire, until 2021, 100% of the electricity purchased in Portugal from renewable sources. Therefore, Galp has established the absolute target of reducing its scope 2 GHG emissions to zero until 2021. The objective was established in 2018, having as reference scope 2 GHG emissions of 2017 (baseline year). This commitment will enable Galp, from 2021 onwards, to avoid the emission of more than 200 thousand tCO<sub>2</sub> per year. Galp considers that its targets are aligned with the required level of decarbonisation to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures, given the high reduction rates compared to the baseline. The Science-based targets Initiative has not yet defined a methodology for the oil and gas sector, which does not allow us to certify these goals.

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**C4.1b**

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

**Target reference number**

Int 1

**Scope**

Scope 1

**% emissions in Scope**

72.3

**Targeted % reduction from base year**

41

**Metric**

Other, please specify (kg CO<sub>2</sub>/CWT)

**Base year**

2008

**Start year**

2014

**Normalized base year emissions covered by target (metric tons CO2e)**

47.8

**Target year**

2022

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

**% of target achieved**

85

**Target status**

Underway

**Please explain**

This target is for the Sines Refinery. Galp established the objective to attain a carbon intensity performance (KPI CO<sub>2</sub>/CWT) in line with the top ten European industry for both refineries, in 2022 (28.4 kg CO<sub>2</sub>/CWT for Sines Refinery and 27.1 kg CO<sub>2</sub>/CWT for Matosinhos Refinery). (EU Benchmarking – 2007/2008: 47.8 kg CO<sub>2</sub>/CWT). The Complexity Weighted Tonne (CWT) is an indicator drawn up by Solomon in partnership with CONCAWE that compares different refineries according to European

Commission decision 2011/278/CE, of 27 April. The CWT characterizes refineries of different sizes and complexity through a means of comparing CO2 emissions. The CWT can be applied to all EU27 refineries and takes into consideration the production mix of each refinery, reducing complexity by using various assessment parameters. The Scope 1 GHG emissions from both refineries represent c.99% (72.3%+26.3%) of total scope 1 GHG emissions of Galp. The target set by Galp is to reduce, by 2022, 41% this KPI for the Sines Refinery (28.4 kg CO2/CWT) and 43% for Matosinhos Refinery (27.1 kg CO2/CWT), in comparison to the base year (47.8 kg CO2/CWT). The CWT of the base year was calculated by doing an average of 2007 and 2008. In 2017, this index was 31.3 kg CO2/CWT for the Sines refinery and 28.5 kg CO2/CWT for the Matosinhos refinery (target accomplished, better than industry's top ten). This shows the positive evolution trend of the performance of both refineries, due to all the improvements made on what regards to energy efficiency, fuels portfolio and BAT implementation. Galp considers that its targets are aligned with the required level of decarbonisation to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures, given the high reduction rates compared to the baseline. The Science-based targets Initiative has not yet defined a methodology for the oil and gas sector, which does not allow us to certify these goals.

**% change anticipated in absolute Scope 1+2 emissions**

-8

**% change anticipated in absolute Scope 3 emissions**

0

**Target reference number**

Int 2

**Scope**

Scope 1

**% emissions in Scope**

26.3

**Targeted % reduction from base year**

43

**Metric**

Other, please specify (kg CO2/CWT)

**Base year**

2008

**Start year**

2014

**Normalized base year emissions covered by target (metric tons CO2e)**

47.8

**Target year**

2022

**Is this a science-based target?**

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

**% of target achieved**

93

**Target status**

Underway

**Please explain**

This target is for the Matosinhos Refinery. Galp established the objective to attain a carbon intensity performance (KPI CO2/CWT) in line with the top ten European industry for both refineries, in 2022 (28.4 kg CO2/CWT for Sines Refinery and 27.1 kg CO2/CWT for Matosinhos Refinery). (EU Benchmarking – 2007/2008: 47.8 kg CO2/CWT). The Complexity Weighted Tonne (CWT) is an indicator drawn up by Solomon in partnership with CONCAWE that compares different refineries according to European Commission decision 2011/278/CE, of 27 April. The CWT characterizes refineries of different sizes and complexity through a means of comparing CO2 emissions. The CWT can be applied to all EU27 refineries and takes into consideration the production mix of each refinery, reducing complexity by using various assessment parameters. The Scope 1 GHG emissions from both refineries represent 99% (72.3%+26.3%) of total scope 1 GHG emissions of Galp. The target set by Galp is to reduce, by 2022, 41% this KPI for the Sines Refinery (28.4 kg CO2/CWT) and 43% for Matosinhos Refinery (27.1 kg CO2/CWT), in comparison to the base year (47.8 kg CO2/CWT). The CWT of the base year was calculated by doing an average of 2007 and 2008. In 2017, this index was 31.3 kg CO2/CWT for the Sines refinery and 28.5 kg CO2/CWT for the Matosinhos refinery (target accomplished, better than industry's top ten). This shows the positive evolution trend of the performance of both refineries, due to all the improvements made on what regards to energy efficiency, fuels portfolio and BAT implementation. Galp considers that its targets are aligned with the required level of decarbonisation to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures, given the high reduction rates compared to the baseline. The Science-based targets Initiative has not yet defined a methodology for the oil and gas sector, which does not allow us to certify these goals.

**% change anticipated in absolute Scope 1+2 emissions**

-21

**% change anticipated in absolute Scope 3 emissions**

0

**C4.2**

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

**C-OG4.2a**

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

Methane emissions represent a very small fraction of total GHG emissions of Galp (only 0.01% of CO2e emissions). Thus, the Company does not have yet methane specific emissions reduction targets.

To ensure that our operations and our products are more sustainable, Galp promotes the efficient use of energy and have implemented the Best Available Technologies (BAT) expressed in the reference documents applicable to the sector, to reduce atmospheric emissions, including methane emissions. In the E&P segment, Galp ensures that its projects are developed in accordance with the principle to meet Zero Routine flaring or venting of hydrocarbons. Additionally, we assure the monitoring and management of our methane emissions from combustion and fugitives sources and that our performance is verified by an independent third-party.

Also in the E&P segment, in 2018 Galp conducted once again a fugitive emissions monitoring campaign, namely methane, throughout the Rabo Branco concession (534 points monitored). This activity follows-up the annual plan for research and monitoring of fugitive emissions. The results obtained demonstrate a low rate of fugitive emissions, confirming the asset's good mechanical integrity conditions, and the adequate management of the equipment's. The majority of the mapped points did not show perceptible leaks to the meter. In order to contribute to the management and reporting of methane emissions in the O&G industry, we follow-up the initiatives related to methane management and reporting from IPIECA, IOGP and the Oil and Gas Climate Initiative (OGCI). Indeed, we recognise that there are opportunities within the industry to maximise the benefits of methane as a low carbon fuel.

In the R&D segment, Sines and Matosinhos refinery's fugitive emissions come from the following sources: product storage, process (including the drainage network) and effluent treatment. Galp refineries' carries out fugitive monitoring annual campaigns, under its Leak Detection Repair programme (LDAR). This methodology assumes the continual assessment of the leaks through a phased and iterative process of detection/measurement of leaks in equipment, followed by repair by maintenance team, until the effective reduction of the emission. We also quantify diffuse emissions from the WWTP the EPA programme Water9 is being used and diffuse emissions from storage the software TANKS 4.09D is being applied.

### C4.3

**(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

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	4	4695
To be implemented*	5	94205
Implementation commenced*	3	43105
Implemented*	3	12718
Not to be implemented	0	0

### C4.3b

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

**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Process optimization

**Estimated annual CO2e savings (metric tonnes CO2e)**

12139

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

2349045

**Investment required (unit currency – as specified in C0.4)**

3995368

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

16-20 years

**Comment**

Matosinhos Refinery: Improved heat recovery at the U1300 through the installation of the High Efficiency Exchanger (E-1351).

**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Process optimization

**Estimated annual CO2e savings (metric tonnes CO2e)**

264

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

119160

**Investment required (unit currency – as specified in C0.4)**

100000

**Payback period**

<1 year

**Estimated lifetime of the initiative**

16-20 years

**Comment**

Sines Refinery: reduction of steam consumption of 3.5 through the optimization of the operation of the deaerators. This involves the installation of steam flow meters, O2 analyser and pressure transmitters, optimizing the operation of the deaerators.

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**Initiative type**

Energy efficiency: Processes

**Description of initiative**

Process optimization

**Estimated annual CO2e savings (metric tonnes CO2e)**

315

**Scope**

Scope 1

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

142495

**Investment required (unit currency – as specified in C0.4)**

0

**Payback period**

No payback

**Estimated lifetime of the initiative**

16-20 years

**Comment**

Sines Refinery: Flow Control at the HG, through the suction throttling control installation at the inlet of the HG-C-2 compressor. Operational measure with no investment required.

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**Initiative type**

Other, please specify (Energy solutions sold)

**Description of initiative**

<Not Applicable>

**Estimated annual CO2e savings (metric tonnes CO2e)**

659.2

**Scope**

Scope 3

**Voluntary/Mandatory**

Voluntary

**Annual monetary savings (unit currency – as specified in C0.4)**

303429

**Investment required (unit currency – as specified in C0.4)**

876951

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

Ongoing

**Comment**

Galp Energy Solutions is a unit of Galp geared towards supporting our customers in the implementation of energy efficiency (EE) and renewable energy projects. The activity is mainly directed to B2B markets: service, transport & industrial buildings sectors that represent the largest share of energy consumption in Portugal.

### C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	In order to comply with Portuguese and European regulation, Galp will reach, in 2020, incorporation of 10% of energy from renewable sources in fuel for road transport, ensuring a minimum of 60% in the reduction of CO2 emissions in the life cycle, and comply with EU-ETS allowance cap.
Dedicated budget for energy efficiency	One of the strategic goals of the Refining and Marketing business unit is focused on energy efficiency and process optimization of the refining system, guaranteeing both cost and energy consumption reductions and the increase of return on capital employed. To address this challenge, Galp promotes a number of projects aiming to boost energy efficiency at our facilities and with our stakeholders (e.g. clients, community), namely: Refinery Conversion project; TOP REF project (Sines); energy efficiency at service stations (Ecoposto); Galp Energy Solutions projects (energy solutions for clients, inc. industry and services); Social projects (Missão UP); among others. In addition to it, Galp also has a programme to transfer knowledge and innovation between the business and academic worlds in Portugal (Galp 21 Programme), focused on energy efficiency and solutions.
Dedicated budget for low-carbon product R&D	In the Biofuels segment, under the palm oil production project, Belém Bioenergia Brasil, in which Galp holds a 50% stake, the production of fresh fruit bunches (FFB) has increased yields from 18.6 kton in 2014 to approximately 242 kton in 2018. Galp also has in place a project to produce distilled biodiesel (FAME) in Portugal from waste feedstock (animal fats). The Enerfuel plant began its production in middle 2013 and it has an annual capacity of 27,000 tons/year. In 2018 it produced approximately 24 kton of second generation FAME (Fatty Acid Methyl Ester). Aligned with the best practices, we have received, at Enerfuel, the "International Sustainability Carbon Certification (ISCC)", which consists of the voluntary implementation of a system that seeks to ensure the sustainability of materials involved in the biodiesel production chain. One of Galp's strategic goals is to build an innovative and differentiated lower carbon business through a CAPEX allocation of 5-15%. The first step was made in 2018, when Galp acquired licenses for solar PV power generation, covering 4 solar parks in Portugal, with a total nominal power of 154 MWp, to add to the installed capacity we already have in wind energy through a stake in Ventiveste.
Internal price on carbon	When evaluating new project developments, expansions or upgrades of existing assets, we run a sensitivity in what regards carbon pricing, assuming an initial price of \$40/ton of CO2 (34.93 €/ton) in the long-term. Aware of the future potential changes in consumer and technological patterns and the risks associated to long-term business plans analysis, Galp is analysing the possibility of considering a progressive price on carbon based on the international references and forecasts. This price is applicable to all businesses and geographies, and this has been approved by the Board of Directors/Executive Committee. The inclusion of carbon price in the assessment of investment projects (medium and long-term) represents a tool to reflect the overall objective of limiting average temperature rises. Note: The price on carbon considered US 40 \$/ton equals to 34.93 €/ton. This price in US\$ was converted into € considering the last conversion rate of 2018 made available by the Bank of Portugal (31/12/2018, 1 USD = 0.87336 EUR).
Internal incentives/recognition programs	Galp developed a Low Carbon Initiatives Programme, Our CO2mmitment, which aims to promote, identify, monitor and communicate Galp's key initiatives aligned with the transition to a low-carbon economy. This programme expresses Galp's commitment to reducing greenhouse gas emissions along its value chain, through actions, projects, plans, initiatives and targets aligned with the decarbonization of the activity: in operations; in products and services; in innovation and research projects; and, in sectoral partnerships and corporate commitments. Actions covered by the programme can have a direct impact on GHG emissions, resulting in a quantitative reduction against a baseline scenario, or contribute to future reductions, for example through the development of new technologies, support for research and innovation or definition goals and adherence to commitments. The programme follows the general principles of the GHG Protocol and IPIECA regarding the calculation of carbon footprint. For each initiative the following criteria/categories are presented: - Activity: identification of the initiative included in the program; - Business: area or business segment to which this initiative is associated; - Outcome: As the initiative's contribution to the transition to a low-carbon economy, the following categories apply to this criterion: (a) reducing greenhouse gas emissions from operations; (b) providing low carbon energy and solutions to the society; (c) further research and development to advance low carbon; (d) Involving in global commitments for climate goals. - Description: description of the activity and/or method used to reduce emissions; - Emissions: quantification of greenhouse gas emissions saved, in CO2e tons, against a baseline scenario without implementation of the initiative; - Methodology: description of the methodology used for the calculation of emission savings, namely protocols and guides followed, as well as assumptions made; The current programme includes the initiatives that started, were implemented or had an impact during the year 2018. The initiatives that are part of the programme will be re-evaluated on an annual basis. In case the initiatives have taken place under an equity share scheme, only the percentage under Galp's responsibility is reported. The methodologies for calculating emissions savings were externally verified by a third party.

### C4.5

#### (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

**(C4.5a) 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.**

**Level of aggregation**

Group of products

**Description of product/Group of products**

1. Biofuels: Galp introduced, in 2018, around 357 thousand m3 of biofuels (biodiesel, BIO-ETBE & HVO) into the Iberian fuel market (either through its retail network, either through the sale to other operators), allowing the GHG reduction of the third parties that purchases these fuels. According to the criteria of the Renewable Energy Directive (RED II), this incorporation represents a potential reduction of GHG emissions of more than 444 kt CO<sub>2</sub>e/year. 2. Biofuels production - Enerfuel: Galp has in place a project to produce distilled biodiesel (FAME) in Portugal from waste feedstock (animal fats). The Enerfuel plant began its production in middle 2013 and in 2018 produced approximately 24 kton of second generation FAME. As such, we contributed to an 83% reduction in GHG emissions from use of traditional mineral diesel fuel, which is replaced by biodiesel. This unit produces biofuel from residual raw materials, particularly used cooking oils and animal fat, which only enhances its merits. Aligned with the best practices, we have received, at Enerfuel, the "International Sustainability Carbon Certification (ISCC)", which consists of the voluntary implementation of a system that seeks to ensure the sustainability of materials involved in the biodiesel production chain. Also in the Biofuels sector, under the palm oil production project, Belém Bioenergia Brasil, in which our Company holds a 50% stake, produces fresh fruit bunches (FFB), with increasing yields from 18.6 kton produced in 2014 to approximately 240 kton in 2018.

**Are these low-carbon product(s) or do they enable avoided emissions?**

Low-carbon product and avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify (GHG Protocol methodology)

**% revenue from low carbon product(s) in the reporting year**

0.2

**Comment**

1. Biofuels: Galp introduced, in 2018, around 357 thousand m3 of biofuels (biodiesel, BIO-ETBE & HVO) into the Iberian fuel market (either through its retail network, either through the sale to other operators), allowing the GHG reduction of the third parties that purchases these fuels. According to the criteria of the Renewable Energy Directive (RED II), this incorporation represents a potential reduction of GHG emissions of more than 444 kt CO<sub>2</sub>e/year. 2. Biofuels production - Enerfuel: Galp has in place a project to produce distilled biodiesel (FAME) in Portugal from waste feedstock (animal fats). The Enerfuel plant began its production in middle 2013 and in 2018 produced approximately 24 kton of second generation FAME. As such, we contributed to an 83% reduction in GHG emissions from use of traditional mineral diesel fuel, which is replaced by biodiesel. This Unit produces biofuel from residual raw materials, particularly used cooking oils and animal fat, which only enhances its merits. Aligned with the best practices, we have received, at Enerfuel, the "International Sustainability Carbon Certification (ISCC)", which consists of the voluntary implementation of a system that seeks to ensure the sustainability of materials involved in the biodiesel production chain. Also in the Biofuels sector, under the palm oil production project, Belém Bioenergia Brasil, in which our Company holds a 50% stake, produces fresh fruit bunches (FFB), with increasing yields from 18.6 kton produced in 2014 to approximately 240 kton in 2018.

**Level of aggregation**

Group of products

**Description of product/Group of products**

3. GSE: Galp Energy Solutions is a business unit of Galp geared towards supporting our customers in the implementation of energy efficiency and renewable energy projects. It is based on the idea of capitalising the knowledge and expertise developed in projects of this nature at own facilities, employing them in the marketplace. The activity is mainly directed to B2B markets: service, transport, and industrial buildings. Savings are presented (measures), and the actual value observed is billed to Customers. Galp applies established and tested methodologies, including IPMVP - International Performance Measurement and Verification Protocol. Some concepts undergoing in 2018 were: 1) Phase IV of Energy Efficient Hotel: Galp signed a contract of EE with Hotel Corinthia that includes the reconversion of climate systems, recovery of thermal energy for water heating, replacement of lighting systems, installation of a solar system & cogeneration system. The air conditioning system reformulation took place (131 GWh electricity saved & 1,060 GWh natural gas saved; 427,557 kg CO<sub>2</sub> avoided); 2) Efficient lighting project at Lisbon Towers: replacement of the lighting of the parking lot at the Towers of Lisbon complex (128 GWh electricity saved; 34,388 kg CO<sub>2</sub> avoided); 3) Hotel Villa Batalha (Solar PV project; 148 GWh saved; 39,799 kg CO<sub>2</sub> avoided); 4) COOPVAL (Solar PV project – ESCO model; 586 GWh saved; 157,505 kg CO<sub>2</sub> avoided). GSE has developed and implemented other projects in the past, namely: 1) EE Hotel (Phases I-III): The measures of EE include the recovery of thermal energy for water heating, replacement of lighting systems, installation of a solar system & cogeneration system. 1st phase, saving of 2.3 GWh/year & 740 t CO<sub>2</sub>/year. 2nd phase, reduction 1.7 GWh/year & 520t CO<sub>2</sub>/year. 2) Sustainable Campus network: energy efficiency projects in cooperation with 3 Universities (UA, UBI and IST), in a total floor area of 300,000 m<sup>2</sup> spread by 100 buildings. 5 solar plants were installed, 900 kW in buildings of the UL. Also installation of 4 photovoltaic power plants, ~1 million kWh/year of energy (savings of 322 t CO<sub>2</sub>/year). The production was about 220 MWh, meaning savings of about 67 tCO<sub>2</sub>. 3) PV panels in Wastewater Treatment Plants: Over 180 kW installed, over 135 MWh produced, avoiding the emission of over 40 tCO<sub>2</sub>/year.

**Are these low-carbon product(s) or do they enable avoided emissions?**

Avoided emissions

**Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions**

Other, please specify (Despacho n.º 15793-D/2013)

**% revenue from low carbon product(s) in the reporting year**

0.01

**Comment**

3. GSE: Galp Energy Solutions is a business unit of Galp geared towards supporting our customers in the implementation of energy efficiency and renewable energy projects. It is based on the idea of capitalising the knowledge and expertise developed in projects of this nature at own facilities, employing them in the marketplace. The activity is mainly primarily to B2B markets: service, transport, and industrial buildings. Savings are presented (measures), and the actual value observed is billed to Customers. Galp applies established and tested methodologies, including IPMVP - International Performance Measurement and Verification Protocol. Some concepts undergoing in 2018 were: 1) Phase IV of Energy Efficient Hotel: Galp signed a contract of EE with Hotel Corinthia that includes the reconversion of climate systems, recovery of thermal energy for water heating, replacement of lighting systems, installation of a solar system & cogeneration system. The air conditioning system reformulation took place (131 GWh electricity saved & 1,060 GWh natural gas saved; 427,557 kg CO<sub>2</sub> avoided); 2) Efficient lighting project at Lisbon Towers: replacement of the lighting of the parking lot at the Towers of Lisbon complex (128 GWh electricity saved; 34,388 kg CO<sub>2</sub> avoided); 3) Hotel Villa Batalha (Solar PV project; 148 GWh saved; 39,799 kg CO<sub>2</sub> avoided); 4) COOPVAL (Solar PV project – ESCO model; 586 GWh saved; 157,505 kg CO<sub>2</sub> avoided). GSE has developed and implemented other projects in the past, namely: 1) EE Hotel (Phases I-III): The measures of EE include the recovery of thermal energy for water heating, replacement of lighting systems, installation of a solar system & cogeneration system. 1st phase, saving of 2.3 GWh/year & 740 t CO<sub>2</sub>/year. 2nd phase, reduction 1.7 GWh/year & 520t CO<sub>2</sub>/year. 2) Sustainable Campus network: energy efficiency projects in cooperation with 3 Universities (UA, UBI and IST), in a total floor area of 300,000 m<sup>2</sup> spread by 100 buildings. 5 solar plants were installed, 900 kW in buildings of the UL. Also installation of 4 photovoltaic power plants, ~1 million kWh/year of energy (savings of 322 t CO<sub>2</sub>/year). The production was about 220 MWh, meaning savings of about 67 tCO<sub>2</sub>. 3) PV panels in Wastewater Treatment Plants: Over 180 kW installed, over 135 MWh produced, avoiding the emission of over 40 tCO<sub>2</sub>/year.

## C-OG4.6

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### **(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.**

To ensure that our operations and our products are more sustainable, Galp promotes the efficient use of energy and have implemented the Best Available Technologies (BAT) expressed in the reference documents applicable to the sector, to reduce atmospheric emissions, including methane emissions. In the E&P segment, Galp ensures that its projects are developed in accordance with the principle to meet Zero Routine flaring or venting of hydrocarbons. Additionally, we assure the monitoring and management of our methane emissions from combustion and fugitives sources and that our performance is verified by an independent third-party.

Also in the E&P segment, in 2018 Galp conducted once again a fugitive emissions monitoring campaign, namely methane, throughout the Rabo Branco concession (534 points monitored). This activity follows-up the annual plan for research and monitoring of fugitive emissions. The results obtained demonstrate a low rate of fugitive emissions, confirming the asset's good mechanical integrity conditions, and the adequate management of the equipment's. The majority of the mapped points did not show perceptible leaks to the meter. In order to contribute to the management and reporting of methane emissions in the O&G industry, we follow-up the initiatives related to methane management and reporting from IPIECA, IOGP and the Oil and Gas Climate Initiative (OGCI). Indeed, we recognise that there are opportunities within the industry to maximise the benefits of methane as a low carbon fuel.

In the R&D segment, Sines and Matosinhos refinery's fugitive emissions come from the following sources: product storage, process (including the drainage network) and effluent treatment. Galp refineries' carries out fugitive monitoring annual campaigns, under its Leak Detection Repair programme (LDAR). This methodology assumes the continual assessment of the leaks through a phased and iterative process of detection/measurement of leaks in equipment, followed by repair by maintenance team, until the effective reduction of the emission. We also quantify diffuse emissions from the WWTP the EPA programme Water9 is being used and diffuse emissions from storage the software TANKS 4.09D is being applied.

## COG4.7

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### **(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

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### **(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.**

Galp refineries' commitment to environmental sustainability it reflected in one more tool for monitoring emissions reduction: the LDAR programme (Leak Detection and Repair). As part of this programme, which includes the application of the Best Available Technologies expressed in the reference documents applicable to the sector, the refinery carries out monitoring campaigns of the VOCs, which are measured in order to minimise leaks. The methodology assumes the continual assessment of the leaks through a phased and iterative process of detection/measurement of leaks in equipment, followed by repair, until the effective reduction of the emission.

Therefore, in an initial phase, a thorough study of the Piping and Instrumentation Diagrams (P&IDs) is carried out and the parts liable to be included in the Leak Identification Programme are identified, drawing up a list of parts per plant. This equipment includes valves, exchangers, pumps, compressors, flanges, sampling points, vents, purges and other end-of-lines, and also an estimate of the VOC emissions that originate in the first phases of the wastewater treatment process at the WWTP, including the storm basins.

The refineries have been carrying out annual monitoring of around 1,500 and 14,000 stock parts in the various plants and biannual monitoring of around 150 elements in some process units, in Matosinhos and Sines Refinery, respectively. Around 18,000 + 14,000 components were identified, monitored and registered in the Database, which enables the whole process history to be recorded and filed, allowing the record of each piece of equipment under analysis and/or being repaired to be quickly checked.

The type of parts and the composition of the lines included in the LDAR programme meet the criteria established through method 21 of the EPA and the EN 15446 standard.

The next phase consists of labelling the monitoring points. The labels used, made from Teflon-coated aluminium, have a barcode so they can be optically read using a PDA. This code unequivocally identifies each piece of equipment, in the facility, the database and the P&ID.

After the labelling, the continual monitoring phase of VOC leaks begins in the equipment outlined in the leak identification programme. If any leaks are detected during the monitoring phase a list of parts that will subsequently be repaired internally by Sines and Matosinhos refineries are created, following a defined maintenance plan. After the repair, VOCs are again measured in the equipment that was previously leaking, to check that the leak has been plugged. The monitoring, repair and post-repair monitoring phases will be repeated as many times as required until the leaks are eliminated.

The LDAR programme also includes an estimate of the emissions coming from the refinery's drainage system and the Wastewater Treatment Plant, through the inclusion of several variables in a graphical interface, using the WATER9 software, of US EPA and diffuse emissions from storage the software TANKS 4.09D is being applied.

## C-OG4.8

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**(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.**

Flaring is relevant to Galp's operations as we are an exploration and production operator. Galp ensures that its projects are developed in accordance with the principle to meet Zero Routine Flaring or venting of hydrocarbons. We monitor and manage our GHG emissions from gas flared and our performance is verified by an independent third-party. The goal is to reduce gas flaring (in normal operation), as it contributes to GHG emissions and other pollutants.

Galp is governed by a responsible activity, focusing on a safe operation, and applying the reference standards in energy management and emissions.

In this sense, we are committed to scaling new E&P projects to zero flaring under normal operating conditions, by joining the Zero Routine Flaring by 2030 initiative as an E&P operator (target & target year: zero flaring until 2030). We joined, in 2015, the initiative Zero Routine Flaring by 2030, as a production and exploration operator. The goal is to reduce gas flaring (in normal operation), as it contributes to GHG emissions and other pollutants. This objective extends until 2030 and the initiative relies on the cooperation of several institutions, governmental entities and companies within our sector.

Current projects are being adapted to reduce emissions, with a registered gas flaring volume of 1192 thousand m3 in 2018 (performance 2018) and 3036 tCO2e. This volume is expected to be reduced upon the implementation of the energy production project, through the reutilisation of the gas produced.

In addition, although there is no regulation in Brazil that requires the injection of gas, in the E&P segment the consortium in where Galp participates (block BM-S-11) has taken the initiative to separate and inject the gas from the production since the beginning, reducing the operation's ecological footprint and optimising the maintenance of the reservoir's pressure. This separation is carried out in the production unit through the selective permeation method, with the gas being injected back into the reservoir using the WAG method.

## C5. Emissions methodology

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### C5.1

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

**Scope 1**

**Base year start**

January 1 2011

**Base year end**

December 31 2011

**Base year emissions (metric tons CO2e)**

3199557

**Comment**

Base year set when Galp updated its carbon footprint.

**Scope 2 (location-based)**

**Base year start**

January 1 2011

**Base year end**

December 31 2011

**Base year emissions (metric tons CO2e)**

192470

**Comment**

Base year set when Galp updated its carbon footprint.

**Scope 2 (market-based)**

**Base year start**

January 1 2011

**Base year end**

December 31 2011

**Base year emissions (metric tons CO2e)**

192470

**Comment**

Base year set when Galp updated its carbon footprint.

### C5.2

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**(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 GHG emissions, 2nd edition, 2011

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

## C6. Emissions data

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### C6.1

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

**Reporting year**

**Gross global Scope 1 emissions (metric tons CO2e)**  
3264935

**Start date**  
January 1 2018

**End date**  
December 31 2018

**Comment**  
Gross global Scope 1 emissions (metric tons CO2e) equals to 3,264,935. Broken down by business unit (metric tons CO2e): E&P (17,392), R&M (3,222,933); G&P (18,909); Others (5,701).

### C6.2

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

**Row 1**

**Scope 2, location-based**  
We are not reporting a Scope 2, location-based figure

**Scope 2, market-based**  
We are reporting a Scope 2, market-based figure

**Comment**  
We are reporting a scope 2 market-based figure.

### C6.3

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

**Reporting year**

**Scope 2, location-based**  
<Not Applicable>

**Scope 2, market-based (if applicable)**  
133516

**Start date**  
January 1 2018

**End date**  
December 31 2018

**Comment**  
Gross global Scope 2 emissions (metric tons CO2e) equals to 133,516. Broken down by business unit (metric tons CO2e): E&P (9), R&M (132,433); G&P (61); Others (1,013).

### C6.4

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#### (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

### C6.5

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

## Purchased goods and services

### Evaluation status

Relevant, calculated

### Metric tonnes CO<sub>2</sub>e

5935580

### Emissions calculation methodology

GHG emissions resulting from the extraction, production, and transportation of goods and services purchased or acquired by Galp. The emission sources associated with purchases of crude oil, natural gas and petrochemical products used as raw material are considered, as well as liquid fuels, not processed by Galp, bought for sale to the final consumer are considered. The inventory were accounted taking into account the emissions produced upstream of their acquisition, based on theoretical emissions factors, representative of the average emissions associated with the transformation processes, and on the amount of goods and services acquired. The emissions resulting from liquid fuels acquired (Fueloil, Jetfuel, Gasoline, Diesel & LPG) are calculated in a well-to-tank perspective. The GHG emissions from the natural gas lifecycle are accounted until the combustion (excluding the emissions resulting from combustion). In the case of the crude oil, the well-to-refinery perspective is considered.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

Upstream emissions resulting from the crude oil, natural gas and fuels (including fuel oil, jet fuel, gasoline, diesel and LPG) purchased by Galp from other operators.

## Capital goods

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Galp considers that emissions associated to capital goods are not material (less than 5% of total GHG emissions). The Company reassessed the materiality of this category in 2018 and decided not to report it given its non-materiality and potential inaccuracies in the information needed to account for the emissions associated with this category, given the complexity of the process of gathering all information.

## Fuel-and-energy-related activities (not included in Scope 1 or 2)

### Evaluation status

Not relevant, calculated

### Metric tonnes CO<sub>2</sub>e

1198895

### Emissions calculation methodology

GHG emissions from the upstream activities to the electricity purchased by Galp for resale, including the emissions from the lifecycle of the fuels associated to electricity purchased and emissions resulted from the power generation. The amount of emissions is calculated based on the amount of power sold by Galp and two different emission factors, for the lifecycle assessment is used a theoretical emission factor from DEFRA, and for the power generation is used a market-based emission factor.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

Upstream GHG emissions from the power sold by Galp to its customers, including the emissions from the lifecycle of the fuels associated to electricity purchased and emissions resulted from the power generation.

## Upstream transportation and distribution

### Evaluation status

Not relevant, calculated

### Metric tonnes CO<sub>2</sub>e

657970

### Emissions calculation methodology

Accounting for emissions associated with primary transportation, using the marine mode, was done through the activity data associated with the operations in time charter and spot charter. For diesel and fuel oil resulting from shipping in time charter, direct emissions from combustion in respective ships were calculated, based on the quantity (tones) of fuel consumed. For spot charter it was considered the quantity transported and distance covered. The emission factors are based on the values defined by the IPCC, adjusted to the Portuguese reality, based on data published by official national entities. For the carbon footprint calculation purposes, Galp considered the primary transportation in upstream transport, so as to be distinguished from secondary logistic.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

### Explanation

Primary transportation using the marine mode, of operations in own marine fleet, time charter and spot charter.

## Waste generated in operations

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Galp considers that emissions associated to waste generated in operations are not material (less than 5% of total GHG emissions). The Company reassessed the materiality of this category in 2018 and decided not to report it given its non-materiality and potential inaccuracies in the information needed to account for the emissions associated with this category, given the complexity of the process of gathering all information.

## Business travel

### Evaluation status

Not relevant, calculated

### Metric tonnes CO<sub>2</sub>e

11149

### Emissions calculation methodology

GHG emissions associated to business travel by air and train. Passenger.km transported by train was calculated based on the locations of origin and destination of each journey and the distance of the rail service provided by the suppliers CP (Portugal) and RENFE (Spain). For trips made in other countries, were considered linear distances between points of origin and destination. For the accounting for indirect emissions associated with the production of the electricity consumed in trains in Portugal and Spain were used emission factors published by the suppliers RENFE and CP, respectively. The passenger.km transported by plane was quantified through the linear distances on the surface, calculated based on the locations of origin and destination of each. For consumption of jetfuel by plane, were recorded direct emissions resulting from fuel combustion, by applying emission factors representative of the international air traffic, considering occupancy rates and average aircrafts for each type of route (short, medium and long distance). In this case, the GHG emissions that occur on air (measured in CO<sub>2</sub>e) are affected by the Index Radiative Force.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

### Explanation

GHG emissions associated to business travel by plane and train.

## Employee commuting

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Galp considers that emissions associated to employee commuting are not material (less than 5% of total GHG emissions). The Company reassessed the materiality of this category in 2018 and decided not to report it given its non-materiality and potential inaccuracies in the information needed to account for the emissions associated with this category, given the complexity of the process of gathering all information.

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO<sub>2</sub>e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Not relevant/Not applicable. This activity is not applicable to Galp as the company does not have leased assets from a third party which are operated. Note: Galp has leased assets, namely Floating Production Storage and Offloading (FPSO). However, as Galp does not hold operational control, this data is not consolidated in the carbon footprint of the Company.

## Downstream transportation and distribution

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

51917

### Emissions calculation methodology

Secondary transport of goods by road. For emissions associated with secondary transport of goods by road in vehicles, were accounted direct emissions from the combustion of diesel fuel in vehicles with internal combustion engine, based on the distances travelled. The emission factors are based on the values defined by the IPCC, adjusted to the Portuguese reality, based on data published by official national entities.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

### Explanation

Secondary transport of goods by road and train in Portugal, Spain and Galp Marketing International.

## Processing of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

14443489

### Emissions calculation methodology

GHG emissions resulting from the processing of intermediate products sold by Galp to other downstream companies, based on the quantities of crude oil sold and emission factors defined by IPCC.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

GHG emissions resulting from the crude oil processing made by the downstream company to whom Galp sold its crude oil.

## Use of sold products

### Evaluation status

Relevant, calculated

### Metric tonnes CO2e

61174433

### Emissions calculation methodology

Direct emissions of the consumption of fuels sold were accounted through the respective combustion (stationary and mobile sources), based on the quantities sold and emission factors defined by the IPCC, adjusted to the Portuguese reality, based on data published by official national entities (National Inventory Report). In the case of road fuels, it was considered the average rate of incorporation of biofuels, based on the latest official data. This category includes GHG emissions associated with the sale of products to operators and exports of oil, since the aim is to have an emission analysis as comprehensive as possible.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

### Explanation

GHG emissions associated to the use of sold products, namely: Diesel oil; Gasoline; Jet; Natural gas; Fuel oil and LPG.

## End of life treatment of sold products

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Not relevant/Not applicable. This activity is not applicable to Galp as the main products that the company sells (fuels) are not recovered, since they are consumed entirely, not generating any waste.

## Downstream leased assets

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Galp has some service stations leased to third parties. However, through a materiality analysis Galp concluded that emissions associated with the leased service stations are not material (less than 5%) compared to other activities of scope 3 GHG emissions. The Company reassessed the materiality of this category in 2018 and decided not to report it given its non-materiality and potential inaccuracies in the information needed to account for the emissions associated with this category, given the complexity of the process of gathering all information.

## Franchises

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Galp has some service stations franchised. However, through a materiality analysis, Galp concluded that emissions associated with franchising are not material (less than 5%) compared to other activities of scope 3 GHG emissions. The Company reassessed the materiality of this category in 2018 and decided not to report it given its non-materiality and potential inaccuracies in the information needed to account for the emissions associated with this category, given the complexity of the process of gathering all information.

## Investments

### Evaluation status

Not relevant, calculated

### Metric tonnes CO2e

622534

### Emissions calculation methodology

Direct emissions from the operation of the exploration and production assets which are not operated by Galp, based on the operation data received from the partner who is responsible for the operation, considering reference emission factors (defined by the IPCC, IPIECA and/or IOGP) and direct measurement techniques. It also includes the fugitive emissions from the Natural Gas Distribution System Operator, based on the number of kilometers of the distribution system and a theoretical percentage of fugitive emissions from API.

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

### Explanation

GHG emissions resulting from the operation of businesses and assets where Galp is present as a joint-venture or with an equity stake, without management control. It includes all the working interest in Exploration and Production assets non-operated by Galp and the Company's stake in the Natural Gas Distribution System Operator.

## Other (upstream)

### Evaluation status

Not relevant, explanation provided

### Metric tonnes CO2e

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

### Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

### Explanation

Not relevant. No other categories have been identified.

**Other (downstream)**

**Evaluation status**

Not relevant, explanation provided

**Metric tonnes CO2e**

<Not Applicable>

**Emissions calculation methodology**

<Not Applicable>

**Percentage of emissions calculated using data obtained from suppliers or value chain partners**

<Not Applicable>

**Explanation**

Not relevant. No other categories have been identified.

**C6.7**

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

No

**C6.10**

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

**Intensity figure**

0.000198

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

3398451

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

17181742240

**Scope 2 figure used**

Market-based

**% change from previous year**

22

**Direction of change**

Decreased

**Reason for change**

In 2018, this performance metric decreased 22% compared to the previous year (from 0.000253 to 0.000198) mainly due to increased percentage of low carbon power purchased and emissions reduction activities (e.g. energy efficiency at R&M segment, among others: In 2018 we invested €13.5 million in eco-efficiency projects. Global scope 1+2 GHG emissions had a 12% decrease (from 3,852,741 tCO<sub>2</sub>e to 3,398,451 tCO<sub>2</sub>e) and changes in the output. Total revenues had a 13% increase (from €15,204 million to €17,182 million). Thus,  $3,398,451/17,181,742,240=0.000198$ .

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**Intensity figure**

534

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

3398451

**Metric denominator**

full time equivalent (FTE) employee

**Metric denominator: Unit total**

6360

**Scope 2 figure used**

Market-based

**% change from previous year**

12

**Direction of change**

Decreased

**Reason for change**

In 2018, this performance metric decreased 12% compared to the previous year (from 608 to 534). Global scope 1+2 GHG emissions had a 12% decrease (from 3,852,741 tCO<sub>2</sub>e to 3,398,451 tCO<sub>2</sub>e), mainly due to overall increased percentage of low carbon power purchased and emissions reduction activities, e.g. energy efficiency at R&M segment, among others (in 2018 we invested €13.5 million in eco-efficiency projects) and changes in the output. Total FTE had a 0.4% increase (from 6,336 to 6,360). Thus,  $3,398,451/6,360=534$ .

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**Intensity figure**

0.221

**Metric numerator (Gross global combined Scope 1 and 2 emissions)**

3398451

**Metric denominator**

Other, please specify (tonne of feedstock processed)

**Metric denominator: Unit total**

15382150

**Scope 2 figure used**

Market-based

**% change from previous year**

0.4

**Direction of change**

Decreased

**Reason for change**

In 2018, this performance metric decreased 0.4% compared to the previous year (from 0.222 to 0.221) mainly due overall increased percentage of low carbon power purchased and emissions reduction activities (e.g. energy efficiency at R&M segment, among others (in 2018 we invested €13.5 million in eco-efficiency projects). Global scope 1+2 GHG emissions had a 12% decrease (from 3,852,741 tCO<sub>2</sub>e to 3,398,451 tCO<sub>2</sub>e) and changes in the output. Total feedstock processed had an 11.4% decrease (from 17,361,584 tonnes to 15,382,150 tonnes). Thus,  $3,398,451/15,382,150=0.221$ .

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

**Unit of hydrocarbon category (denominator)**

Other, please specify (Million Barrels of Oil Equivalent - mmboe)

**Metric tons CO2e from hydrocarbon category per unit specified**

29377.1

**% change from previous year**

7

**Direction of change**

Decreased

**Reason for change**

In 2018, this performance metric decreased 6.6% compared to the previous year (from 31,451.1 to 29,377.1) mainly due to emissions reduction activities (e.g. energy efficiency at R&M segment, among others: In 2018 we invested €13.5 million in eco-efficiency projects at the Sines refinery). Global scope 1 GHG emissions (E&P+Refining - including biofuels) had a 10% decrease (from 3,597,987 tCO2e to 3,237,665 tCO2e) and total Million Barrels of Oil Equivalent (mmboe) produced had a 3.7% decrease (from 114.4 mmboe to 110.2 mmboe). Thus,  $3,237,665/110.2=29,377.1$ .

**Comment**

The numerator 3,237,665 tCO2e) includes scope 1 GHG emissions of Exploration & Production and Refining (including biofuels) segments. The denominator (110.2 mmboe) includes hydrocarbons produced at upstream oil and natural gas produced & refining intake (feedstock processed), including biofuels, at the Refining segment.

**C-OG6.13**

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

**Oil and gas business division**

Upstream

**Estimated total methane emitted expressed as % of natural gas production or throughput at given division**

1.32

**Estimated total methane emitted expressed as % of total hydrocarbon production or throughput at given division**

0.14

**Comment**

Galp monitors upstream (E&P) CH4 emissions. Galp follows the methodology proposed by API for the determination of CH4 emissions.

**C7. Emissions breakdowns**

**C7.1**

**(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?**

Yes

**C7.1a**

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	3264148	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	369	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	418	IPCC Fourth Assessment Report (AR4 - 100 year)

**C-OG7.1b**

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

**Emissions category**

Fugitives

**Value chain**

Upstream

Downstream

**Product**

Oil

**Gross Scope 1 CO2 emissions (metric tons CO2)**

0

**Gross Scope 1 methane emissions (metric tons CH4)**

36.7

**Total gross Scope 1 emissions (metric tons CO2e)**

918.2

**Comment**

CH4 fugitive emissions reported are related to flare at Refining. Fugitive emissions from equipment at the refining system are not relevant. Galp does not have natural gas fields in production in 2018.

**Emissions category**

Flaring

**Value chain**

Upstream

**Product**

Oil

**Gross Scope 1 CO2 emissions (metric tons CO2)**

0

**Gross Scope 1 methane emissions (metric tons CH4)**

12.9

**Total gross Scope 1 emissions (metric tons CO2e)**

322.9

**Comment**

CH4 fugitive emissions from flaring at E&P, according to API Compendium and IOGP Assumption. Galp does not have natural gas fields in production in 2018.

**Emissions category**

Combustion (excluding flaring)

**Value chain**

Upstream

Downstream

**Product**

Oil

**Gross Scope 1 CO2 emissions (metric tons CO2)**

2330605.3

**Gross Scope 1 methane emissions (metric tons CH4)**

1.5

**Total gross Scope 1 emissions (metric tons CO2e)**

2330865

**Comment**

Methane emissions included in values of CO2e. CO2 emissions also include the cogeneration units within the refineries. It includes CO2 emissions from combustion of fuels in other operations (e.g. Logistics; Fuel Marketing; Biofuels; Others).

**Emissions category**

Combustion (excluding flaring)

**Value chain**

Other (please specify) (Power Generation)

**Product**

Gas

**Gross Scope 1 CO2 emissions (metric tons CO2)**

18499.7

**Gross Scope 1 methane emissions (metric tons CH4)**

0.3

**Total gross Scope 1 emissions (metric tons CO2e)**

18704.5

**Comment**

Emissions from Galp's cogeneration unit (Agroger).

**Emissions category**

Process (feedstock) emissions

**Value chain**

Downstream

**Product**

Oil

**Gross Scope 1 CO2 emissions (metric tons CO2)**

912124.5

**Gross Scope 1 methane emissions (metric tons CH4)**

0

**Total gross Scope 1 emissions (metric tons CO2e)**

912124.5

**Comment**

Process emissions from refining. Methane emissions included in values of CO2e.

**C7.2**

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Portugal	3246022.1
Spain	616.2
Brazil	3076
Cabo Verde	310.5
Guinea-Bissau	310
Mozambique	244
Swaziland	0
Namibia	14356.2

**C7.3**

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

By business division

**C7.3a**

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

Business division	Scope 1 emissions (metric ton CO2e)
Exploration and Production (E&P) - Operated Blocks	17392
Refining and Marketing (R&M)	3222933
Gas and Power (G&P)	18909
Others	5701

**C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4**

**(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.**

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions, metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility generation activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	17392	<Not Applicable>	Exploration and Production (E&P) Operated Assets
Oil and gas production activities (downstream)	3247543	<Not Applicable>	Refining and Marketing (R&M) + Gas and Power (G&P) + Others
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**C7.5**

**(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)
Portugal	0	132972	489921	269187
Spain	0	103	409	0
Brazil	0	9	174	0
Cabo Verde	0	329	552	0
Guinea-Bissau	0	17	29	0
Mozambique	0	9	782	0
Swaziland	0	77	129	0
Namibia	0	0	0	0

**C7.6**

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

By business division

**C7.6a**

**(C7.6a) Break down your total gross global Scope 2 emissions by business division.**

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Exploration and Production (E&P) - Operated Blocks	0	9
Refining and Marketing (R&M)	0	132433
Gas and Power (G&P)	0	61
Others	0	1013

**C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7**

**(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.**

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	0	9	E&P scope 2 emissions.
Oil and gas production activities (downstream)	0	133507	R&D scope 2 emissions.
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

**C7.9**

**(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**

**(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.**

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	94519	Decreased	2.5	Explanation for 'Change in renewable energy consumption' category. Global Figure (Scope 1+2) 2018: 3,398,451 tCO2e; Global Figure (Scope 1+2) 2017: 3,852,741 tCO2e; Reduction due to 'Change in renewable energy consumption': approx. 94,519 tCO2e. Galp decreased 2.45% $((94,519/3,852,741) * 100 = 2.5\%)$ its scope 1+2 GHG emissions due to change in the emission factor of the electricity consumed (electricity was produced with less fossil fuels and more renewables). General explanation for gross global emissions (Scope 1 and 2 combined): In 2018, absolute gross scope 1 and 2 GHG emissions combined decreased 11.8% $((454,290/3,852,741)*100=11.8\%)$ compared to previous year (from 3,852,741 t CO2e to 3,398,451 t CO2e; decrease of 454,290 tCO2e). Disaggregating this decrease (-11.8%) by different reasons, emissions were: 1) Decreased 2.5% (approx. 94,519 t CO2e) due to change in the emission factor of the electricity consumed by Galp in Portugal (electricity was produced with less fossil fuels and more renewables); 2) Reduced -0.3% (approx. -12,718 t CO2e) due to 'Other emission reduction activities' implemented mainly in the Refining segment; 3) Decreased 8.9% (approx. 343,482 t CO2e) due to a change in output (decrease on the feedstock processed at Refining segment, due to scheduled partial shutdowns for maintenance purposes, and an increase in production of the E&P segment); 4) Reduced 0.1% (approx. -3,571 tCO2e) due to minor reduction initiatives that are difficult to quantify/disaggregate (unidentified). Thus, Global -11.8% decrease equals to: Change (%) = -11.8% = -2.5% (1) -0.3% (2) -8.9% (3) -0.1 (4). Change (tCO2e) = -454,290 = -94,519 (1) -12,718 (2) - 343,482 (3) - 3,571 (4).
Other emissions reduction activities	12718	Decreased	0.3	Explanation for 'Other emission reduction activities' category. Global Figure (Scope 1+2) 2018: 3,398,451 tCO2e; Global Figure (Scope 1+2) 2017: 3,852,741 tCO2e; Reduction due to ERA: approx. -12,718 tCO2e. Galp decreased -0.3% $((12,718/3,852,741)*100=0.3\%)$ its scope 1+2 GHG emissions due to Emission Reduction Activities, such as the implementation of energy efficiency initiatives in the Refining segment. For example, in 2018, Galp invested €13.5 million in efficiency projects at the Sines refinery. Galp has been reducing the GHG emissions in the refining operations, through the implementation of the BAT to improve Eco-efficiency of resource use. In the last five years, we have reduced the consumption of direct energy by primary sources (-7%). Related to energy intensity index (EII), Sines refinery reduce 7% and Matosinhos refinery reduce 4% from 2013 to 2018. General explanation for gross global emissions (Scope 1 and 2 combined): In 2018, absolute gross scope 1 and 2 GHG emissions combined decreased 11.8% $((454,290/3,852,741)*100=11.8\%)$ compared to previous year (from 3,852,741 t CO2e to 3,398,451 t CO2e; decrease of 454,290 tCO2e). Disaggregating this decrease (-11.8%) by different reasons, emissions were: 1) Decreased 2.5% (approx. 94,519 t CO2e) due to change in the emission factor of the electricity consumed by Galp in Portugal (electricity was produced with less fossil fuels and more renewables); 2) Reduced -0.3% (approx. -12,718 t CO2e) due to 'Other emission reduction activities' implemented mainly in the Refining segment; 3) Decreased 8.9% (approx. 343,482 t CO2e) due to a change in output (decrease on the feedstock processed at Refining segment, due to scheduled partial shutdowns for maintenance purposes, and an increase in production of the E&P segment); 4) Reduced 0.1% (approx. -3,571 tCO2e) due to minor reduction initiatives that are difficult to quantify/disaggregate (unidentified). Thus, Global -11.8% decrease equals to: Change (%) = -11.8% = -2.5% (1) -0.3% (2) -8.9% (3) -0.1 (4). Change (tCO2e) = -454,290 = -94,519 (1) -12,718 (2) - 343,482 (3) - 3,571 (4).
Divestment	0	No change	0	Not applicable. No divestment
Acquisitions	0	No change	0	Not applicable. No acquisitions
Mergers	0	No change	0	Not applicable. No mergers
Change in output	343482	Decreased	8.9	Explanation for 'Change in output' category. Global Figure (Scope 1+2) 2018: 3,398,451 tCO2e; Global Figure (Scope 1+2) 2017: 3,852,741 tCO2e; Reduction due to 'change in output': approx. 343,482 tCO2e. Galp decreased 8.9% $((343,482/3,852,741)*100=8.9\%)$ its scope 1+2 GHG emissions due to change in output, such as the decrease on the feedstock processed at Refining segment, due to scheduled partial shutdowns for maintenance purposes, and an increase in production of the E&P segment. General explanation for gross global emissions (Scope 1 and 2 combined): In 2018, absolute gross scope 1 and 2 GHG emissions combined decreased 11.8% $((454,290/3,852,741)*100=11.8\%)$ compared to previous year (from 3,852,741 t CO2e to 3,398,451 t CO2e; decrease of 454,290 tCO2e). Disaggregating this decrease (-11.8%) by different reasons, emissions were: 1) Decreased 2.5% (approx. 94,519 t CO2e) due to change in the emission factor of the electricity consumed by Galp in Portugal (electricity was produced with less fossil fuels and more renewables); 2) Reduced -0.3% (approx. -12,718 t CO2e) due to 'Other emission reduction activities' implemented mainly in the Refining segment; 3) Decreased 8.9% (approx. 343,482 t CO2e) due to a change in output (decrease on the feedstock processed at Refining segment, due to scheduled partial shutdowns for maintenance purposes, and an increase in production of the E&P segment); 4) Reduced 0.1% (approx. -3,571 tCO2e) due to minor reduction initiatives that are difficult to quantify/disaggregate (unidentified). Thus, Global -11.8% decrease equals to: Change (%) = -11.8% = -2.5% (1) -0.3% (2) -8.9% (3) -0.1 (4). Change (tCO2e) = -454,290 = -94,519 (1) -12,718 (2) - 343,482 (3) - 3,571 (4).
Change in methodology	0	No change	0	Not applicable. No change in methodology.
Change in boundary	0	No change	0	Not applicable. No change in boundary.
Change in physical operating conditions	0	No change	0	Not applicable. No change in physical operating conditions.
Unidentified	3571	Decreased	0.1	Explanation for 'Unidentified' category. Global Figure (Scope 1+2) 2018: 3,398,451 tCO2e; Global Figure (Scope 1+2) 2017: 3,852,741 tCO2e; Reduction due to 'unidentified': approx. 3,571 tCO2e. Galp decreased 0.1% $((3,571/3,852,741)*100=0.1\%)$ its scope 1+2 emissions due to minor reduction initiatives that are difficult to quantify/disaggregate (unidentified). General explanation for gross global emissions (Scope 1 and 2 combined): In 2018, absolute gross scope 1 and 2 GHG emissions combined decreased 11.8% $((454,290/3,852,741)*100=11.8\%)$ compared to previous year (from 3,852,741 t CO2e to 3,398,451 t CO2e; decrease of 454,290 tCO2e). Disaggregating this decrease (-11.8%) by different reasons, emissions were: 1) Decreased 2.5% (approx. 94,519 t CO2e) due to change in the emission factor of the electricity consumed by Galp in Portugal (electricity was produced with less fossil fuels and more renewables); 2) Reduced -0.3% (approx. -12,718 t CO2e) due to 'Other emission reduction activities' implemented mainly in the Refining segment; 3) Decreased 8.9% (approx. 343,482 t CO2e) due to a change in output (decrease on the feedstock processed at Refining segment, due to scheduled partial shutdowns for maintenance purposes, and an increase in production of the E&P segment); 4) Reduced 0.1% (approx. -3,571 tCO2e) due to minor reduction initiatives that are difficult to quantify/disaggregate (unidentified). Thus, Global -11.8% decrease equals to: Change (%) = -11.8% = -2.5% (1) -0.3% (2) -8.9% (3) -0.1 (4). Change (tCO2e) = -454,290 = -94,519 (1) -12,718 (2) - 343,482 (3) - 3,571 (4).
Other	0	No change	0	Not applicable. No other.

**C7.9b**

**(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?**

Market-based

**C8. Energy**

**C8.1**

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

More than 0% but less than or equal to 5%

**C8.2**

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

	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	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

**C8.2a**

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	11579893	11579893
Consumption of purchased or acquired electricity	<Not Applicable>	269187	222808	491995
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	269187	11802701	12071888

**C8.2b**

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

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	No
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	Yes

**C8.2c**

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

**Fuels (excluding feedstocks)**

Natural Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

5642349

**MWh fuel consumed for self-generation of electricity**

<Not Applicable>

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

5621991

**Comment**

Natural Gas consumed for self-cogeneration in R&D and G&P.

---

**Fuels (excluding feedstocks)**

Diesel

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

22006

**MWh fuel consumed for self-generation of electricity**

<Not Applicable>

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Comment**

Diesel consumption.

---

**Fuels (excluding feedstocks)**

Motor Gasoline

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

166

**MWh fuel consumed for self-generation of electricity**

<Not Applicable>

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Comment**

Gasoline consumption.

---

**Fuels (excluding feedstocks)**

Fuel Gas

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

5864800

**MWh fuel consumed for self-generation of electricity**

<Not Applicable>

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Comment**

Fuel gas consumption.

---

**Fuels (excluding feedstocks)**

Fuel Oil Number 1

**Heating value**

LHV (lower heating value)

**Total fuel MWh consumed by the organization**

50572

---

**MWh fuel consumed for self-generation of electricity**

<Not Applicable>

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

<Not Applicable>

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self-cogeneration or self-trigeneration**

0

**Comment**

Fuel oil consumption.

---

C8.2d

---

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

**Diesel**

**Emission factor**

0.0744

**Unit**

metric tons CO2e per GJ

**Emission factor source**

APA (2016) - National Inventory Report + API Compendium.

**Comment**

APA (2016) - National Inventory Report + API Compendium.

**Fuel Gas**

**Emission factor**

0.0643

**Unit**

metric tons CO2e per GJ

**Emission factor source**

APA (2016) - National Inventory Report + API Compendium.

**Comment**

APA (2016) - National Inventory Report + API Compendium.

**Fuel Oil Number 1**

**Emission factor**

0.0775

**Unit**

metric tons CO2e per GJ

**Emission factor source**

APA (2016) - National Inventory Report + API Compendium.

**Comment**

APA (2016) - National Inventory Report + API Compendium.

**Motor Gasoline**

**Emission factor**

0.00228

**Unit**

metric tons CO2e per GJ

**Emission factor source**

APA (2016) - National Inventory Report + API Compendium.

**Comment**

APA (2016) - National Inventory Report + API Compendium.

**Natural Gas**

**Emission factor**

0.0567

**Unit**

metric tons CO2e per GJ

**Emission factor source**

APA (2016) - National Inventory Report + API Compendium.

**Comment**

APA (2016) - National Inventory Report + API Compendium.

**C8.2e**

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

	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	963218	0	37	0
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

**C8.2f**

**(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.**

**Basis for applying a low-carbon emission factor**

Grid mix of renewable electricity

**Low-carbon technology type**

Wind

Hydropower

Other low-carbon technology, please specify (Renewable cogeneration + Other renewables)

**Region of consumption of low-carbon electricity, heat, steam or cooling**

Europe

**MWh consumed associated with low-carbon electricity, heat, steam or cooling**

269187

**Emission factor (in units of metric tons CO2e per MWh)**

0

**Comment**

Galp purchases all electricity consumed in Portugal (489,921 MWh) to GalpPower (a Group company). GalpPower commercialized in 2018 a portfolio of electricity with 54.9% of renewable energy (23.3% hydro; 21.6% wind; 3.4% renewable cogeneration; 6.7% other renewables). By law, Galp is required to sell to the national grid all electricity produced by the company (renewable or not).

**C9. Additional metrics**

**C9.1**

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

**C-OG9.2a**

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

	In-year net production	Comment
Crude oil and condensate, million barrels	34.1	Galp produced 34.1 million barrels in 2018 (including: Angola and Brazil).
Natural gas liquids, million barrels	0	Galp does not produce natural gas liquids.
Oil sands, million barrels (includes bitumen and synthetic crude)	0	Galp does not produce oil sands.
Natural gas, billion cubic feet	27.3	Galp produced 27.3 billion cubic feet in 2018 (including: Brazil).

**C-OG9.2b**

**(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.**

Galp estimates of proved, probable and possible reserves presented have been prepared in accordance with the Petroleum Resources Management System (PRMS) approved in March 2007 by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, and the Society of Petroleum Evaluation Engineers.

**C-OG9.2c**

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

	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)	Comment
Row 1	755.2	984.8	5278.1	Reserves data

**C-OG9.2d**

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

	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)	Comment
Crude oil / condensate / Natural gas liquids	79	81	65	Reserves and Resources data
Natural gas	21	19	35	Reserves and Resources data
Oil sands (includes bitumen and synthetic crude)	0	0	0	Reserves and Resources data

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

Onshore

**In-year net production (%)**

1

**Net proved reserves (1P) (%)**

0

**Net proved + probable reserves (2P) (%)**

0

**Net proved + probable + possible reserves (3P) (%)**

0

**Net total resource base (%)**

0

**Comment**

Onshore represents 0.6% of total O&G production in 2018. In-year net production (%): 0.6% Net proved reserves (1P) (%): 0.1% Net proved + probable reserves (2P) (%): 0.2% Net proved + probable + possible reserves (3P) (%): 0.2% Net total resource base (%): 0.2%

**Development type**

Deepwater

**In-year net production (%)**

5

**Net proved reserves (1P) (%)**

1

**Net proved + probable reserves (2P) (%)**

1

**Net proved + probable + possible reserves (3P) (%)**

1

**Net total resource base (%)**

8

**Comment**

Deepwater represents 4.8% of total O&G production in 2018. In-year net production (%): 4.8% Net proved reserves (1P) (%): 1.2% Net proved + probable reserves (2P) (%): 0.9% Net proved + probable + possible reserves (3P) (%): 0.8% Net total resource base (%): 8.1%

**Development type**

Ultra-deepwater

**In-year net production (%)**

95

**Net proved reserves (1P) (%)**

99

**Net proved + probable reserves (2P) (%)**

99

**Net proved + probable + possible reserves (3P) (%)**

99

**Net total resource base (%)**

92

**Comment**

Ultra Deepwater represents 94.6% of total O&G production in 2018. In-year net production (%): 94.6% Net proved reserves (1P) (%): 98.7% Net proved + probable reserves (2P) (%): 99.0% Net proved + probable + possible reserves (3P) (%): 99.1% Net total resource base (%): 91.7%

**C-OG9.3a**

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

	Total refinery throughput capacity (Thousand barrels per day)
Capacity	418

C-OG9.3b

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

	Throughput (Million barrels)	Comment
Oil	92.12	92 millions of barrels (oil).
Other feedstocks	17.67	18 millions of barrels (other feedstock).
Total	109.79	110 millions of barrels (total),

C-OG9.3c

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

Yes

C-OG9.3d

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

Product produced	Refinery net production (Million barrels) *not including products used/consumed on site
Liquified petroleum gas	3.55
Gasolines	22.51
Naphtha	6.93
Kerosenes	11.11
Diesel fuels	46.65
Fuel oils	14.51
Lubricants	0.81
Waxes	0.07
Asphalt and tar	0.77
Petroleum coke	0
Still gas	0
Other, please specify (Chemicals)	2.86

C-CO9.6/C-EU9.6/C-OG9.6

**(C-CO9.6/C-EU9.6/C-OG9.6) Disclose your investments in low-carbon research and development (R&D), equipment, products, and services.**

**Investment start date**

January 1 2017

**Investment end date**

December 31 2021

**Investment area**

Products

**Technology area**

Energy efficiency in transport

**Investment maturity**

Large scale commercial deployment

**Investment figure**

19100000

**Low-carbon investment percentage**

61-80%

**Please explain**

Galp, along with its partners and under the ECO-GATE project, is investing to develop several natural gas filling stations on the Iberian Peninsula. The company will open two natural gas filling stations in each country, Portugal and Spain. Galp's infrastructure plans are not limited to the installations covered by ECO-GATE, with several new stations planned for the near future. ECO-GATE covers more than 20 gas stations located in each of the 4 countries where the project is deployed: Germany, France, Portugal and Spain. The ambitious project on conventional and renewable vehicular natural gas provides the deployment of infrastructure along the Atlantic Corridor and the Mediterranean Corridor through new technologies and innovative solutions. In 2018, Galp deployed the first natural gas filling stations under the ECO-GATE project in Sines.

**Investment start date**

January 1 2015

**Investment end date**

December 31 2022

**Investment area**

R&D

**Technology area**

Enhanced Oil Recovery (EOR) techniques

**Investment maturity**

Applied research and development

**Investment figure**

7376000

**Low-carbon investment percentage**

0-20%

**Please explain**

Given the increasing complexity of exploration and production activities, it has been Galp's priority to develop its technological dimension, capitalising on innovative solutions that allow to create value in the projects in which participates, but also on the possibility of licensing and extending the use of these technologies to other projects, with the aim of creating an additional source of value. Galp has been developing several projects related to production and primary processing systems dedicated to CO2 management, namely Enhanced oil recovery (EOR) techniques.

**C-OG9.7**

**(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 and dividends paid/ share buybacks.**

25

**C10. Verification**

**C10.1**

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

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

## C10.1a

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

**Scope**

Scope 1

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Reasonable assurance

**Attach the statement**

GALP\_GRI Content Index\_2018\_EN.pdf

Galp\_Integrated\_Report\_2018.pdf

**Page/ section reference**

The document attached is the Galp Integrated Report 2018 (Integrated Report). This document has attached within the Independent Assurance Report (By PwC). Scope 1 GHG emissions are reported in page 72 (Carbon Footprint) & 86 (Environmental performance) and Independent Assurance Report, that covers ALL the sustainability information (including scope 1 GHG emissions), is on pages 298-300. Also, complimentary to the Integrated Report 2018, GRI Content Index is published at Galp's website.

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

---

**Scope**

Scope 2 market-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Reasonable assurance

**Attach the statement**

GALP\_GRI Content Index\_2018\_EN.pdf

Galp\_Integrated\_Report\_2018.pdf

**Page/ section reference**

The document attached is the Galp Integrated Report 2018 (Integrated Report). This document has attached within the Independent Assurance Report (By PwC). Scope 2 GHG emissions are reported in page 72 (Carbon Footprint) & 86 (Environmental performance) and Independent Assurance Report, that covers ALL the sustainability information (including scope 2 GHG emissions), is on pages 298-300. Also, complimentary to the Integrated Report 2018, GRI Content Index is published at Galp's website.

**Relevant standard**

ISAE3000

**Proportion of reported emissions verified (%)**

100

---

## C10.1b

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

**Scope**

Scope 3- all relevant categories

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Attach the statement**

GALP\_GRI Content Index\_2018\_EN.pdf

Galp\_Integrated\_Report\_2018.pdf

**Page/section reference**

The document attached is the Galp Integrated Report 2018 (Integrated Report). This document has attached within the Independent Assurance Report (By PwC). Scope 3 GHG emissions are reported in page 72 (Carbon Footprint) and Independent Assurance Report, that covers ALL the sustainability information (including scope 3 GHG emissions), is on pages 298-300. Also, complimentary to the Integrated Report 2018, GRI Content Index is published at Galp's website.

**Relevant standard**

ISAE3000

## C10.2

**(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

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	ISAE 3000	Year-on-year change in emissions (Scope 1 and 2) is verified by third party (Integrated Report).
C6. Emissions data	Year on year change in emissions (Scope 3)	ISAE 3000	Year-on-year change in emissions (Scope 3) is verified by third party (Integrated Report).
C6. Emissions data	Year on year emissions intensity figure	ISAE 3000	Progress made on intensity figure CWT (complexity weighted tonne) is verified every year for the Downstream segment (R&D). Specific emissions expressed in kg CO2/complexity weighted tonne (CWT) (benchmark recognised by the European Commission for the refining industry) maintained the downward trend in 2018 and stood at 31.3 CO2/CWT for the Sines Refinery and 28.5 CO2/CWT for the Matosinhos Refinery. Progress made on other intensity figure for the Upstream segment (E&P) (CO2e/boe) is also verified every year.
C4. Targets and performance	Progress against emissions reduction target	ISAE 3000	Progress made on intensity figure CWT (complexity weighted tonne) is verified every year for the Downstream segment (R&D). Specific emissions expressed in kg CO2/complexity weighted tonne (CWT) (benchmark recognised by the European Commission for the refining industry) maintained the downward trend in 2018 and stood at 31.3 CO2/CWT for the Sines Refinery and 28.5 CO2/CWT for the Matosinhos Refinery.
C4. Targets and performance	Emissions reduction activities	ISAE 3000	Emission reduction initiatives reported in the Galp Integrated Report 2018 are verified, under the GRI Indicators GRI 302-4, GRI 302-5 and GRI 305-5. As the Integrated Report is an Integrated Report (financial & non-financial data), GRI Content Index 2018 is published at Galp's website.

## C11. Carbon pricing

### C11.1

**(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

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

EU ETS

### C11.1b

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

**EU ETS**

**% of Scope 1 emissions covered by the ETS**

99

**Period start date**

January 1 2018

**Period end date**

December 31 2018

**Allowances allocated**

1993837

**Allowances purchased**

1222382

**Verified emissions in metric tons CO<sub>2</sub>e**

3216219

**Details of ownership**

Facilities we own and operate

**Comment**

For 2018 (period January 1, 2018 to December 31, 2018) Galp was awarded with 1,993,837 free emissions allowances. Galp purchased 1,222,382 allowances. The final verified emissions for 2018, under the EU-ETS, in metric tons of CO<sub>2</sub> were 3,216,219.

**C11.1d**

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

Galp has an internal regulatory standard (NR-024 GHG Emissions Management - ETS) on GHG emission management, regarding ETS. This standard is intended to define the responsibilities in managing GHG emissions and data, to ensure compliance with applicable legal requirements and guarantee a fully informed and timely decision-making process, anticipating risk situations and opportunities and supporting decision making. As an example, this internal standard requires that managers of facilities covered by the ETS to periodically report current and projected emissions, estimating deficits and surpluses that will allow minimising the risks and maximising the opportunities associated. This reporting is done quarterly and reported to the Executive Committee. The responsible for the management of allowances accounts of each installation covered by the ETS were appointed by the Executive Committee, through deliberation. Galp also has an information system that tracks all regulatory changes, including those related to the ETS, in order to be constantly update about all legislation in force and with impact on the activities of Galp. Galp is currently under the 2013-2020 period and will be involved in the post 2020 period (2021-2030, namely IV phase).

**C11.2**

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

No

**C11.3**

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

Yes

**C11.3a**

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

#### **Objective for implementing an internal carbon price**

- Navigate GHG regulations
- Stakeholder expectations
- Change internal behavior
- Drive energy efficiency
- Drive low-carbon investment
- Stress test investments
- Identify and seize low-carbon opportunities
- Supplier engagement

#### **GHG Scope**

- Scope 1
- Scope 2

#### **Application**

Galp considers that there are potential impacts on its business model associated with a transition to a lower carbon economy, as result of several developments and disruptions (e.g. regulatory changes, changes in consumer behaviours, physical impacts, among others). Accordingly, when evaluating new projects, we run a sensitivity analysis regarding carbon pricing, assuming \$40/ton of CO2 nominal in the long-term (c.34.93 €/ton). This price is applicable to all businesses and geographies, and has been approved by the BoD & Executive Committee. Thus, it intends to give more emphasis to the alternatives with lower CO2 emissions and strives to build a portfolio suitable to the transition to a lower carbon economy. Galp considers the carbon pricing as the most efficient and cost-effective mean of achieving the GHG emissions reduction targets (scopes 1&2). However, we consider as fundamental a worldwide common approach that guarantee a cost effective long-term trajectory for carbon abatement.

#### **Actual price(s) used (Currency /metric ton)**

34.93

#### **Variance of price(s) used**

Galp sets a uniform price that is applied throughout the company independent of geography and business unit. When evaluating new projects, we run a sensitivity analysis regarding carbon pricing, assuming \$40/ton of CO2 nominal in the long term (approx. 34.93 €/ton). This price is applicable to all businesses and geographies, and has been approved by the Board of Directors/Executive Committee. Thus, on the one hand, it intends to give more emphasis to the alternatives with lower CO2 emissions and, on the other hand, strives to build a portfolio suitable to the transition to a lower carbon economy.

#### **Type of internal carbon price**

Shadow price

#### **Impact & implication**

Recognising the practice of putting a price on carbon as an essential and strategic tool to minimising the activity's carbon intensity, Galp submitted its commitment to the We Mean Business Platform. The inclusion of carbon price in the assessment of investment projects (medium and long-term) represents a tool to reflect the overall objective of limiting average temperature rises. It is also a way of positively influencing the necessary technological transitions leading to maximising energy efficiency and minimising the carbon footprint of activities and products. Galp assumes this as a criterion in the valuation of its new projects as a variable in its investment decision-making process. The establishment of an internal price on carbon allow us to evaluate risk and opportunities areas, considering the overall energy consumption and the possible improvement actions to be implemented. This is one of the variables considered as reference for the establishment of corporate emissions reduction targets. Moreover, the choice of the energy mix for internal consumption also takes into account the carbon content of each energy type and the carbon price. To monitor and continually manage the carbon price and risks we have maintained an internal structure in the Company. In this sense, within the scope of the Compliance, Environment, Quality, Safety and Regulatory Changes workgroup, created by the Risk Management Committee, we established a risk radar, which follows relevant developments, regulatory changes and Galp's performance, measuring and monitoring potential impacts and defining mitigation actions. We also have a specific Business Unit that monitors the carbon market in all geographies in which Galp operates. According to an established risk profile, this unit provides support for the Budget & Plan (medium and long-term) and to the management of Galp emission allowances portfolio. Relevant information within the scope of the carbon market is provided to the Executive Committee and Board of Directors, as well as to the Business Units of the Group, in a quarterly basis. Note: The price on carbon considered US 40\$/ton equals to approx. 34.93 €/ton. This price in US\$ was converted into € considering the last conversion rate of 2018 made available by the Bank of Portugal (31/12/2018, 1 USD = 0.87336 EUR).

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## **C12. Engagement**

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### **C12.1**

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

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

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### **C12.1b**

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

**Type of engagement**

Education/information sharing

**Details of engagement**

Run an engagement campaign to education customers about your climate change performance and strategy

**% of customers by number**

89

**% Scope 3 emissions as reported in C6.5**

2.8

**Please explain the rationale for selecting this group of customers and scope of engagement**

Galp remains focused on selling additive-enhanced fuel and committed to the excellence of the products and services provided, differentiating strategy in the marketing of oil products. With this in mind, Galp has launched a new fuel offer for Iberian clients. These fuels, named Evologic diesel and gasoline are marketed in the Iberian Peninsula (around 90% of retail sales). These fuels have high-performance additives, which allow greater fuel savings, extended engine life and more efficiency, with lower GHG emissions associated, consequently benefiting the environment. Galp concentrates its marketing activity in Iberia (downstream), where it is a relevant player. We have a vast distribution network and we are one of the leading operators in the region where Evologic fuels are marketed. These fuels are sold at most Galp service stations. Since this initiative was launched, Galp has carried out several strong engagement campaigns with this group of customers (Iberian Clients) with the aim of promoting this type of fuels and the environmental benefits associated. Success is measured through the level of sales of these new fuels, which have increased compared to last year, as customers are being engaged and accept the Evologic fuels. In 2018 Evologic fuels represent 33% of the total of diesel and gasoline sales for the Iberian Peninsula.

**Impact of engagement, including measures of success**

Galp remains focused on selling additive-enhanced fuel and committed to the excellence of the products and services provided, differentiating strategy in the marketing of oil products. With this in mind, Galp has launched a new fuel offering for Iberian clients. These fuels, named Evologic diesel and gasoline are marketed in the Iberian Peninsula (around 90% of retail sales). These fuels have high performance additives, which allow for greater fuel savings, extended engine life and greater efficiency, with lower GHG emissions associated, consequently benefiting the environment. Galp concentrates its marketing activity in Iberia (downstream), where it is a relevant player. We have a wide distribution network and we are one of the leading operators in the region where Evologic fuels are marketed, moreover these fuels are sold at most Galp service stations. Since this initiative was launched, Galp has carried out several strong engagement campaigns with this group of customers (Iberian Clients) with the aim of promoting this type of fuels and the environmental benefits associated. Success is measured through the level of sales of these new fuels, which have increased compared to last year, as customers are being engaged and accept the Evologic fuels. In 2018, Evologic fuels represent 33% of total of diesel and gasoline sales for the Iberian Peninsula.

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**C12.1c**

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

Galp's main engagement methods are collaborative projects, cooperation programmes and providing training. However, whenever necessary, we also carry out one to one meetings and written correspondence (documentation exchange, signing protocols, etc.).

Partners: Galp 21 is a university cooperation programme that aims to identify and develop rational energy systems and behaviors. The programme is based on a shared mentoring system between Galp (the client manager), the client company and the university concerned. The studies' accomplishment is followed up by Galp, with the objective of contributing to its materialisation into specific energy efficiency projects in its clients. Each year, the program awards 21 research scholarships of €3k to 21 students to carry out the projects at 21 clients chosen by Galp in a range of sectors. The projects implemented have resulted in average reductions of 5% in primary energy consumption and 4% in CO2 emissions and had a total amount of savings potential of €2.95M since its beginning. In 2018, 69 measures were proposed, of which 26% were adopted by the participating entities. Since its twelve editions, Galp has already supported 232 grantees.

Civil Society: Climate change educational projects: UP Mission | United by the Planet is an educational project on energy efficiency that we have developed since 2010. This project is targeted at Primary School students, aged between six and 10 years, as well as their teachers, guardians and parents. These programs are addressing issues such as energy sources, sustainable mobility, energy footprint and energy-related careers and schools receive play-based educational visits that aim to contribute to changing behaviours towards a more efficient energy consumption. Following, another innovative project was launched: Switch UP, which is targeted at secondary and vocational education students. This programme promotes entrepreneurship by creating Clubs in secondary schools throughout the country, for developing projects that promote local community engagement and the sharing of ideas and activities about energy efficiency. Regarding Educational UP projects, they covered more than 1 million students and 120 thousand teachers, from the 1st to the 12th year (6-18 years) and over 3,500 energy classes were taught. Main outcomes of 2018 for Mission UP were: 1,468 schools signed up; 13,600 teachers involved; 161,272 students involved; 507 lectures about energy.

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**C12.3**

**(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

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**C12.3a**

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

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Adaptation or resilience	Support	Continuing the open dialogue with stakeholders and an active participation in legislative and regulatory development processes, we developed an extensive position to the recent public consultations regarding energy and climate policies and laws in Portugal and in the European Union. In 2018, the Portuguese government presented both the Net Zero Carbon roadmap for 2050 (RNC2050) and the National Plan of Energy and Climate until 2030 (PNEC2030). Through a "roll-back" the future perspective, the RNC2050 presents three scenarios, with different rates of economic development, analysing and proposing strategic options for Portugal to be carbon neutral in 2050. The PNEC 2030 presents the main legislative actions and intentions regarding energy and climate in Portugal until 2030, aligned with the RNC 2050. Besides the participation in the consultation as a company, Galp also supported the participation of its related associations in these public consultations, namely the Business Council for Sustainable Development in Portugal (BCSD Portugal), the Portuguese Association of Petroleum Companies (APETRO) and the Portuguese Association for the Chemical, Petrochemical and Refining businesses (APQuímica). The overall objective of this participation is to engage our business perspective in a collaborative way, within a common scope for the identification of corporate solutions and contributions to public policies, within the framework of the national strategy. The development of the project allows us to strengthen the relationship with political stakeholders, enable our Company to have a proactive internal discussion and knowledge sharing to adapt the business models to a future scenario of decarbonisation of the economy, and leverage a prominent position within the organization. Galp worked with several internal and external stakeholders, namely political ones and Portuguese associations, to analyse and contribute to the Portuguese decarbonisation pathway until 2030 and a carbon neutral country in 2050. Also, to identify alternative solutions with higher added value and contribute to a policy action, through technical and specialised know-how, enabling the definition of strategic priorities at national and international level.	Galp worked with several internal and external stakeholders, namely political ones and Portuguese associations, to analyse and contribute to the Portuguese decarbonisation pathway until 2030 and a carbon neutral country in 2050. Also, to identify alternative solutions with higher added value and contribute to a policy action, through technical and specialised know-how, enabling the definition of strategic priorities at national and international level.

**C12.3b**

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

Yes

**C12.3c**

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

**Trade association**

FuelsEurope

**Is your position on climate change consistent with theirs?**

Consistent

**Please explain the trade association's position**

Galp is a member of the Energy and Climate Issue Group, the Emission Trading System and Energy Efficiency Task Forces, among the energy and climate issues, in the European industry association FuelsEurope. Participation in this association allows us to have an overview of trends, context and policies on energy and climate in Europe, through this participation we understand and support EU initiatives and leadership, recognising the need to address both climate change and security of energy supply. Besides, Galp believes that the emissions trading scheme is the most important and functional instrument to ensure the CO2 emissions reduction in the most cost-effective way. However, Galp does not support artificial market interventions. Galp also believes in a level playing field between energy sources and competing economies and in technologically neutral policies. Besides, Galp calls for transparency within the EC calculations which determine the amount of allowances in the market each year.

**How have you influenced, or are you attempting to influence their position?**

Yes. Galp, through its participation in FuelsEurope position papers, ensures that its views are acknowledged and integrated into the final documents published.

**C12.3f**

**(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?**

Galp has specialised working groups with high skills that actively participate in the development of legislation and in discussion forums (national and international) with policymakers, to ensure that the vision, strategy and objectives of Galp regarding climate change are taken into account. Thus, Galp ensures that activities, direct and indirect, made in the development of regulation are fully aligned with the climate change strategy of the company. Also, the department that promoted the development of the climate change strategy of Galp (Environment, Quality, Safety & Sustainability) is the same that represents the company in international forums and working groups, which engage in activities that either directly or indirectly influences public policy on climate change, ensuring that direct and indirect activities that influence policy are consistent with the Galp's Climate Change Strategy, Policy and Vision.

**C12.4**

**(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).**

**Publication**

In mainstream reports, incorporating the TCFD recommendations

**Status**

Complete

**Attach the document**

GALP\_GRI Content Index\_2018\_EN.pdf

Galp\_Integrated\_Report\_2018.pdf

GALP\_TCFD\_2018\_EN.pdf

**Page/Section reference**

Please consult Integrated Report 2018 (whole report). Some direct references to TCFD, climate change and GHG emissions can be found at pages: 8-9; 22-27; 34-39; 64-72; 80-86. Please also consult attached two complimentary pieces which are Annexes of the Integrated Report but which are published separately, namely: 1. Galp's alignment with the Recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) (full pages) and 2. GRI Content Index 2018.

**Content elements**

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Other metrics

**Comment**

Please consult Integrated Report 2018 (whole report). Some direct references to TCFD, climate change and GHG emissions can be found at pages: 8-9; 22-27; 34-39; 64-72; 80-86. Please also consult attached two complimentary pieces which are Annexes of the Integrated Report but which are published separately, namely: 1. Galp's alignment with the Recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) (full pages) and 2. GRI Content Index 2018.

**C14. Signoff**

**C-FI**

**(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.**

No further information.

**C14.1**

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

	Job title	Corresponding job category
Row 1	Executive Board Director and Chief Sustainability Officer (same person)	Director on board

**SC. Supply chain module**

**SC0.0**

**(SC0.0) If you would like to do so, please provide a separate introduction to this module.**

**SC0.1**

**(SC0.1) What is your company's annual revenue for the stated reporting period?**

	Annual Revenue
Row 1	

**SC0.2**

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Please select

### SC1.1

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(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

### SC1.2

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(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

### SC1.3

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(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges

Please explain what would help you overcome these challenges

### SC1.4

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(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Please select

### SC2.1

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(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

### SC2.2

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(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

Please select

### SC3.1

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(SC3.1) Do you want to enroll in the 2019-2020 CDP Action Exchange initiative?

Please select

### SC3.2

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(SC3.2) Is your company a participating supplier in CDP's 2018-2019 Action Exchange initiative?

Please select

### SC4.1

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(SC4.1) Are you providing product level data for your organization's goods or services?

Please select

Submit your response

---

In which language are you submitting your response?

English

**Please confirm how your response should be handled by CDP**

	Public or Non-Public Submission	I am submitting to	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Public	Investors Customers	Yes, submit Supply Chain Questions now

**Please confirm below**

I have read and accept the applicable Terms