



Climate change and emissions

During COP 26, held in Glasgow, Scotland, the Brazilian government announced the new Nationally Determined Contribution (NDC), aiming to contribute to the mitigation of climate change as proposed in the Paris Accord. The country has committed to reducing its annual greenhouse gas (GHG) emissions by at least 50% by 2030, based on the domestic inventory carried out in 2005.

Like Brazil, various other countries have revised their commitments to prevent the planet's average temperature from increasing by

more than 2°C by 2050. This global mobilization shows how the impacts of climate change have become one of the main issues of the ESG agenda today.

The effort to reduce emissions has caused changes in all production chains. The growth of carbon credit markets, awareness of reducing deforestation, development of new technologies, and the incentive to increase energy generation from renewable sources are a few examples of the transformations that are already taking place.

Our positioning

The challenges and impacts of climate change are one of the main externalities that impact our business model. Therefore, we work to identify and mitigate the risks associated with the emission of greenhouse gases into the atmosphere, focusing efforts on adaptation measures.

We believe that the gradual transition to a global energy matrix with a greater share of renewable sources and biofuels will be supported by the coexistence with energy sources of fossil origin, such as oil and natural gas. We assess the risks and opportunities of climate change in our strategic planning, acting to adequately respond to these issues in an integrated manner in all our activities.



ESG target

In 2021, with the encouragement of the Board of Directors, we established our first corporate goal related to ESG aspects and influencing the variable compensation of the CEO and Directors. Our emissions intensity¹ was expected to be below 21 kgCO₂e/boe. At year-end, the result was 17.6 kgCO₂e/boe.

¹Considers scope 1 (direct emissions) and scope 2 (indirect emissions from the purchase of electricity).



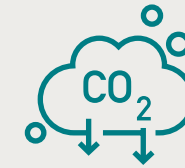
Engagement

- ✓ We support the Paris Accord and its objectives.
- ✓ We explicitly support the goals of “Zero Routine Flaring.”
- ✓ We seek to reduce the intensity of methane and CO₂ in our operations.



Governance and transparency

- ✓ We measure, verify and certify all our greenhouse gas (GHG) emissions.
- ✓ We publish our emissions inventory annually, with accurate indicators and independent certification.



Carbon management

✓ Reduction

- We actively seek measures to reduce emissions in our operations.
- We set limits on the carbon intensity associated with our operations (scopes 1 and 2).
- We act diligently to reduce total Scope 3 GHG emissions.

✓ Compensation

- We invest in zero or low-carbon technologies, whenever applicable and economically viable in our operations.
- We offset our scope 2 emissions through renewable energy certificates (I-REC).

✓ Removal

- We focus investments on research and development projects for carbon retention and removal, based on nature and science.

Emissions inventory

The greenhouse gas (GHG) emissions inventory is the tool we use to measure the total CO₂ emitted by our activities. The document, published on an annual basis, follows the methodology of the GHG Protocol program, the most widely recognized program at the international level for this type of accounting, and is classified with the Gold Seal – the highest standard. Detailed information is available at the **Public Emissions Registry**.

In the inventory, we account for emissions resulting from our direct activities (scope 1), those related to electricity consumption (scope 2), and those resulting from third-party activities that are related to our business (scope 3). In 2021, total emissions decreased by 19.3% compared to the previous year.

Climate Change Policy

In 2022, we aim to approve the Climate Change Policy alongside the Board of Directors. The new governance instrument will provide an even more effective targeting of actions to reduce emissions, mitigation of direct impacts, and plans to adapt the business model to the energy transition and new market scenarios.

Reduction of emissions

The increase in the consumption of associated gas for power generation in our operations at the Atlanta Field is one of the initiatives we conduct to improve our operational efficiency and reduce GHG emissions in Scope 1. Therefore, we seek alternatives to increase the IUAG (Index of Use of Associated Gas) while reducing the amount of gas burned in the flares and the diesel consumption of the FPSO Petrojarl I.

In 2021, improved efficiency in the use of gas led to a 20.9% reduction in scope 1 emissions. We also achieved a 14.2% reduction in scope 3 emissions thanks to the replacement of one of the three vessels

that operated in the Atlanta Field emergency response plan. With the current stage of maturity of the operation, we have been able to allocate a vessel dedicated on standby for this type of activity in the Guanabara Bay (Rio de Janeiro), thereby contributing to the reduction of fuel consumption and emissions.

Other technologies and projects that will enable the reduction of scope 1 emissions in the Atlanta Field operation are being studied alongside Yinson, a supplier with whom we signed, in 2022, a contract for the charter and operation of the FPSO Atlanta, to be used in the Definitive System (DS) for production.

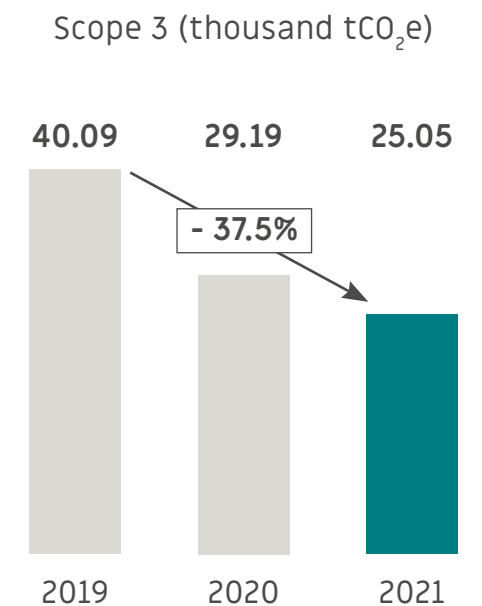
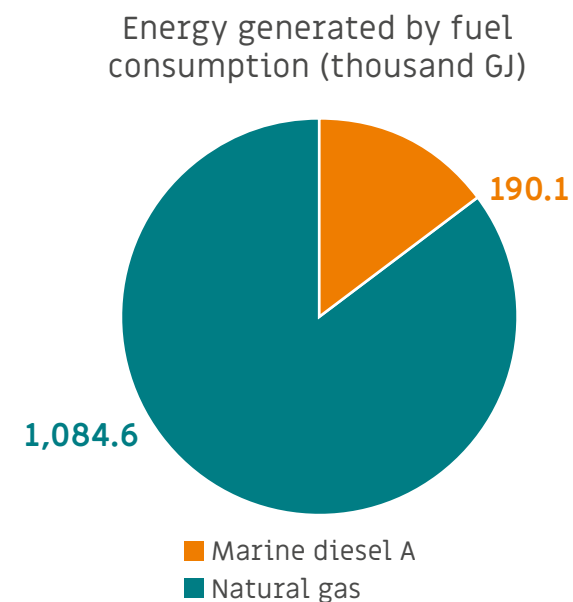
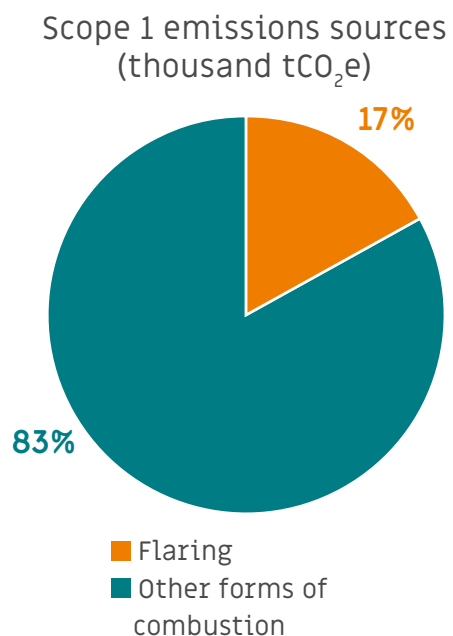
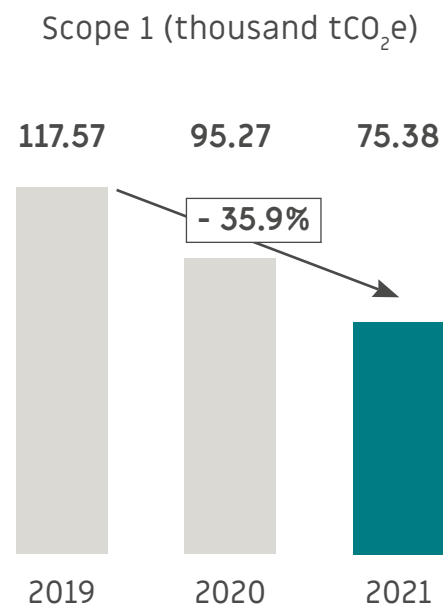
The joint understanding between the companies will allow the implementation of technologies with a focus on minimizing carbon emissions. The FPSO adaptation project includes actions to optimize operational and environmental efficiency in terms of avoided CO₂ emissions.

Electricity consumption occurs only in our corporate offices. Therefore, the impact of emissions related to scope 2 is smaller when compared to what occurs in the Atlanta Field operations. Despite that, we work on educational campaigns and raising awareness among employees for the efficient use of energy in administrative activities.



With the FPSO Atlanta, acquired for the Definitive Production System, we will reduce emissions in oil production

Emission at the Atlanta Field





Carbon stock in mangroves

Our investments in research and development (R&D) projects involve academic and scientific centers in the development of innovations and new knowledge that add value to the oil and gas industry. In 2021, one of the main projects carried out – with an emphasis on assessing the impacts of climate change – was presented to representatives of several countries during the United Nations Climate Change Conference (COP 26), held in Glasgow, Scotland.

The study carried out in partnership with the State University of Rio de Janeiro (UERJ) developed a survey to quantify the carbon stock stored by mangrove forests in the state of Rio de Janeiro. These inputs provide subsidies to direct investments and the development of public policies for the maintenance of conservation units in these coastal environments, considering the ecosystem service provided to mitigate global warming.

The conclusions were selected by the Brazilian Petroleum and Gas Institute (IBP) to compose information on projects in the industry in Brazil taken to COP 26. The total investment in this R&D project, which required three years of work by the researchers, amounted to R\$1.3 million.

Over ten years, our total accumulated investment in R&D is approximately R\$54.6 million, 50% of which is earmarked for environmental projects. These resources enabled the development and improvement of new technologies for safe exploration and production of oil and gas, with a focus on operational efficiency, innovation and application of barriers and methodologies to avoid risks to biodiversity.

Learn +  [Click here and check out all our R&D projects](#)