

TACKLING CLIMATE CHANGE

Saipem is aware that climate change may have a significant impact on its business operations, both directly and indirectly. Saipem can play an active role in the changing global energy scenarios by taking climate change risks and opportunities into consideration.

2017 Highlights	UN GC Principles	Sustainable Development Goals	
Tonnes of CO ₂ saving* due to energy efficiency initiatives +2,800			
Organisation of the Saipem Sustainability Vision workshop on the evolution of global business scenarios and of some relevant sustainability issues, such as climate change, addressed to the Board of Directors			
(*) Measured.			

CLIMATE CHANGE RISKS AND OPPORTUNITIES

In the framework of Saipem's industry, the World Bank's announcement regarding the end of its financial support for upstream oil and gas within the next two years in response to the growing threat posed by climate change is an important signal of the impact of climate change on business¹.

The global effort to limit climate change is reflected in the gradual change in the world's energy mix that the Company has been taking into consideration in order to predict and properly adapt to the consequent socio-economic and technological evolution of its reference markets.

For a company, climate change related risks arise from climate variables and from a chain of consequences that may directly and indirectly affect the capacity to carry out its activities.

On the other hand, Saipem, aware of related opportunities and risks, can play an active role in these changing scenarios. **Saipem is committed to providing cutting-edge and sustainable solutions, helping to meet the demands of a lower-carbon future through its portfolio choices and by working to reduce the carbon footprint of its services and solutions.**

THE RISK MANAGEMENT PROCESS

The process of risk identification and assessment is implemented both at company level (i.e. Group and subsidiaries) and at project level. Once the risk assessment is completed, the CEO of the Group and

the Managing Director (or equivalent figure) of the subsidiary present the relevant results to their Board of Directors. Risk assessment is regularly updated on a six-month basis through workshops conducted with the management team. At project level, risk management is implemented by the Project Manager (both in the commercial and the execution phase) to identify and face any risks and opportunities. The identification process determines and records the risks or opportunities identified that might affect the project.

THE PARIS AGREEMENT

As evidence of the growing recognition of the risks represented by climate change, 195 governments signed the Paris Agreement in 2015, committing themselves to strengthening the global response to the threat of climate change by 'holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels'². This commitment represents a step change for all of humanity and a challenge for all actors, including international organisations, governments, individual citizens and corporate organisations.

(1) World Bank Group Announcements at One Planet Summit, December 12, 2017.

(2) United Nations Framework Convention on Climate Change, 'The Paris Agreement,' December 2015.

The main climate-related issues representing risks and opportunities assessed are presented below:

Risk	Opportunity
Extreme natural events	Broadening of client and project portfolios (i.e. wind farm)
Evolution of environmental laws and regulations (i.e. introduction of carbon pricing)	New market opportunities for low emission services and green technologies (i.e. renewables, carbon capture)

CLIMATE CHANGE GOVERNANCE

Saipem's commitment to climate change prevention is reflected in its governance, principles and policies. The Board of Directors has always been proactive in climate issues and recently these were integrated into the company business strategy. Furthermore, climate issues are topics of discussion in internal committees such as the Corporate Governance Committee and Scenarios, the Audit and Risk Committee and the Sustainability Committee. One example of the BoD's interest in such topics is the workshop organised in November 2017 on macro trends presented to its members with the purpose of discussing

and analysing business scenarios with a particular focus on sustainability and climate change prevention. It resulted in a new vision and mission for Saipem.

SAIPEM'S RESPONSE TO CLIMATE CHANGE-RELATED SCENARIOS

To guarantee a sustainable business in the long term, providing increasingly more efficient and innovative solutions and contributing to the climate change mitigation global action, Saipem's strategy is focused on developing energy efficiency solutions, initiatives and innovative technologies to reduce CO₂ emissions and renewables.

ENERGY EFFICIENCY

Saipem is constantly committed to the containment of GHG emissions



[Further details on Saipem's approach to energy efficiency can be found in the 'Consolidated Non-Financial Statements' of the Annual Report 2017.](#)

ENERGY EFFICIENCY FOR OFFSHORE VESSELS AND RIGS

Ship Energy Efficiency Management Plan

In 2017, a Corporate-level Template was created to align Ship Energy Efficiency Management Plans (SEEMP) on Saipem vessels. The objective is to define KPIs suitable for measuring vessel energy performance and the minimum technical and management requirements.

Energy efficiency assessments on vessels

Energy assessments were performed for several relevant vessels to quantify the environmental benefits of systems already implemented on board and to further evaluate related interventions. In particular, Saipem 7000 and Castorone were subject to an in-depth study carried out with the Politecnico di Milano. Studies have defined:

- best practices such as the definition of ecospeed (tests conducted to define the optimal speed for a vessel to cover a route with the lowest fuel consumption); tests to build the specific consumption curve (SFOC - specific fuel oil consumption) of diesel generators on board;
- feasibility studies and an estimation of the environmental and economic advantages of a list of initiatives, including, for example, the identification of the most appropriate LED systems for Offshore operations subject to extreme marine conditions;

implementation of heat recovery systems from fumes or other heat sources; implementation of VFD (variable frequency drive) systems on cooling water pumps; implementation of automatic systems that can choose the most suitable of the two available fan speeds to avoid waste; and the hybridization of a vessel with energy storage systems.

Furthermore, the environmental benefit of a heat recovery system already implemented on board of Castorone was evaluated for the first time, and a saving of 2,123 tonnes of marine diesel oil and of 6,593 tonnes of CO₂ emission per year was estimated. An investment plan will be defined in 2018 for interventions scheduled by management.

Route optimisation

Saipem continued to implement an initiative for route optimisation of its offshore and drilling vessels through the use of route optimisation software. The best route is detected each day by taking weather conditions and marine currents into consideration. In this regard, in 2017 software was applied to the FDS 2 vessel and to the Scarabeo 9 drilling rig, saving 51 tonnes of marine diesel oil and 157 tonnes of CO₂ emissions.

Route optimisation became a regular and good practice within Saipem's organisation and it should be evaluated and implemented for long routes. Indeed, the Oil & Gas industry has changed radically over the last few years and

FOCUS ON GREEN PARTNERSHIP BETWEEN SAIPEM AND SNAM

Snam and Saipem signed a Memorandum of Understanding in November 2017 to evaluate cooperation opportunities across the entire gas infrastructure value chain. The collaboration aims, amongst other things, to assess projects, initiatives and clients of common interest in gas transportation, storage and LNG, with a specific focus in the areas of infrastructure design, engineering and construction. The two companies will also cooperate to promote green technology solutions improving sustainability in the gas infrastructure sector. This will enable Snam and Saipem, along with its new business division XSight, to integrate their best practices and knowledge, thus reinforcing their positioning as reference partners in the global gas market.

current contracts are very often characterised by short term activities and the need for frequent long relocations. Within this context, route optimisation can be considered an efficient solution for reducing CO₂ emissions.

Innovative upgrades onboard Castorone

Modernisation and upgrading in 2016 of the switchboard and of the entire electrical system on board the Castorone were carried out. This led to improvements in the reliability of the vessel in dynamic position operations, in terms of asset integrity system strengthening, and a reduction in diesel consumption. The main improvements included reductions in: generator maintenance and therefore in the waste generated, fuel and oil consumption, noise and emissions into the atmosphere.

TOTAL SAVINGS IN 2017 tonnes of marine diesel

237

tonnes of CO₂

737

ENERGY EFFICIENCY FOR FABRICATION YARDS

A continuous effort in the Kuryk yard

In 2017, ERSAl built a new part of the Training Centre in the Kuryk yard using selected construction materials

and building technologies in order to achieve the highest energy efficiency.

EXPECTED SAVINGS

New building reduction
of energy consumption per m²
compared to the old one

-38%

Moreover, the lighting system of the yard was improved by implementing lighting automation and replacing old lamps with LED light (1,513 LED lamps installed).

EXPECTED SAVINGS

MWh of electric energy

4,334

Tonnes of CO₂

1,998

Quantifying the effectiveness of yard energy efficiency measures

In 2017, Saipem initiated a campaign to measure the energy efficiency of initiatives implemented throughout 2016 around its yards in order to validate the savings obtained in terms of energy consumption and CO₂ emissions. At the Karimun yard, after the implementation of measures such as a diesel generator power management improvement, replacement of damaged piping for compressed air lines, reduction of standby power for welding machines, etc., the savings were:

tonnes of diesel/year

522

tonnes of CO₂/year

1,650

Moreover, the savings connected with the use of around 50 solar panels in the yard were also estimated:

tonnes of diesel/year

59

tonnes of CO₂/year

188

TOTAL ENERGY CONSUMPTION

Year	Energy consumption/revenues*	Total energy consumption (ktoe)
2015	44.7	514.0
2016	41.3	411.7
2017	49.0	440.6

(*) Tonnes of oil equivalent produced per €1 million in revenue.

Energy consumption in 2017 increased by 7% compared to 2016, in line with the increase in operating activities. The projects that have contributed most to the increase in energy consumption include: Zohr (Egypt) which involved Castorone, Saipem 10000 and Normand Maximus, Hydrodesulfuring gas plant of Minatitlan Refinery Plant (Mexico), Tangguh LNG expansion (Indonesia), SCPX Pipeline (Azerbaijan), Jazan Integrated Gasification Combined Cycle and EPC Khurais (Saudi Arabia).

FOCUS ON TARGETING PROGRESSIVE DECARBONISATION OF ENERGY

Technologies are key for reducing the CO₂ fingerprint and gaining a competitive advantage. For this reason Saipem is pursuing several and diversified actions:

- In the renewable field, attention is focused on emerging technologies such as new marine, advanced wind farms and the use of hydrogen as a clean energy carrier produced by water with renewable energy.
- The application of novel hybrid approaches based on adoption of green technologies applied to the development of Oil & Gas operations.
- Energy storage technologies, both at small-mid and larger scale to better manage power consumption and to

- bring energy more easily to remote and confined areas.
- A technology portfolio to deal either with purification of Natural Gas from reservoirs with high content of CO₂ or capture of CO₂ from combustion flue gas in power generation and industrial processes. In particular, Saipem can master the whole Carbon Capture & Storage (CCS) chain thanks to its solid background in process technology, pipeline fluid transportation over long distances and onshore and offshore drilling. As a matter of fact, Saipem was selected in a Norwegian CCS project for the CO₂ transportation phase. Furthermore, CO₂ re-utilisation options are being intensely pursued as a first step of industrial exploitation of this kind of technologies.
- The development of circular solutions to sustainably treat waste or residual feedstocks with their consequent valorisation to energy and/or valuable products.

The same measurement was applied for the Intermare yard (in Italy) and SCNL yard (in Nigeria) in order to assess the real savings obtained following the implementation of a series of energy efficiency solutions.

SAVINGS AT ARBATAX AND SCNL YARDS

**MWh of electric energy
(Arbatax yard)** **165**

**tonnes of diesel
(SCNL yard)** **205**

**tonnes of CO₂ emission
(Arbatax and SCNL yards)** **719**

The results will be shared as best practices within the Group and will constitute a solid base for the investigation of further possibilities for reducing Saipem's environmental footprint.

ENERGY EFFICIENCY FOR ITALIAN OFFICES

In 2017, thanks to a few initiatives such as pull printing, which ensures the sustainable management of printers, the Jojob car sharing service and reduced summer work hours for offices, the following savings have been estimated:



CUTTING EDGE GREEN TECHNOLOGIES

In terms of new technologies based on a green design approach, the Moss Eco™ includes the development of a peculiar hybrid concept for application mostly to new or re-adapted drilling rigs. Other innovative solutions for reduced energy consumption are under scrutiny after the successful development, with the Politecnico di Milano, of a novel process scheme for the re-gasification of LNG.

tonnes of CO₂ emissions **94**

MWh of electric energy **197**

REPORTING EMISSION PERFORMANCE

Saipem developed an emission calculation methodology which was third-party certified. Saipem sites report GHG emissions and energy consumption on a quarterly basis. In 2018, the emission methodology will be updated to also include Scope 3 emissions for the first time.

TOTAL GHG EMISSIONS

Year	GHG emissions/revenues*	Scope 1 emissions**	Scope 2 emissions**
2015	134.5	1,504.2	43.0
2016	124.5	1,203.4	38.9
2017	144.4	1,299.7	37.5

(*) Tonnes of carbon dioxide (Scope 1 + Scope 2) equivalent produced per €1 million in revenue.

(**) kt CO₂ eq.