



# SAFETY FIRST

Safety is a real value at Saipem and an integral and key part of its business model. Saipem seeks to be a global leader in Health, Safety & Environment performance, just as it is in the management and delivery of EPC(I) and drilling projects for the Oil & Gas industry and in the design and construction of chemical plants, energy production facilities and infrastructures.

<b>Stakeholders to whom it matters</b>	<b>2016 Highlights</b>	<b>Saipem goals</b>	<b>UN GC Principles</b>	<b>Sustainable Development Goals</b>
	TRI frequency rate <b>0.78</b> <hr/> LiHS events <b>782</b>	<ul style="list-style-type: none"> <li>Promote and develop a safety culture (i.e. Life Saving Rules campaign and LiHS programme)</li> <li>Strengthen HSE audit planning system</li> </ul>		 

To guarantee the safety of all people – whether Saipem people, local communities or partners – Saipem has developed a comprehensive HSE Management System based on four principles: *'No injury to people nor the environment' is everyone's aim; manage employee, subcontractor, client and environmental risks in order to mitigate the impact of activities; promote and develop a safety culture; pursue continuous improvement.*

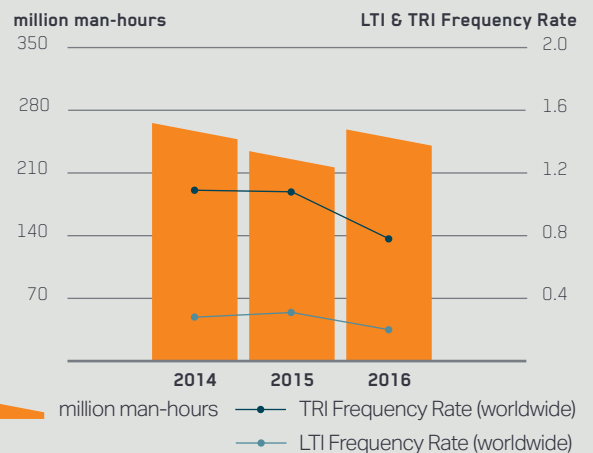
The Risk Assessment process, one of the most important HSE system processes, consists of different steps and aims to manage risks whose significance cannot be considered negligible. Since this process is dynamic, each risk assessment is reviewed periodically (at least every year) or in the event of any changes, new legal requirements or significant incidents. The HSE Management System Saipem has developed meets the requirements of all applicable laws and is certified to international standards ISO 14001 and OHSAS 18001. Saipem companies with an HSE significance assessed as 'high' employs about 32,000 people, of which more than 80% work for companies covered by third party issued ISO 14001 and OHSAS 18001 certifications.

In order to manage such a comprehensive HSE Management System, Saipem has:

- issued a formal corporate **HSE policy** (it defines strategic guidelines and reference principles);
- identified clear **responsibilities** (three levels of responsibilities identified, considering the proximity to the sources of risks);
- developed **training programmes** (they are an important part of the HSE system implementation and an important preventive action to reduce risks);
- implemented a **feedback collection system** (since safety performance includes feedback from contractor personnel, the HSE&S function contributes to the vendor feedback collection system by supporting the relevant procurement function).

For further information on Vendor feedback see page 51.

## SAFETY PERFORMANCE 2016



It should be noted that safety data, including project based HSE training, also includes Saipem's subcontractors operating within the work perimeter (not necessarily geographic) in which Saipem is responsible for designing, implementing and monitoring HSE standards.

A value of 0.78 TRIFR was recorded in 2016, significantly better compared to previous years, the annual target (1.04) and industry benchmark data. This result is definitely connected to the many initiatives aimed at maintaining occupational safety standards at the highest levels at all Saipem locations. Unfortunately one fatal injury occurred in 2016 to one of Saipem's subcontractors in an outdoor fabrication yard (located in the UAE) during the installation of pyramid supports required to support different structures and systems.

Further details on this performance can be found in the 'Sustainability Statements' of the Annual Report 2016.



## THE 5 LIHS PROGRAMME PHASES

PHASE 1 LIHS WORKSHOP	PHASE 2 CASCADING EVENTS	PHASE 3 FIVE STARS INTERVENTION	PHASE 4 LEADING BEHAVIOURS	PHASE 5 CHOOSE LIFE
Designed to involve management levels to strengthen their capabilities as Safety Leaders.	Cascading events to demonstrate a visible management commitment to the Company's safety vision.	Courses for operational personnel to induce them to intervene in case of unsafe actions.	Focused on 5 'non-negotiable' behaviours (Start, Recognise, Intervene, Challenge, Share) to spread positive attitudes and actions and eliminate the negative ones.	Campaign to encourage adopting a healthy lifestyle and making positive health choices.
<b>Workshops</b> 71	<b>Cascading events</b> 153	<b>Five Stars training workshops</b> 190	<b>Leading Behaviours cascading events</b> 347	<b>Choose Life workshops</b> 21

### A CONTINUOUS IMPROVEMENT APPROACH

The Management Review completes the continuous improvement cycle and lays the groundwork for the next planning cycle, drawing on the data and information made available by the HSE control system through monitoring, reporting and audit activities.

The HSE Review:

- analyses results with regard to defined objectives;
- verifies the execution, or progress, of any corrective or preventive actions defined in the previous Review;
- identifies improvement objectives for the subsequent period;
- records any changes which have occurred in the regulatory, internal or external context that affect HSE activities.

### LIHS PROGRAMME OVERVIEW

Leadership in Health and Safety (LiHS) is a cultural change programme whose aim has been, since its launch in 2007, to continuously improve Saipem's safety culture. LiHS is rooted in the strong belief that leadership is the key to achieving a cultural change within an organisation since leaders are the ones who direct others in the organisation to follow and represent the commitment to change. The methods used are innovative, based on interactive participation instead of lectures.

The participants are driven through discussions, group exercises and role-playing games by expert facilitators and together reach shared conclusions and answers.

The movie 'The safer the better' which is shown to participants helps to focus on the LiHS messages. Saipem leaders, starting from top management down to department and unit managers, are the first target of the LiHS programme which consists of 5 phases. Over the years the LiHS programme has evolved considerably and today projects and sites are encouraged to adapt the programme, tailoring the phases to match their specific practical needs, with the support of pools of LiHS facilitators and local LiHS teams. Furthermore, the programme sees the participation of clients and subcontractors.

#### Leadership in Health & Safety Offshore 'Re-boot'

As an outcome from the 'We Want Zero' campaign (WWZ, an initiative launched in 2014 that aims to reduce fatal accidents to zero within the organisation) and starting from 2015, a robust strategy was developed to 're-boot' the LiHS campaign within the fleet to strengthen the level of engagement. Saipem Offshore Business Unit managers expressed their own personal commitment to lead the process. To support vessel management in the implementation, a 2-day workshop was developed around the fundamental questions relating to safety leadership and organisational safety culture, and the provision of tools to enable participants to return to their respective work locations with the knowledge and skills to allow a very real 'move to action'.

Based on the lessons learned in previous experiences, Vessel Management Teams (VMT) and their first line

supervisors were directly involved to positively influence the majority of the personnel on-board their vessel. First line supervisors are often young, energetic and as such, the perfect target for creating and spreading a new generation of 'conscious' Safety Leaders.

**Workshops delivered between October 2015-December 2016**

**10**

Following the workshop, the second phase of the LiHS process saw the 'cascade' of the VMT's personalised Safety message to their front-line supervisors as well as delivery of the Leading Behaviours campaign (LiHS Phase 4).

**Leading behaviour events**

**184**

**Personnel involved**

**3,223**

Since the role of the front-line supervisor is critical to the success of the campaign, a one day 'LiHS for Supervisors' workshop was developed in line with the Saipem safety culture, 5 Stars intervention (LiHS Phase 3) and the Leading Behaviours (LiHS Phase 4).

While all Saipem vessels were engaged in the first part of the re-boot process, a maintenance phase with the aim of supporting the vessels with their current campaigns (LiHS phase 2, 3 and 4 activities) is ongoing. Furthermore, the delivery of the Choose Life campaign (LiHS Phase 5) will start in 2017 after a series of *Choose Life train the trainer* workshops were performed in 2016 in order to train doctors from Saipem vessels to be aligned with Choose Life tools and methodology.

**LIFE SAVING RULES CAMPAIGN**

Saipem's process towards the goal of achieving zero accidents started by implementing LiHS in phases and continued with the introduction of the Life Saving Rules (LSR), the 'gold standards' for safety compliance within

## **SAFETY LEADERS CHAMPIONSHIP IN THE DRILLING BUSINESS UNIT**

As a We Want Zero initiative, the 'Safety Leaders Championship' was developed to increase individual and collective leadership, rewarding initiatives promoting operational safety and operational improvements performed by personnel, empowering the crew to intervene and stop unsafe acts and stimulating participation in HSE training courses. While in 2015 the contest was organised on board the Saipem 12000, in 2016 it involved management and crew personnel of Saipem 10000 and Perro Negro 8.

### **Saipem 10000**

The Campaign was presented on June 20, 2016 with a meeting that saw the participation of the entire management on board and in which the guidelines of the campaign, methods and aims of the project were defined. Once defined, the initiative was presented to the crew in two training sessions and during the General Safety Meeting. The 22 teams involved got into the spirit of the initiative right from the start, observing and reporting unsafe situations and conditions, sharing information and giving way to a correction, improvement and prevention process.

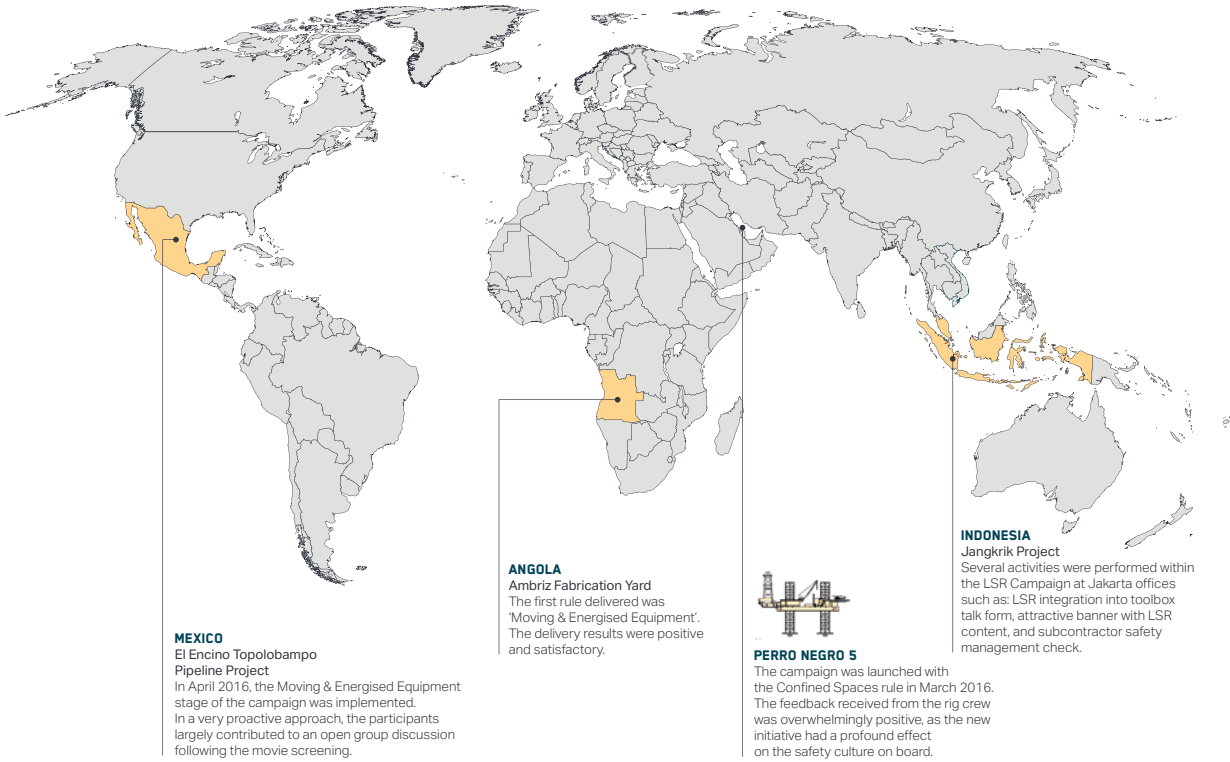
On September 25, 2016, the Saipem 10000 celebrated its second LTI-free year: an excellent goal to which the Safety Leaders Championship also contributed.

### **Perro Negro 8**

Managing safety effectively on board an offshore rig is not an easy task. For this reason the Safety Leaders Championship programme was launched on Perro Negro 8 at the beginning of 2016. The initiative was fully supported by the Rig Management and it involved the entire rig crew: 12 teams from 3 departments (drilling, technical and marine) actively participated in the 6-month programme. Each team was led by a Safety leader, changed on a bi-weekly basis, who provided support and encouraged team members to work safely to achieve good operational and safety performance results. One of the outcomes of the Championship was the increased number of the Safety Hazard Observation Cards (SHOC) submitted compared to the previous period, with an average of 1,500 submissions per month. 10% of SHOC were about workforce personnel interventions to correct an unsafe act or condition.

On October 24, 2016, Perro Negro 8 celebrated 1 year without a Lost Time Injury.

**EXAMPLES OF LSR CAMPAIGN IMPLEMENTATION AT LOCAL LEVEL**



the Saipem industry implemented by the 'Institute of Oil & Gas Producers' Association (IOGP).

To ensure companywide awareness of the rules and considering its high level of multiculturalism, Saipem's challenge was to unify its personnel in embracing a common safety vision. To adapt the campaign to its specific context, being more efficient and effective, Saipem has developed its own campaign, based on the IOGP guidance but more accessible to its people, increasing the awareness of the rules, their scope and individual personal expectations.

Out of a total of 18 Life Saving Rules, Saipem selected its own key rules based on an analysis of its safety performance and risk profile which resulted in the identification of 3 core rules (Safe Working at Height, Confined Spaces and Moving & Energised Equipment) and 3 supplementary rules (Personal responsibilities, Vehicle operations, Operation specific rules).

To stress the importance and safety message of the campaign, videos on Saipem core and supplementary rules were recorded, inviting all the viewers to critically consider a fundamental and common question: *what extra effort can you make for this process to be even safer?* The campaign was launched by Saipem's CEO at the end of 2015 and, via cascade meetings, communicated to business unit managers, who 'kicked-off' the campaign

within their own respective units by organising events with their reporting management teams. At local level, campaigns have been implemented since 2016.

<b>People reached by the LSR campaign launch, including clients and subcontractors*</b>	<b>+5,500</b>
<b>LSR campaigns launched since the beginning*</b>	<b>108</b>
<b>People reached by each stage of LSR campaign since the beginning*</b>	<b>+24,000</b>

(\*) Figures as at January 10, 2017.

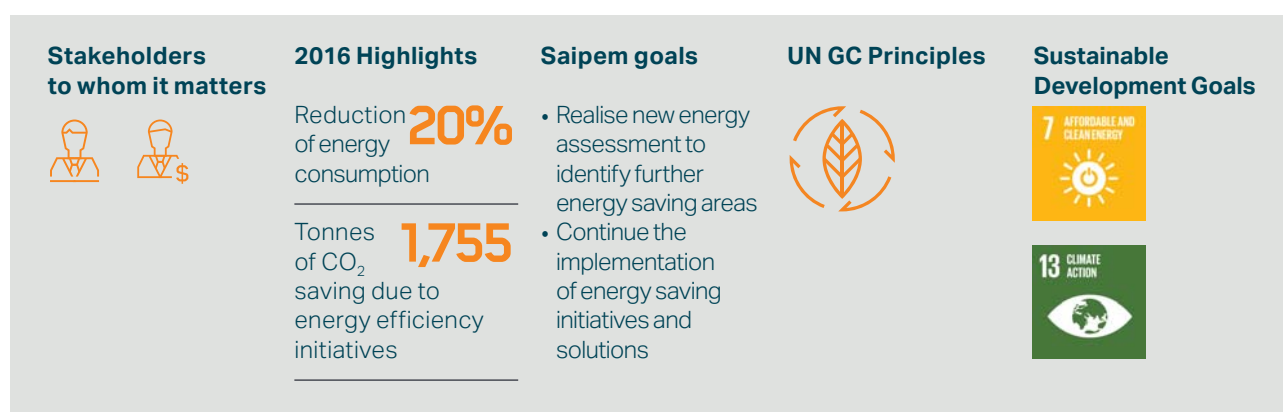
# SAFEGUARDING THE ENVIRONMENT WHILE OPERATING

Saipem has adopted an Environmental Management System certified in accordance with the international standard ISO 14001, a tool for minimising and keeping any environmental impact arising from its activities under control, as well as for regularly striving for continuous improvement. Environmental aspects pertaining to all activities performed both directly by Saipem and by its subcontractors are systematically identified and assessed.

Saipem pursues continuous improvement for its environmental performances. A key element of this strategy is promoting a well spread environmental awareness and the implementation of best practices at all Saipem construction sites and projects. These also include pollution prevention, energy and water saving, and promoting waste reutilisation and recycling. As an official member of the UN Global Compact from whose Ten Principles it draws inspiration, Saipem's commitment to the environment also falls within its adherence to Principles 7, 8 and 9.

## SAIPEM'S APPROACH TO ENERGY EFFICIENCY

Saipem is constantly committed to the containment of greenhouse gas (GHG) emissions resulting from its activities. Growing attention to climate change issues represents not only a commitment for Saipem but also an opportunity.



Saipem's approach to energy efficiency (and consequently emissions) has become increasingly more structured over the years, developing a method for estimating emissions for each specific source of emissions. All Saipem projects and sites monitor and communicate energy consumption and air emission data on a quarterly basis.

Energy assessments have been carried out since 2013 on a number of offices, vessels, work sites and drilling vessels. Over the years, Saipem has implemented many initiatives aimed at increasing the energy efficiency of its operations, for example the optimisation of the shipping routes for its vessels. It has also structured several training tools to increase knowledge and raise awareness on environmental issues, such as participation in international campaigns, organising events and drafting and disseminating communication tools. Saipem has answered the 'Carbon Disclosure Project' questionnaire relative to the Company's approach to climate change since 2009.

### ENERGY EFFICIENCY ASSESSMENTS

In recent years Saipem performed energy efficiency assessments at 14 sites, 4 of which were performed in

2015: Karimun Construction Yard (Indonesia), Arbatax Construction Yard (Italy) and two Italian office buildings. The choice of assets to be analysed is decided based on criticality in terms of consumption, level of control, real possibility of intervention, and need for regulatory compliance.

In 2016, Saipem implemented all the most cost effective measures identified during the previous years' audits in order to reduce energy consumption, CO<sub>2</sub> emissions and operational costs.

The measures implemented include:

- Diesel generator power management improvement (utilisation of diesel generators at their most efficient load of work);
- Limitation of equipment stand-by power consumption (best practice of turning off equipment instead of leaving it in stand-by);
- Limitation of artificial light usage during daytime;
- Repair of damaged pressurised air lines;
- Implementation of VFDs (Variable Frequency Drivers);
- Implementation of more efficient lighting systems (substitution of neon with led).

## GOALS AND TARGETS

Saipem constantly strives to improve energy efficiency and reduce GHG emissions. This process is expected to be carried out throughout 2017 by implementing the following steps:

- extending the energy assessments to 5 more vessels chosen considering their expected lifetime and workload;
- extending the use of the route optimisation software to the offshore drilling fleet;
- utilising the study 'Technologies for the Energy Efficiency and for the Minimisation of the Environmental Impact for new Accommodation Camps in Onshore Projects and for Other Assets' to implement environmentally friendly technologies in different accommodation camps;
- issuing the standard procedure 'Identification of significant environmental and social aspects'.

In 2017, Saipem will evaluate the effectiveness of the measures implemented by tracking the energy consumption of the sites involved.

## ESTIMATED SAVINGS AT KARIMUN AND ARBATAX YARDS IN 2016

litres of diesel	545,681
MWh of electric energy	144
tonnes CO <sub>2</sub> emission	1,523

## OPTIMISING ENERGY SAVING IN OFFICE BUILDINGS

Saipem at the end of 2015 moved the offices of the Ravenna logistic base (Italy) from the old prefabricated building to a newer building where several energy efficiency systems were adopted:

- walls and windows with high thermal insulation;
- high efficiency HVAC (Heating, Ventilating and Air Conditioning) units and water boilers;
- automatic lighting activated by photocell in common toilet;
- autonomous temperature management system for each room.

## SAVINGS AT RAVENNA LOGISTIC BASE IN 2016

MWh	114
tonnes CO <sub>2</sub> emission	51

A photovoltaic system comprising 56 modules was installed on the roof (16.8 kW peak in total), that went on line in January 2016.

In contributing to the above mentioned savings, the photovoltaic panels led to a saving of 7 tonnes of CO<sub>2</sub> emissions and produced 18.5 MWh.

## ROUTE OPTIMISATION

In 2016, Saipem continued the initiative of voyage optimisation for offshore vessels through the use of Route optimisation software. The software was applied to Bar Protector, FDS and FDS2.

Route optimisation consists of the identification, through real time satellite evaluation, of the optimal route a vessel should follow in order to reduce navigation time and therefore fuel consumption. The best route is detected each day by taking weather conditions and marine currents into consideration. Starting from 2017 route optimisation will be standardised for every long route.

## SAVINGS BY ROUTE OPTIMISATION IN 2016

tonnes of fuel	58
tonnes of CO <sub>2</sub> emission	181

## REDUCTION OF ENVIRONMENTAL IMPACT OF ACCOMMODATION CAMPS

Saipem onshore projects are usually located in remote areas, often requiring temporary camps for Saipem workers. These camps represent a significant part of energy consumption.

Therefore, in 2016 Saipem developed the study 'Technologies for the Energy Efficiency and for the Minimisation of the Environmental Impact for new Accommodation Camps in Onshore Projects and for Other Assets' to identify technologies that could bring savings in energy and water consumption and improve waste management.

In addition, operative tools were developed that could support the choice of the best technologies to implement.



## FOCUS ON REDUCING CO<sub>2</sub> EMISSIONS (ENERGY EFFICIENCY, CO<sub>2</sub> MANAGEMENT AND RENEWABLES)

The conclusions of COP-21, targeting containment of the mean temperature increase to 'well below 2 °C' by the end of the century, will require extensive deployment of measures to reduce CO<sub>2</sub> emissions into the atmosphere. Saipem is building a technology portfolio to address different options:

- technologies to improve energy efficiency;
- CO<sub>2</sub> management: i.e. purification of natural gas from reservoirs with a high CO<sub>2</sub> content or directly capturing CO<sub>2</sub> from combustion flue gas in power generation and industrial processes;
- technologies in the field of renewables.

### Technologies for improving energy efficiency

The development of a novel process scheme for the re-gasification of LNG with reduced energy consumption was completed in collaboration with *Politecnico di Milano*.

For further information see the chapter 'Innovation: the key to competitiveness'.

### CO<sub>2</sub> management

There is considerable promise for power generation from natural gas in this field, including the capture

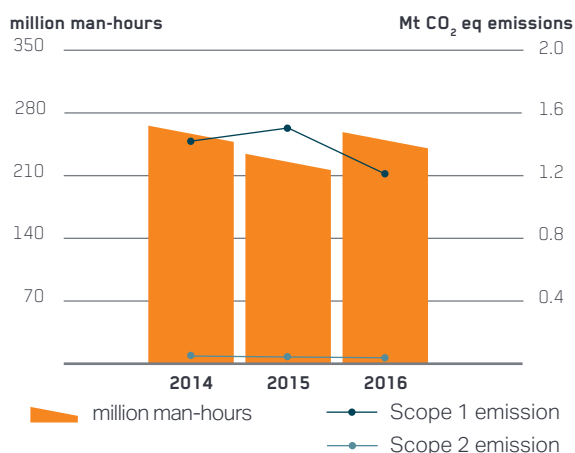
of CO<sub>2</sub>, while maintaining high transformation efficiency. Novel cycles using supercritical CO<sub>2</sub> as a working fluid appear to be an interesting solution. Worldwide deployment of Carbon Capture, transportation and geological Storage (CCS) will be necessary to hit the targets of global warming mitigation set by the COP-21 agreement. By taking advantage of this trend, Saipem can master the whole chain of CCS thanks to its solid background in process technology (particularly in the field of Urea, where management of CO<sub>2</sub> is a standard feature), pipeline fluid transportation over long distances and onshore and offshore drilling.

Exploitation of gas fields with a high CO<sub>2</sub> content may be an early step in applying CCS techniques. In addition, other technologies are being studied such as cryogenic separation which may be a flexible approach for application to different situations.

### Technologies in the renewables field

Efforts are mostly concentrated in offshore wind, the most synergic source with Saipem's characteristic core activities: several new solutions are being developed in the field.

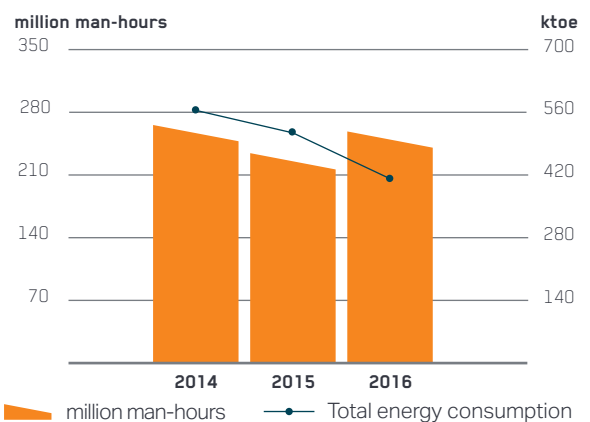
## TOTAL GHG EMISSIONS



In 2016, the total value of Saipem Scope 1 emission was 1,203.4 kt CO<sub>2</sub> eq (1,504.2 in 2015 and 1,420.1 in 2014). Regarding the scope 2 emissions the total value was 38.9 kt CO<sub>2</sub> eq.

Further details on this performance can be found in the 'Sustainability Statements' of the Annual Report 2016.

## TOTAL ENERGY CONSUMPTION



In 2016, Saipem consumed 411.7 ktoe of energy (514.0 in 2015 and 564.3 in 2014). Energy consumption by worked-man hours decreased significantly in 2016 (1.59) compared to 2015 (2.19) and 2014 (2.12).

Further details on this performance can be found in the 'Sustainability Statements' of the Annual Report 2016.



# SAIPEM'S APPROACH TO SPILL PREVENTION AND RESPONSE

In line with its HSE Policy and Corporate Standards, Saipem adopted a pollution prevention approach as a guiding principle for all of its activities, using its best efforts to prevent and take all reasonable precautions to avoid pollution or contamination of the land, air or water.

Stakeholders to whom it matters	2016 Highlights	Saipem goals	UN GC Principles	Sustainable Development Goals
	Training man-hours delivered on spill management issues <b>20,180</b> <hr/> Oil spill mappings completed <b>18</b>	<ul style="list-style-type: none"> <li>Reduce the frequency and the volume of spills</li> <li>Improve spill response measures and system</li> </ul>		 

Given the results of risk analysis on Saipem operations, spill prevention and preparedness are a top priority. Saipem performs its operational activities to avoid the risk of a spill or, whenever a contingency occurs, to implement measures and actions to prevent its escalation.

Saipem's strategy to prevent and manage spills is based on the following cornerstones:

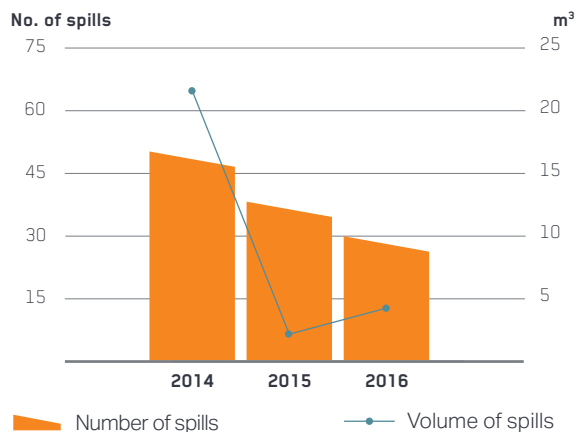
- Prevention:** action has been taken to harmonise and improve processes and the operational control of those sites and vessels most at risk.
- Training and preparedness:** specific training packages are periodically delivered on spill prevention and spill drills to strengthen emergency management skills.
- Emergency response:** all Saipem sites have the necessary equipment to tackle any emergency which may arise.
- Reporting:** the data concerning spills and 'near misses' are monitored and subsequently analysed to assess the causes and prevent recurrence. Each quarter, environmental bulletins and reports are disseminated throughout the Group in order to share the 'lessons learned'.

Fully aware that even under the best conditions emergency response and recovery may only be partially effective, Saipem is strongly committed to improving 'Prevention' and 'Preparedness'. This means that prevention is by far the most important area to be taken into account as well as being the most cost effective. Starting from the identification of the main situations in which a spill of pollutants may occur, specific procedures define systems to control and avoid any release. All personnel involved in spill responses are duly trained in emergency drills carried out regularly as part of annual drill plans, also in collaboration with clients and other entities involved. Drills take into account various scenario types in order to foresee all possible kinds of spills.

## Spill drills performed

**405**

## SPILL NUMBER AND VOLUME



The spill number (30) decreased in 2016 compared to 2015 (38) and 2014 (50). Although the spill volume increased compared to 2015, the value is still contained.

All incidents are reported and investigated appropriately in order to establish the causes and identify corrective actions to prevent such events from happening in the future.

[Further details on this performance can be found in the 'Sustainability Statements' of the Annual Report 2016.](#)

## OIL SPILL RISK ASSESSMENT

In 2015, Saipem started to plan performing spill risk assessments for all its assets. Through a rigorous and consistent method, the assessments assigned a risk level for every piece of equipment on site in order to evaluate





## FOCUS ON OIL SPILL PREVENTION

Saipem has a very important tradition in the field of Oil Spill Response and has been involved in different and significant experiences such as the deepwater oil recovery loss from the Prestige oil tanker in Spain in 2004, plus other experiences in the Far East between 2007 and 2010. In addition, Saipem has also offered a comprehensive Oil Spill Response service to Eni over the years, including related training activities. The continuous development of innovative methodologies and solutions for 'oil spill response preparedness' has recently resulted in the acquisition of a major project ('Subsea Well Response Project' - SWRP) for a consortium of oil companies.

- **Offset Installation System** in the framework of SWRP: SWRP is a non-profit joint initiative of a few major Oil & Gas companies, aimed at developing solutions to respond quickly and efficiently to future subsea well-control incidents. SWRP has assigned a contract to Saipem for the engineering, procurement, fabrication and testing of the Offset Installation Equipment, a tool designed to install a capping stack on a blowout well without requiring direct vertical access. This will allow support vessels to stay outside the zone in which it is unsafe to operate.

More in general, an extensive and unified endeavour in the field of 'oil spill monitoring & intervention', involving all of Saipem's offshore, onshore and drilling businesses, is currently underway:

- **Early Warning Integrated System (EWIS):** this system, developed with an Italian aerospace company, will be an innovative data collection and decisional support platform for a very early and effective response to oil spills. It is a well-known fact that the best way to minimise environmental damage in the event of an incident is to take proper action in the shortest possible time. It is estimated that oil spills should be secured within 72 hours of their occurrence to avoid major negative consequences. EWIS will collect, integrate and elaborate data from different sources (satellite, aerial, radars, fixed observational structures, etc.) related to the detection, movement and degradation of oil slicks.
- **Intervention Tool for cleaning Oil spills:** the current response service generally relies on technologies that are mainly based on contaminated water containment, oil particles breaking-up by use of chemicals and shipment of the recovered oil to shore for dedicated treatment. The aim of Saipem's proprietary solution would be to provide worldwide availability of modular and containerised 'plug and play' units for easy transport and lifting/installation onto offshore vessels.

wherever the risk is unacceptable and to provide a priority order for the implementation of risk reduction measures. This consists of 3 different steps:

1. Mapping all the equipment capable of generating oil spills or other substances hazardous to the environment;
2. Assessing the risk through a qualitative evaluation of:
  - a. Probability of release;
  - b. Magnitude of the consequences for the environment;

3. Implementing prevention and mitigation measures. In 2016, Saipem completed the mapping for almost the entire offshore construction fleet (15 vessels mapped), of 2 offshore drilling rigs (Scarabeo 9 and Saipem 12000) and of one drilling barge (TAD). Moreover, in 2017 Saipem plans to complete the Oil spill mapping of all the offshore drilling rigs, perform several Oil spill risk assessments and start the implementation of risk reduction measures.