



PROJECT SUSTAINABILITY REPORT

MOROCCO

TANGER MED 2



ABOUT THIS PROJECT REPORT

This Report is part of a series of Local Sustainability Reports that Saipem began publishing in 2003 as 'Sustainability Case Studies' with the purpose of underlining the importance the Company ascribes to local business sustainability.

Along with the annual Sustainability Reports and the Country Sustainability Reports, the Project Sustainability Reports represent the main tools adopted by Saipem to communicate to all stakeholders the Company's commitment and performance with regard to sustainability.

A Project Report focuses on a specific project and describes the principles, activities and performance of Saipem in relation to sustainable development. It is designed to provide easy access to key indicators and information and is divided into two parts: the first provides an overview of Saipem and its business around the world, while the second introduces the country in which the project is executed and then goes on to describe the project itself, as well as its sustainability performance.

The current document aims to describe Saipem's performance and its engagement with stakeholders in Morocco during the execution of the Tanger Med 2 Project.

A set of Key Performance Indicators (KPIs) was selected to bolster the information provided to stakeholders.

The consolidation perimeter is based on the principles adopted for financial reporting and annual sustainability reporting. Data for the Company's performance reported in the document have been drawn from the management and reporting systems used by the various Company functions involved in the reporting process.

The Project execution period was from 2010 to 2014. Data are reported for the entire period unless otherwise indicated.

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MESSAGE FROM THE CEO



Stefano Cao

It is with great pleasure that I introduce this collection of Local Sustainability Reports which, along with the annual Sustainability Report and the Saipem Website, represent an integral part of our Sustainability communication tools.

Indeed, these Reports aim to provide insights into how Saipem operates at local level, our commitment to long-term value generation and our effective engagement with local stakeholders.

Saipem operates worldwide as a provider of services to the Oil&Gas industry. However, we seek to apply our Sustainability approach regardless of the location of our projects. This involves creating long-term value for all

our stakeholders, as well as maximising socio-economic development opportunities while at the same time minimising the adverse impacts of our operations.

Saipem bases itself on this wide-ranging and inclusive approach to Sustainability. But the variety of projects we undertake, and the differences between countries where our activities are performed, demand the development of distinctive local plans and initiatives.

The aim of this Project Report, therefore, is to provide a specific case study in order to facilitate greater understanding of how we aim to achieve our long-term Sustainability goals in general.

MISSION

Pursuing the satisfaction of our Clients in the energy industry, we tackle each challenge with safe, reliable and innovative solutions. We entrust our competent and multi-local teams to provide sustainable development for our Company and the communities where we operate.

LETTER FROM THE PROJECT MANAGER



For 10 years Saipem and its partners have been involved in the development of key harbour infrastructures as part of the advancement of the North part of the Kingdom of Morocco. The third harbour, Tanger Med 2, a container terminal, has just been completed, and follows Tanger Ro-Ro and Tanger Med 1.

During these projects, and especially the most recent one, sustainability was a key concern for Project Management, convinced as it was that the success of the project could only be achieved if the safety of staff was ensured. To this end, the project was fully integrated into the surrounding area and fulfilled the needs of all stakeholders.

In order to achieve our goal, with the involvement of all staff, we channelled our actions towards:

- Training local people on construction jobs, including maritime works. These were mainly farmers not used to working on construction sites. By training them, we were able to increase Local Content, including at management level.
- Integration, beginning from design stage, of environmental constraints, such as site water drainage, waste management and waste concrete treatment plants, that were even more stringent than local regulations.
- Developing relationships with the local community by performing actions such as building schools, renovating houses, and providing fresh water to villages from wells drilled in our quarry.
- Taking care of our staff by installing health facilities on site and performing vaccination campaigns.

Since sustainability represents a core principle for Saipem, we worked to improve our practices continuously in order to achieve operational excellence and ensure the safety of our people on present and future projects.

Antoine Bidault
Tanger Med 2 Project Manager



PROJECT OVERVIEW

Tanger Med 2 project

The Tanger Med 2 project, located in Tangier, Morocco, involved the construction of primary and secondary breakwaters, as well as docking works for the new port of Tanger Méditerranée II. Specifically:

- A primary breakwater of 3,700 m, with a rubble mound armoured with Accropode™ of 1,040 m and reinforced concrete caissons shored up by an inner seawall of 2,710 m (95 caissons).
- A secondary rubble mound breakwater of 700 m, with rubble mound portion of 377 m and caissons of 341 m in length (10 caissons).

To construct these facilities, a wide array of activities was carried out, including earthworks, concrete prefabrication works, civil engineering works for superstructures, construction of dams, transport of materials, dredging, quarrying and marine works, such as material dumping with split barges or caisson and Accropode™ placing.

The project commenced in 2010 and was delivered in November 2014.



INTRODUCTION TO SAIPEM

Saipem is an international group with a strong bias towards Oil & Gas related activities in remote and deepwater areas. The Company began operations in the 1950s and is now a leader in the provision of engineering, procurement, project management and construction

services with distinctive capabilities in the design and execution of large-scale offshore and onshore projects.

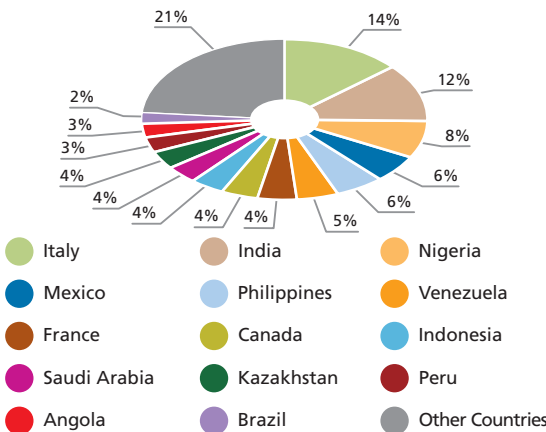
Saipem operates in the Engineering & Construction and Drilling businesses. It enjoys a superior competitive position for the provision of EPC/EPCI services to the oil industry both onshore and offshore, with a particular focus on the toughest and most technologically challenging projects, particularly those in remote areas, deep waters or involving 'difficult' oil.

The Group is a truly global contractor, with a strong local presence in strategic and emerging areas such as West Africa, the Americas, Central Asia, the Middle East, North Africa and Southeast Asia.

Saipem is an international company employing over 54,000 people from approximately 131 nationalities (2014).

The majority of the Group's human resources (79% in 2014) are locally employed.

Saipem workforce distribution by nationality (2014)



★ EPCI Hubs



● Engineering Centres



□ Yards and Main Logistic Bases

▲ Other Main Areas and Representative Offices

SAIPEM'S SUSTAINABILITY APPROACH

Saipem believes that a correct, open and cooperative relationship with all stakeholders is vital for the success of a project. Saipem is present in many locations around the world and operates with a decentralised organisational structure in order to respond to local needs and sustainability requirements.

Wherever it works, the Company plays an active role in local communities by offering employment opportunities and personnel training, working effectively with local suppliers and subcontractors, creating economic and social value and, finally, contributing to infrastructures

such as access roads, and construction camps with facilities such as hospitals, power generators, and so forth.

The breadth of Saipem's international workforce is another facet of sustainability: all personnel are treated with dignity, and their rights, cultural values, local customs and traditions, diversity and identity are at all times respected.

For each project, social, economic and environmental impacts are evaluated and continuously monitored in conjunction with the pursuit of customer satisfaction.



SAIPEM AT A GLANCE

Saipem has world class engineering and project management expertise together with a strong, technologically advanced and highly versatile fleet. The Company operates in the Engineering & Construction and Drilling businesses.

Onshore, Saipem mainly serves the Oil & Gas segments, the refining and petrochemical markets, as well as a number of diversified industrial markets such as infrastructures (i.e. high speed railways, port facilities and marine terminals) and environment (especially remediation of soil, ground water and contaminated sites).

Saipem offers a complete range of services, from feasibility and front-end studies to design, engineering, procurement and field construction, most often on an EPC (Engineering, Procurement and Construction) and LSTK (Lump Sum Turn Key) contractual basis, for complex Oil & Gas facilities, including production, treatment, liquefaction, refining and petrochemical plants, as well as for Oil & Gas transportation systems, such as pipelines, pumping and compression stations and terminals.

Saipem's expertise focuses on the design and execution of large projects with a high degree of complexity in terms of engineering, technology and project management, with a strong bias towards challenging projects in the most difficult environments and remote areas.

Saipem has designed and built numerous 'mega' Oil & Gas production facilities, 36 grass-roots refineries and more than 500 individual refining process units, as well as more than 400 plants worldwide to produce chemicals from natural gas, including the world's largest ammonia/urea complexes.

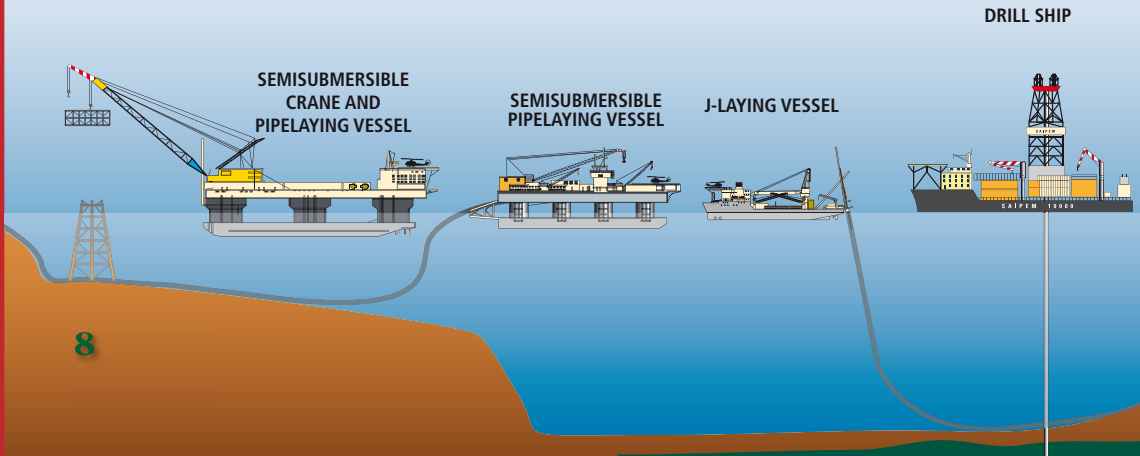
In particular, land pipeline design and construction has historically been one of the mainstays of Saipem's business. The Company has laid a record of over 60,000 km of gas pipelines, 30,000 km of oil and product pipelines and 1,400 km of water pipelines on five continents.

In recent years, the Company has designed and constructed more than 40 power plants (over 10,000 MW) and four Integrated Gasification Combined Cycle plants, two of which are the world's largest (power output of about 550 MW each).

Offshore activities include platforms, marine terminals, pipelines and the development of deepwater fields.

Experience in EPCI (Engineering, Procurement, Construction and Installation) projects hinges on trunklines, export pipelines, infield flowlines, pipe-in-pipe systems, bundles, tie-ins and riser systems for the transportation of oil, gas and multi-phase products from depths in excess of 2,000 metres.

With a fleet of over 40 construction



vessels, the Company is a leader in deepwater and shallow water pipelaying and platform installation with more than 35,000 km of sealines and more than 2.5 million tonnes of offshore structures installed. The Company has completed more than 100 major EPCI projects, including several challenging large-scale integrated complexes.

Saipem is also involved in the construction of marine terminals, mooring systems with conventional buoys, wharfs and jetties. All of this is bolstered by significant fabrication capabilities based in the heart of major Oil & Gas provinces such as Angola, Canada, Republic of the Congo, Kazakhstan, Nigeria, United Arab Emirates, the Mediterranean Sea, Indonesia and Brazil, with an aggregate in-house fabrication capacity of over 250,000 tonnes per year. In addition to that, the design, construction or conversion of floating production units has become one of Saipem's main business activities since the early nineties.

Thanks to the development of competitive technical solutions, relationships with key players and presence in strategic markets, together with its unique EPCI experience and track record of four new-builds and seven conversion projects, Saipem has become a reliable general contractor

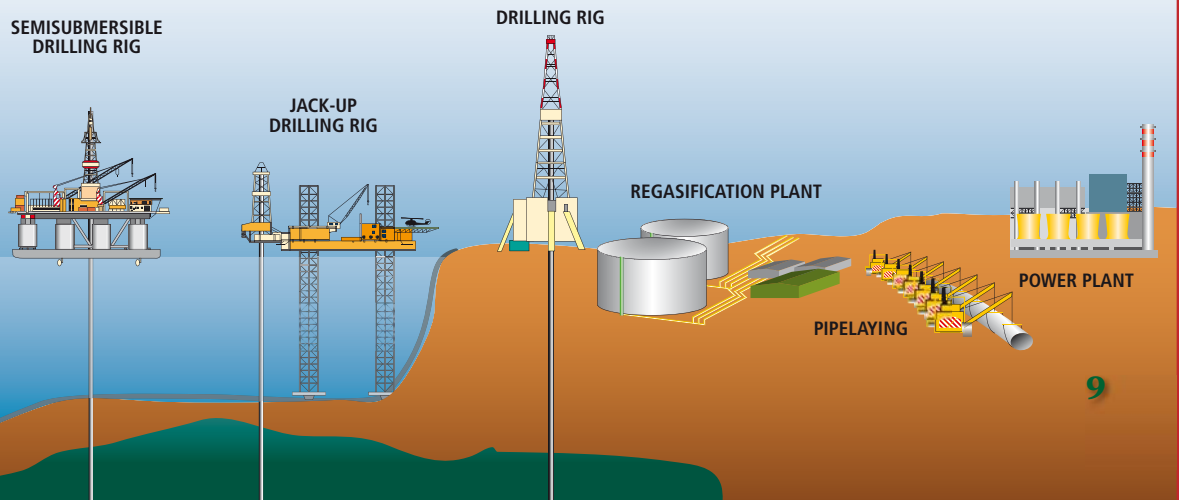
for the provision of floating solutions worldwide.

As an international drilling contractor operating in some of the harshest onshore and offshore environments, Saipem is presently contracted to major oil companies in many of the Oil & Gas industry's 'hotspots', carrying out important drilling programmes in Europe, the Commonwealth of Independent States (CIS), North and West Africa, the Middle and Far East and the Americas.

Coupled with its strong technological and operational expertise, Saipem's vast experience in managing drilling activities has enabled it to build a proven capability and a global reputation in the industry.

In Offshore Drilling, the Company boasts an extensive fleet with six jack-ups, a Tender Assisted Drilling Barge, seven semisubmersible drilling rigs and two drillships (the Saipem 10000 and the Saipem 12000) which can operate at depths of up to 10,000 and 12,000 feet, respectively, while in the onshore sector, Saipem owns in the region of 100 drill and workover rigs.

Over the decades, Saipem has drilled more than 7,300 wells (1,800 of which offshore), totalling an overall depth of about 18.5 million metres, and has been involved in the workover of hundreds of well.



SAIPEM IN THE WORLD

EUROPE		2012	2013	2014
Revenues	(€ million)	1,781	1,482	1,709
Investments	(€ million)	31	34	36
Workforce	(units)	11,133	10,364	11,303
Local Workforce	(% of total)	75	84	83
Energy consumption	(ktoe)	98	74	76
HSE Training	(hours)	129,309	55,655	85,134

AMERICAS		2012	2013	2014
Revenues	(€ million)	1,808	2,371	3,192
Investments	(€ million)	136	256	126
Workforce	(units)	7,825	12,168	14,315
Local Workforce	(% of total)	88	84	84
Energy consumption	(ktoe)	101	115	133
HSE Training	(hours)	225,351	241,955	382,073

CENTRAL & SOUTH AFRICA		2012	2013	2014
Revenues	(€ million)	2,482	2,163	2,815
Investments	(€ million)	8	14	14
Workforce	(units)	7,586	8,563	9,074
Local Workforce	(% of total)	64	58	65
Energy consumption	(ktoe)	84	112	48
HSE Training	(hours)	146,551	104,332	200,802

NORTH AFRICA		
Revenues	(€ million)	
Investments	(€ million)	
Workforce	(units)	
Local Workforce	(% of total)	
Energy consumption	(ktoe)	
HSE Training	(hours)	

Additional data for investments

Further investments not allocated to a specific area amounted (in € million) to 717 in 2012, 400 in 2013 and 336 in 2014.

CIS		2012	2013	2014
Revenues	(€ million)	1,352	1,241	1,187
Investments	(€ million)	13	17	26
Workforce	(units)	3,491	3,237	3,684
Local Workforce	(% of total)	62	66	70
Energy consumption	(ktoe)	37	46	47
HSE Training	(hours)	101,054	115,872	86,491

REST OF ASIA & OCEANIA		2012	2013	2014
Revenues	(€ million)	1,241	1,210	1,078
Investments ¹	(€ million)	107	178	154
Workforce	(units)	6,699	5,679	5,070
Local Workforce	(% of total)	78	77	78
Energy consumption	(ktoe)	39	67	48
HSE Training	(hours)	105,424	66,240	58,443

2012	2013	2014
1,494	663	589
3	3	2
4,379	3,113	1,134
85	83	77
66	27	19
123,113	34,825	13,349

MIDDLE EAST		2012	2013	2014
Revenues	(€ million)	3,211	2,711	2,303
Investments	(€ million)	-	-	-
Workforce	(units)	7,342	9,033	10,057
Local Workforce	(% of total)	82	82	83
Energy consumption	(ktoe)	168	180	150
HSE Training	(hours)	856,456	904,532	630,006

(1) including Middle East.

MOROCCO



COUNTRY OVERVIEW

The Kingdom of Morocco is a constitutional monarchy of about 30 million people. Its capital is Rabat.

Morocco has capitalised on its proximity to Europe to build a diverse, open, market-oriented economy.

Since 1999, the Kingdom has been characterised by a stable economy marked by steady growth, low inflation,

and gradually falling unemployment. Industrial development strategies and infrastructure improvements are making Morocco more and more competitive.

Nowadays, Morocco is experiencing significant economic growth, mainly due to the political stability of the country. Key sectors of the economy

include agriculture, tourism, phosphates, textiles, apparel, and subcomponents. Morocco also seeks to expand its renewable energy capacity with a goal of 40% renewable electricity output by 2020.

(Source: African Economic Outlook, Morocco 2014 and CIA The World Factbook)

ECONOMIC OUTLOOK

Morocco has invested in targeted sectorial strategies to accompany reforms and to accelerate the transformation and diversification of its economy, leading to more

employment. The National Pact for Industrial Emergence (PNEI, 2009-15) aims to revive the industrial sector and boost its competitiveness, and is thus an important framework for launching industries in which Morocco can be considered more competitive. From this

Economic indicators (2012)

GDP Gross Domestic Product ⁽¹⁾	(million current US\$)	95,992
GDP growth rate at constant 2005 prices ⁽¹⁾	(annual %)	2.7
GDP per capita ⁽¹⁾	(current US\$)	2,952
GDP by sector percentage ⁽²⁾ :	(%)	
Agriculture, hunting, forestry, fishing		14.4
Manufacturing industry		15.9
Mining		5.3
Wholesale and retail trade, hotels and restaurants		13.0
Construction		6.5
Electricity, gas and water		2.6
Transport, storage and communication		6.7
Finance, real estate and business services		14.1
Public administration, education, health and social work, community, social and personal services		9.7
Other services		11.8

(1) Source: World Statistics Pocketbook/United Nations Statistics Division.

(2) Source: African Economic Outlook, Morocco 2014.

perspective, the objective of creating 220,000 new jobs seems feasible for 2015. The new aeronautical and automobile industries represent an important source of economic growth and innovation for Morocco.

(Source: African Economic Outlook, Morocco 2014)

SOCIAL ASPECTS

Between 2001 and 2011, Morocco made significant progress in reducing poverty and vulnerability. According to data from the High Commission for Planning, absolute poverty fell from 15.3% to 6.2% nationally and vulnerability fell from 22.8% to 13.3% nationally. In 2013, Morocco surpassed the 2015 targets for the first Millennium Development Goal (eradicating extreme poverty and hunger). However, despite its best efforts, regional disparities remain and represent a significant challenge for the Government. Morocco's goal is to improve access to basic social services for the entire population by developing social safety nets. The Medical Assistance Regime (RAMED), intended for those most in need, and the extension of medical coverage, are part of the Kingdom's poverty-reduction and social-development policy. In 2013, however, access to health care

remained limited to only 49% of the population.

ENVIRONMENT

Environmental fragility and the effects of climate change are sources of weakness for the sustainable development of the Moroccan economy. Indeed, studies of climate evolution indicate that aridity is worsening, due to both a decline in precipitation and to the significant increase in temperatures across the entire country. Aware of the consequences of the degradation of natural resources on the population, the Moroccan Authorities have made access to a healthy environment a fundamental right of its citizens under the new Constitution. Since 2011, numerous environmental improvement programmes intended to raise standards of living have therefore been implemented. These include protection of water quality, regulation of air pollutant emissions, waste management, development and renewal of protected areas, including both the coastline and soils, and access to environmental information. Morocco has also set itself the ambitious goal of raising its installed capacity of power generated from renewable sources to 42% by 2020, compared to the current 32%.

(Source: African Economic Outlook, Morocco 2014)

Social data			
Population (2014) ⁽¹⁾			29,680,069
Age structure (2014) ⁽²⁾	0-14 years	(%)	26.7
	15-24 years	(%)	17.7
	25-54 years	(%)	42.0
	55-64 years	(%)	7.3
	65 years and over	(%)	6.3
Urbanisation (2011) ⁽²⁾	Urban population	(%)	57
	Rural population	(%)	43
Unemployment rate (2014) ⁽¹⁾		(%)	10.2
Illiteracy rate (population aged 10 and over) (2004) ⁽¹⁾		(%)	43

(1) Source: Royaume du Maroc - Haut-Commissariat au Plan (<http://www.hcp.ma/>).

(2) Source: CIA The World Factbook.

Focus on Tangier

Tangier's economy is the third largest of all Moroccan cities, after the economic capital Casablanca and the political capital Rabat. Tangier is Morocco's second most important industrial centre after Casablanca.

To take advantage of its geographical position between Europe and Africa, where Tangier is the 'bridge' between these two continents, starting about 15 years ago Morocco decided to develop this northern area by building port infrastructures. The port infrastructures of Tangier

Med 1, Tangier Ro-Ro and Tangier Med 2 were built between 2003 and the present day. Free zones were developed to facilitate the establishment of several industries, especially the automobile sector, to provide employment for the local population. Currently, the city has four industrial parks of which two have the status of free economic zone. Alongside the automobile sector, there are the textile, chemical, mechanical, metallurgical and naval industries.

Source: The Report: Morocco 2012
(Oxford Business Group)



TANGER MED 2 PROJECT

PROJECT DESCRIPTION

The city of Tangier plays an important role in the process of Morocco's growth and development, its location making it a genuine stepping-stone between Africa and Europe. In this context, Saipem started working in Tangier in 2003 when the construction of Tanger Med 1 port was initiated. In 2006, the project continued with the Tanger Ro-Ro terminal and, beginning in 2010, work proceeded apace with the Tanger Med 2 port development, which was delivered in November 2014.

Situated at about 40 km east of Tangier, the port project was executed by an equal share joint venture between Saipem, Bouygues TP and Bymaro – generically called TMBYS – and the quay joint venture Besix Somagec (BSTM). The Client was the Tanger Med2 Special Agency and the employer's representative was TME - Tangier Mediterranean Engineering, as per the International Federation of Consulting Engineers (FIDIC).

The scope of work comprised engineering, procurement and construction of the basic and operational infrastructures for a container platform with two protection breakwaters. TMBYS was responsible for the protection works, namely:

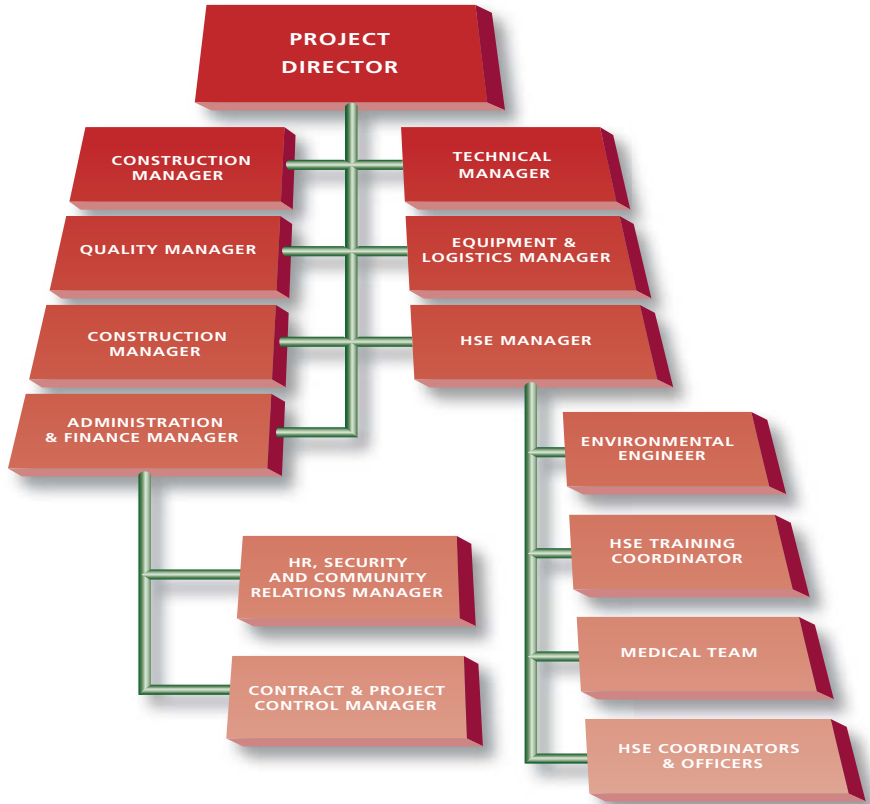
- A main breakwater of 3,700 m, with a rubble mound armoured with an Accropode™ section of 1,040 m, and reinforced concrete caissons shored up by an inner seawall of 2,710 m (95 caissons).
- A secondary rubble mound breakwater of 700 m, with rubble mound armoured with an Accropode™ portion of 377 m and caissons of 341 m in length (10 caissons).
- Temporary facilities for the construction of caissons.
- A berth of 1,200 m in length with draft between -16 and -18 m.

- Reclamation for storage of containers achieved with 5.5 Mm³ of dredged sand.

To complete the project, the TMBYS joint venture controlled the entire production chain:

- About 20 million tonnes of rocks and quarry run required for the construction of the breakwaters were produced by a quarry operated by TMBYS and located 15 km from the construction site. For the production of quarry run a swinging sieve, also called Trommel, was used. The quarry produced 500,000 to 1 million tonnes of material each month. In order to achieve the required amounts, 3 drilling rigs, 21 hydraulic excavators (45 to 80 tonnes), 10 dumpers, 4 trucks and 7 wheel loaders were needed.
- A total of 1 million tonnes of aggregates for concrete, including sand, were produced by a crushing unit installed in the TMBYS quarry.
- Three concrete plants coped with daily needs, regardless of the outside temperature:
 - prefabrication of Accropode™ and temporary quay blocks – over 10,000 units in total which required 76,000 m³ of concrete;
 - production of 105 caissons achieved in two steps: first on the ground, then completed while floating (234,500 m³ of concrete and 47,850 tonnes of rebar);
 - superstructures on caissons and a crest wall on top of a rubble mound: 163,500 m³ of concrete and 13,000 tonnes of reinforcement rebar);
 - production of all concrete for installations.
- Reinforcement workshop: 70,000 tonnes of steel cut, bent and assembled on site.
- A fleet of 4 split barges, 3 tugs and 8 barges for installing embankment

Organisation and Project Management



Installation of caissons



footings, towing and sinking, ballasting and scour – protection of the caissons. Up to 21 divers were mobilised on site to assist the operations.

- A spread of 3 crawler cranes (capacity of 200 to 300 tonnes), 9 hydraulic excavators (45 to 120 tonnes), 9 dumpers and 2 wheel loaders were dedicated to the construction of the rubble mound breakwaters.

Compared to the previous projects carried out in Tangier, this project developed three major innovations:

- For the installations, three prefabrication lines enabled the production of seven caissons per month during the summer, along with six storage zones inside the port basin, while awaiting more favourable weather conditions for caisson placing.
- Designing, building and operating a gantry crane capable of lifting 3,600 tonnes in order to float the caissons. This very innovative system involved a floating dock and a sliding scaffold on teflon plates connected to a reinforced concrete structure braced with metal tubes, all of which had a rock foundation. This technology was developed by the project team to secure the project schedule and significantly reduce the risk of accidents. On previous projects, the watering of caissons was done using a slipway, which involved divers during construction and operation. With the gantry crane, no divers were required during either of the phases.
- At the quarry, the use of the rotary Trommel screen facilitated production at high speed (8,000 t/day).

Due to its position and the nature of the works, the project was highly affected by sea conditions, which are tough and change regularly in the Strait of Gibraltar. In order to cope with the schedule, the production team was forced to adapt its activity constantly to the weather and to seek optimal measures to reduce the exposure of the works to sea conditions.

SUSTAINABILITY APPROACH

The importance of applying a sustainable approach in operations, contributing to the long-term growth and sustainable development of the area, was clear from the outset. Since activities could not incur unacceptable risks to people or the environment, operations were carried out under the following principles:

- Development of qualified local resources.
- Attention to employee health and safety at work.
- Promotion of a culture of health and safety including local subcontractor employees.
- Protection of the environment and ecosystems and preservation of natural resources.
- Contribution to economic development, mainly through the purchase of goods and services locally.
- Dialogue with local communities and participation in their social life.

FOCUS ON HEALTH, SAFETY AND ENVIRONMENT

Improvement in the Health, Safety and Environment (HSE) performance was a clear objective of Project Management throughout the project. From the outset, indeed, dedicated resources were allocated to achieve this aim and to develop a HSE culture among the project teams. The project HSE programme was implemented by taking the most relevant and high-performing elements of Bouygues' and Saipem's management plans. The ensuing policy was developed along 5 main axes:

- Development of a HSE culture.
- Identification and control of risks.
- Preservation of health.
- Reduction and control of environmental impacts.
- Positive reinforcement of safe practices and good performance.

SUSTAINABILITY PERFORMANCE ON THE PROJECT

PEOPLE

Workforce

TMBYS directly hired more than 2,400 employees at the peak of activities, of which almost 97% were Moroccan. Up to 350 workers were additionally employed by subcontractors.

TMBYS reaped the benefits of running port construction projects for 10 years in the vicinity of Tangier. Indeed, during this period, Saipem, along with its joint venture partners, trained local manpower in order to develop technical skills and a HSE culture in line with Saipem's standards.

As an example, most seamen working on the barges or involved in caisson operations had previously worked on other types of activity (mainly fishing).

Ongoing training was therefore necessary for them to acquire the HSE and technical background needed to perform their jobs to Saipem standards. Crane operators, barge masters, marine works foremen and engineers were positions occupied by local people, which was not the case during previous projects.

In addition, retention was considered essential for key local personnel. Some

of them had participated on other Saipem projects, such as the Sohar Bulk Jetty. At the end of the Tanger Med 2 project, Saipem undertook to retain key local personnel by proposing other employment opportunities on other projects within the maritime business line.

Training

A programme was established incorporating different types of internal or external training, such as HSE Culture/Management: (i) Leadership in Health and Safety (LiHS) Programme; (ii) vital attitude programme; and (iii) roles and responsibilities of supervisors). Job technical training: (i) safely conduct on construction equipment (cranes, lifts, earthmoving equipment, forklifts, etc.); (ii) electrical empowerment; (iii) scaffolding; (iv) power tool use; (v) slinging and command gestures; and (vi) healthy eating. General safety training: (i) first aid; (ii) fire (use of extinguishers); (iii) road safety; (iv) work at height; (v) reception scaffolding; (vi) inspection of lifting accessories; (vii) marine works; (viii) gestures and postures; and (ix) noise measurement.

The personnel involved on the project received safety induction as part of an integration circuit which also included,

Workforce

Categories	Male	Female	Total
Expatriates	78	2	80
Locals (Moroccan)			
Management	25	7	32
White collar	224	11	235
Blue collar skilled workers	1,276	5	1,281
Blue collar unskilled workers	852	-	852
Total	2,455	25	2,480



Offshore operations

amongst other things, a medical check-up. An employee's contract became effective only after validation of the entire integration circuit.

A total number of 4,409 people benefited from dedicated training during the project, totalling 17,636 hours. A training coordinator was mobilised full-time to ensure the delivery of HSE inductions, coordinate with the trainers and deliver or organise the internal training sessions. HSE animators/supervisors contributed to the delivery of certain internal courses, such as work at height or marine works.

In addition to HSE related training, the following courses were provided to selected personnel in order to enhance their professional development.

Internal Communications

Coordination meetings at various levels (project, department, tool box) were organised to ensure top-down and bottom-up information flows. In addition, specific HSE meetings were held with department managers, engineers and field management. Information about accidents, incidents and near-misses was communicated to all personnel through HSE bulletins that were discussed during weekly tool box meetings or pre-job talks. Noticeboards were posted on every work site to communicate information about administration, production, quality and HSE matters.

Every year in June, an event was organised to review issues and results with all HSE personnel.

Training courses

Topic	Number of hours
Enforcement of labour code	3
Autocad/Adfer/Robot Bat	8
Office training	3
E-Doc (document control tool)	36
Business Ethics	13
Excel	24
SAP	17
Payroll Payment Process	4
Reading reinforcement steel & formwork drawings	9
Fiscal dispositions of the Finance Law 2011	1
Application of reinforced concrete	18

Health

By the end of the project the medical department had carried out almost 10,000 medical consultations. In terms of specific health training and awareness, more than 20 tool box talks were organised, covering such themes as emergency procedures, tetanus injections, flu vaccinations, noise, chemicals, working under hot conditions, drugs & alcohol, cardiovascular risks and personal hygiene.

In view of the size and nature of the project and its location 40 km from Tangier's medical facilities, it was decided to put a strong medical organisation in place to oversee general and occupational health, manage medical emergencies and assure workplace health surveillance.

The organisation included:

- (i) one occupational physician, in charge of occupational health surveillance;
- (ii) emergency doctors, available 24/24 on site;
- (iii) two infirmaries, fully equipped (one on the construction site, one at the quarry);
- (iv) two ambulances, fully equipped (one on the construction site, one at the quarry);
- (v) nurses with a 24/24 presence on site; and
- (vi) protocols with clinics and hospitals in Tangier and Rabat, audited by Saipem's medical department to evaluate their level of competency.

In order to house the local workforce, an accommodation camp, with a capacity

of 1,500, was built, and included medical assistance.

As diving activities were carried out over virtually the entire duration of the project, a protocol was signed with a clinic equipped with a therapeutic compression chamber. This agreement included access to the chamber, as well as the 24/24 availability of a doctor capable of intervening in the pressurised area and who could also be mobilised to the construction site in the event of need. These measures were in addition to two compression chambers on the construction site itself.

Vaccination campaigns were organised (flue, diphtheria, tetanus) for local staff and workers, as well as awareness campaigns on cardiovascular risks. A campaign against smoking was also developed, providing medical support for those employees who decided to quit the habit.

Safety

The overall safety performance for the entire project is given in the table below.

The project safety programme was developed under the key concept that everyone should go home safe and sound every day.

The safety culture was raised by implementing specific programmes such as LiHS (Leadership in Health and Safety) and 'Vital Attitude'. A first phase of the LiHS programme was launched in

Safety	
Indicator	Entire project period
Man-hours worked	21,675,900
LTIF	0.97
TRIFR	6.09
SHOC cards	5,583
Tool Box meetings	6,419
HSE meetings	367
Risk assessment/JSA	500
HSE inspections	32,000
HSE management visits	136

January 2011 and lasted throughout the first semester of 2011 to train managers and engineers. Local trainers were taught how to provide 5 stars training and in turn to pass this on to all line management.

In 2012 and 2013, the Leading Behaviours campaign was communicated to all personnel through specific sessions.

In May 2013, 'Vital Attitude' training was organised for line managers, with a view to making them aware of their role as coaches of their teams and referees for the implementation of approved activities. The programme was designed on the basis of a comparison between sport and work practices.

HSE walkthroughs were organised twice a month over the entire site. Four to five

homogenous groups of managers and supervisors from different disciplines would each visit an area and point out safety or environmental issues, as well as good practices. At the end of the visit, a briefing would be held at the office to collate and review all remarks. Actions were recorded and followed up until closed out.

In order to tackle risks at source, they were identified and assessed during development of a method statement. Job Safety Analysis (JSA) was implemented on commencement of new tasks and whenever changes in the working method were required. In addition to JSA, a work permit system was implemented for activities such as (but not limited to) excavation and confined spaces. Pre-job meetings were held every morning by all teams.



HSE training on site



Quarry operations

In addition to weekly workplace inspections, foremen and supervisors would focus on behaviours by regularly observing a worker or a team of workers for about 10 to 15 minutes, coaching them on any safe practices to be implemented.

Along with standard preventive maintenance, formal inspections were carried out every 3 months on tools and equipment with an impact on safety. This programme involved lifting gears, fall protection equipment, portable power tools, electrical installations, ladders, and lifejackets. A full-time inspector was recruited to implement and follow up this inspection protocol.

Awards (diplomas, phone cards, T-shirts) were distributed to the most deserving employees, nominated by heads of departments based on their positive examples and initiatives on health and safety. These symbolic rewards, and the recognition that went with them, were much appreciated by the staff.

Road Safety

Due to the distance between the quarry and the construction site (15 km) and the amount of quarry material transported (20 million tonnes), almost 34 million km were travelled by trucks during the project. Consequently, transport activity was identified as highly risky as regards HSE and a special action

plan was implemented:

- All heavy vehicles and equipment were inspected at their mobilisation on site. During their working period for TMBYS, regular controls of sensitive items, such as brakes, were performed.
- Traffic patrols with a HSE supervisor equipped with mobile radar performed random speed controls along the route on a 24 hour basis.
- HSE meetings were held twice a month with the transport subcontractor's top management in order to deal with safety issues.
- Toolbox Talks covering dedicated topics related to transportation were performed on a weekly basis with drivers.
- A system of fining was implemented with a view to encouraging subcontractor drivers and top management to comply with driving rules as part of the project's HSE policy.
- All staff, local and expatriate, to whom a company car was provided, followed a defensive driving course focusing on traffic risks. In addition, TMBYS provided devices against falling asleep at the wheel and took on toll fees to encourage staff to use motorways instead of the coastal road, which is more risky due to traffic conditions.

CLIENT AND PARTNERS

The relationship with the Client, Tangier Med 2 Special Agency, was cordial and mutually respectful. The Client identified a HSE representative who acted as a liaison with the TMBYS HSE department through monthly meetings, weekly site inspections and a close relation with the Client's Environmental Specialist (NOVEC).

The Client was involved in HSE organisation by conducting twice monthly safety visits of the construction site and the quarry site. It verified that actions decided upon during previous visits had been implemented. Minutes were taken of each visit.

In addition, audits were performed by NOVEC and by the European Investment Bank. The outcomes were always positive and the auditors expressed their general satisfaction with the environmental system in place.

At the beginning of the project, discussions were held between the different companies of the joint venture (Bouygues TP, Saipem, Bymaro), each with its own corporate culture and wishing to implement its own particular system. The project built a HSE system that took into account the best aspects of each company. Relations



Total spent

Value of purchases (in currency)	(€)	48,536,192
	(MAD)	486,994,511
Volume of purchases (number of orders placed)	(€)	3,600
	(MAD)	8,000

subsequently became more formalised and joint audits were conducted. Several meetings and joint initiatives were also carried out with the other partners in the consortium, BSTM.

SUBCONTRACTORS AND SUPPLIERS

The project was carried out essentially by internal staff (85% of hours worked). The following activities were subcontracted: (i) transportation of quarry materials; (ii) diving; (iii) design, installation and support for the use of the gantry crane; and (iv) the caisson shifting system.

Cement, steel fabrication, PPE and tools were also provided by local subcontractors. The most numerous subcontractors were in the field of transport of materials. Kick-off meetings were organised to mobilise each subcontractor to ensure it understood the contractual requirements and clarify points of coordination regarding HSE matters. HSE meetings were organised with them every 2 weeks at the beginning of the project, then once a month. The total spent in Morocco on the purchase of goods and services is given in the table above.

ENVIRONMENT

Project financing by the European Investment Bank required a very high level of attention to environmental issues. In line with Client requirements and the joint venture members' policy, a comprehensive environmental programme was implemented.

Based on environmental impact assessments, both for quarry and port activities, preventive and monitoring actions were carried out to reduce the impact of the project on the environment. Indeed, the entire project was designed in such a way as to reduce the amount of quarry material used by favouring the use of prefabricated concrete caissons over bulk material breakwaters. Other initiatives, such as the operation of the concrete waste recycling unit, the runoff recovery network at the quarry and on the port site with settling basin/oil separation, or the installation of a wastewater treatment plant for the accommodation camp and offices, contributed to the environmental protection approach promoted by the project.

Ecosite Label

To mitigate the environmental impact of its sites, Bouygues Construction set Ecosite environmental standards that were common to all its subsidiaries and adapted to all its businesses. An evaluation grid based on 11 themes (project environmental risks assessment, waste, hazardous products, noise, air, aquatic environment, biodiversity, energy consumption, cleanliness and storage, communication,

emergency situations) was used to check the implementation of the environmental management system on the Tanger Med 2 project. More than 60 evaluation criteria were graded according to three levels of performance. 12.14 points out of 20 were obtained and an environmental Ecosite Label was awarded (twice) by Bouygues Construction to the Tanger Med 2 project. Furthermore, in 2013 the project was certified ISO 14001 by AFNOR (Association Française de Normalisation).



*Beach
Cleaning
campaign*

Water management

Site installations were designed to limit the impact on water resources. Areas where oil was used were waterproofed with concrete slabs and rainwater was collected in dedicated decantation and oil filtering basins in order to avoid the release of oil into the environment.

At the quarry, rainwater was collected in a basin and reused for dust abatement.

Waste water from accommodation areas and offices was treated with the Aerobic Activated Sludge Process, which provides a series of advantages such as accessible cost, good quality of effluent, low land requirements, and near total freedom from fly and odour nuisance.

Concrete recycling plant

As the production of large quantities of concrete was a key component of the activities performed, a concrete recycling system was implemented on site.

In the first phase, the system separated solids (sand, gravel) from liquid materials (water, cement fine particles). Sands and gravels were disposed of at the quarry site or used for paving tracks on site.

In a second phase, the fine particles were separated as the remaining liquid passed through a press filter. Some of this water was used to clean the inside of truck mixers. The other part was injected with carbon dioxide to lower its pH to neutral so that it could be discharged without a negative impact on the environment.

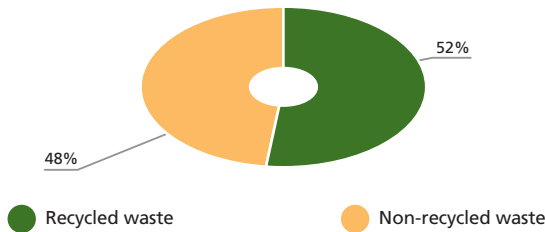
Waste management

There were two types of waste management: (i) general waste and household waste was disposed of; and (ii) timber, steel, ink and toner cartridges, used batteries, filters, rags and medical waste were sent to a dedicated company for recycling or energy optimisation. Furthermore, waste oils were recovered by the fuel provider



School opening ceremony

Waste recycling



and burnt in cement plants. A register of all waste streams, quantities and companies contracted to handle each type of waste was constantly updated.

Energy consumption

Energy savings were made possible thanks to the implementation of the

following measures: (i) use of LED lighting in areas subject to traffic and on the caterpillar crane; (ii) connection to the public electricity grid; and (iii) optimisation of lighting in bungalows by means of specific lighting analysis.

Dust, noise and vibration control

A protective cover and a water spraying system was installed at the entrance to the crusher on the quarry crushing and separation equipment as a control measure to prevent dust from dispersing into the atmosphere. Furthermore, supplementary watering was ensured by watering trucks in the vicinity of the crusher.

Regular measurements were carried out for noise and vibration both at the quarry and in the port area. Protective earmuffs were provided in the vicinity of the noisiest areas.

Energy consumption

Fuel type		
Diesel	(tonnes)	58,326
Gasoline	(tonnes)	236

The following monitoring methods were developed to assess impacts:

- Bi-annual dust control in the site boundary (quarry and port).
- Bi-annual noise control in the site boundary.
- Systematic control of vibration for each shot mine.

Oil Spill Prevention and Response

Oil spill response kits were installed at high risk spill locations. Instructions for proper intervention in the event of a pollution accident were available both at the locations and inside the kit box. Dedicated training sessions on the correct use of spill response materials and practice drills were organised during the project.

Awareness raising

Numerous HSE Flashes were produced and displayed, both in French and Arabic, on topics such as water preservation, waste minimisation, response means to pollution by oil spill on water or land, chemical product transportation, energy saving, biodiversity protection and responsible printing practices.

During the project 130 hours of environmental training were delivered and 6 environmental drills were carried out to provide practical skills for emergency situations.

LOCAL COMMUNITIES

From the outset of the project, TMBYS was involved in several actions aimed at establishing good relations with the local communities, improving their living conditions and contributing to the social and economic development of the area. In particular, activities were carried out in the following areas:

- Promotion of and contribution to education through the improvement of the school in the Taghramt village; a free literacy programme for local people; the organisation of a pickup

and transport service for adolescents from several villages to participate in the different professional training programmes organised by the Office for Professional Formation of Morocco; the distribution of schoolbags in schools close to the site at the beginning of the school year.

- Promotion of community health through the supply of water (from the well drilled for quarry needs) to the village located nearby; medical and optical care for some villagers.
- Contribution to socio-economic development through the supply of materials for the levelling of several roads leading to villages; renovation of 10 houses in the village of Mrah Debbane near the quarry used by TMBYS, and construction of a new house for a family of 7 with 2 handicapped children.
- Promotion of environmental awareness campaigns through cleaning of areas adjacent to the project site.
- Support for civil protection units during a fire at a nearby location.

School renovation

The school in Taghramt village, located in the vicinity of the project quarry, and which was in an advanced state of degradation, was renovated by a team of TMBYS workers:

- The caisson prefabrication production workers organised into teams for school renovation activities.
- The procurement office asked suppliers to contribute to the project by donating materials or furniture.
- The technical office designed the school.

The grand opening of the renovated school took place in January 2013. A delegate of the Ministry of Education, the Caïd of Taghramt regional government, local authorities, associations and the whole village participated in the event. An artistic programme was performed by children in the newly renovated schoolyard.

Cleaning of surrounding areas

As part of its environmental commitment, and to spread awareness of the importance of protecting the environment, the project engaged frequently in clean-up activities of the areas in the vicinity of the worksite. The Oued Ghlala estuary was cleaned in a campaign launched on the occasion of World Environment Day 2012 by the Tanger Med Association for Environment and Development, with the assistance and supervision of TMBYS, BSTM, the inhabitants and local authorities. The estuary was freed from the domestic waste that had been dumped in it for years and for which the local community could not find a solution. Tonnes of waste were removed from the estuary and conveyed to public waste management facilities. In April 2013, similar measures were carried out at the same location.

The Ksar Sghir beach and the streets and channel of Ksar Sghir village were also subject to cleaning as more than 80 Port of Tangier Med 2 construction employees managed to collect 4.2 tonnes of waste in March 2013. The campaign was organised in association with the beach initiatives of the 'Surfrider' Association.

The companies participating in this initiative were TMBYS (Bouygues TP/Saipem/Bymaro), Waste Service SYNAPSE-IDEA, BSTM (Besix/Somagec), its subcontractor TPM and the Client's representative, TME.

Support to civil protection organisation in a fire emergency at a nearby location

In the summer of 2011, the mountains in the vicinity of the site suffered a major fire. By providing water trucks and maintaining continuous water supply on the scene for a whole night, TMBYS assisted firefighting crews in controlling and eventually extinguishing the blaze.

LOCAL AUTHORITIES

The relationship with local authorities was a permanent, constructive and two-way collaboration over the entire duration of the project. Each party provided assistance when the other required it. For example, TMBYS assisted firefighters to tackle land fires in summer 2011, while the local authorities helped TMBYS handle relations with its neighbouring communities.

GLOSSARY & ACRONYMS

BSTM Joint Venture Besix and Somagec	HSE Health, Safety and Environment	SHOC Safety Hazard Observation Card
EPCI Engineering, Procurement, Construction and Installation	JV Joint Venture	T&I Transportation and Installation
EPC Engineering, Procurement and Construction	LTIFR Lost Time Injury Frequency Rate	TMBYS Joint Venture Saipem, Bouygues TP and Bymaro
FEED Front End Engineering Design	MAD Moroccan Dirham	TME Tangier Mediterranean Engineering
GDP Gross Domestic Product	PPE Personal Protective Equipment	TRIFR Total Recordable Incidents Frequency Rate

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Feedback

What you think of this Case Study matters to us.
As we are constantly striving to improve our reporting, we would very much welcome your feedback. We will also be pleased to answer any questions you may have.

Contact us at: sustainability@saipem.com

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