*OIL & GAS*

# THE ENERGY TRANSITION AND THE SAIPEM MODEL

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*In an era of Big Data and artificial intelligence, everything seems to be more predictable and easier to comprehend. But, more than ever before, the nature, pace and extent of change are transforming uncertainty and volatility into a new "norm". In the Oil & Gas sector, the recent oil market crisis and the current global commitment to the energy transition have brought about a profound process of transformation. In this context, businesses in the Oil & Gas sector will have to remain resilient but, above all, will need to show an ability to adapt culturally to constant change and uncertainty.*

We live in a world that is constantly changing, as instability and profound changes affect everything from the economy to geopolitics and society, through to energy and technology. We are in an era of Big Data and artificial intelligence in which everything appears to be easier to forecast or simple to grasp. But today more than ever before, uncertainty and volatility have become the new normality with which we have to live.

Long-term forecasts are gradually becoming less relevant and popular as a basis for preparing for and predicting the future. The nature, speed and magnitude of change are increasingly complex to foresee and are drastically reshaping current paradigms.

The most radical change we are witnessing is the shifting of the world's economic and social centre of gravity from the West to the East. Until the Industrial Revolution, the global centre of gravity was in Asia, particularly in India and China. The Industrial Revolution was a game changer, as it moved the centre of gravity to the West - firstly to Britain, then to the rest of Europe and the United States. Today, the centre of gravity is slowly moving back towards Asia. The new Silk Road clearly symbolises this trend and the ambitious role China and other South-East Asian countries intend to play in the future.

Demographic trends point to a growing global population, with resulting demographic and geographical heterogeneity. Along with projections for future energy consumption, this represents one of the most important indicators of current megatrends. In terms of energy scenarios, the demographic expansion of the middle classes in Asia - which account for much of the growth in GDP – suggests that the centre of gravity for energy demand will shift towards Asia.

Even the supply of energy is changing profoundly. One only has to think of the revolutionary impact of the appearance on the market of unconventional sources like shale, which places the United States in pole position as the world's largest producer of oil and gas. We should also bear in mind the protracted reductions in oil output by OPEC countries and Russia and the rapid growth of liquefied natural gas (LNG), which is transforming the way gas is transported and exchanged globally.

New technologies are also revolutionising the way in which energy is produced, transported and consumed. Energy is becoming part of broader services that are purchased and sold in increasingly competitive and efficient markets.

Finally, increasing calls for sustainability - that are spreading through all industrial sectors - in organisations and society at large, require us to revisit current business models and engage in extensive cultural changes.

It is through the four lenses of demand, supply, technology and sustainability that we can analyse more accurately the energy sector and its potential evolution in the near future. It is a future in which ground-breaking technologies and digitalisation can reshape geographical borders and the way in which energy is produced and consumed; a future where there will be a growing demand for interconnection and transport – of both the traditional and digital varieties - and, finally, a future where a balance will have to be sought between the need to satisfy growing energy requirements while generating fewer emissions, using sources that are cleaner and more environmentally sustainable

## 1. THE ENERGY TRANSITION

In recent years the energy sector has experienced a long and profound crisis that began with the collapse of oil prices in 2014 and continued with years of high volatility. This volatility has forced all the sector's operators to rethink consolidated business and organisational models that relied on the cyclical nature of the oil industry and the implication that prices would eventually return to pre-crisis levels.

The crisis has lasted much longer than expected, oil prices have not returned to pre-crisis levels and the contagion from this new normality has been more disruptive that we imagined, ripping through business models,

organisations, cost structures and operating methods. On the one hand, through a series of acquisitions, mergers and profound industrial restructuring, this contagion has brought about major changes, as the sector's players have scrambled to identify the most appropriate way to remodel their businesses or simply survive in the new market; on the other, it has served as a trigger for cultural change which is still taking place behind the scenes.

Against this backdrop of profoundly changing market conditions in the energy sector brought about by volatile oil prices, we have also had to contend with the energy transition, a process which formally began with the 2015 Paris Agreement, the first universal climate accord.

We must, therefore, see the energy transition as a gradual process of change in the geopolitical, legislative, regulatory, social and business contexts that energy sector stakeholders have been operating in for decades. The aim of the transition is "decarbonisation" i.e. a reduction in the dependence on fossil fuels in the energy mix by introducing new sources, such as renewable energy, and new means of producing energy. This process is in part occurring spontaneously, driven by economic viability and technological progress, and in part under the impetus of political decisions.

A process of this magnitude can only take place gradually, to ensure that demand for energy continues to be satisfied by conventional sources - which still provide more than 80% of global primary energy consumption - and enable the construction of infrastructure for the production and distribution of renewable energy. In this evolutionary process, natural gas is set to play a key role as the best fossil fuel for accompanying the energy transition. Studies and forecasts point to the gas market expanding for 15-20 years.

The main reasons for this are:

(i) competitiveness: the abundance and widespread availability of gas resources that can be produced at a low cost, from both conventional deposits, and from shale, including as a result of significant technological development;

(ii) environmental sustainability and compatibility: in terms of emissions, natural gas has major advantages compared to other fossil fuels;

(iii) schedulability: gas is the fuel that can best be combined with intermittent renewable energy to guarantee continuity and regulation of electricity production (if we ignore consumption for transportation, which is highly oil-dependent);

(iv) new technologies.

Confidence in the development of the market and in increased gas consumption is demonstrated by numerous capital-intensive LNG projects

that are currently underway or which have been scheduled. Trading in LNG is expanding (more rapidly than trading using pipelines) which will lead to significant changes in the market, progressively making it more liquid and similar to the oil market (i.e. with plenty of suppliers and plenty of purchasers, who are not necessarily bound by long-term contracts).

Therefore, oil and gas will continue to make up a significant percentage of energy demand in the coming decades and will require new solutions to improve the sustainability of production processes, such as the use of new hybrid configurations, as well as the adoption of renewable technologies applied to Oil & Gas operations to reduce overall CO2 emissions in facilities at sea and on land.

Renewable sources, which tend to be plentiful, easy to find and geographically widespread - albeit at higher costs - could result in a shake-up of energy dependence relationships between countries and bring about a new global energy and geopolitical balance.

In terms of the circular economy, innovative technological solutions are being developed to exploit and reuse waste material from the Oil & Gas industry or other industries, by transforming these into energy and finished products.

## 2. THE CHALLENGES FOR COMPANIES IN THE ENERGY SECTOR

The changes that are underway mean companies need to be flexible and successful in adapting. In this new global scenario, in which previous models are being redefined, the ability to innovate, renew oneself and rise to challenges will be key. In our sector we often speak about the need to become more resilient - borrowing a concept that is normally applied to materials - which implies being able to withstand shocks and changing conditions. The crisis in the sector has certainly tested the resilience of companies and their very instinct to survive.

The challenge ahead not only requires us to continue developing and honing our resilience, but also to develop the ability to adapt culturally to constant change and uncertainty. We must do so positively and proactively, by looking at change differently and improving the way we adapt managerial decisions and industrial models to evolving markets, in order to reap the benefits of the opportunities brought about by the change.

## 3. THE NEW SAIPEM MODEL

Saipem has traditionally considered itself as a supplier of services in the Oil & Gas sector. The recent crisis in the oil sector, as well as the

broader processes of energy transition and the far-reaching strategic analysis that began in 2015, have led to us embark on a profound process of transformation. The current business model stems from a new awareness of the external market and the distinctive features of our organisation, in terms of human capital, technical know-how, technologies and innovation-oriented culture and the management of complexity (e.g. in technical, geographical and technological terms).

We have become aware that, irrespective of the future energy mix, we can identify solutions to meet the requirements of the new world, while we design new proposals, innovate and show an ability to modernise and structure our organisation to manage changes. Our diversified offer, know-how and culture can be major assets going forward: there could be new opportunities in traditional sectors, in new sectors emerging from the energy transition and in other infrastructure sectors with a high technical and technological content.

The ability to innovate is part of Saipem's DNA and this has allowed us constantly to push forward technological frontiers and boundaries. The great challenge Saipem and its customers face is that of ensuring the feasibility of onshore and offshore projects at lower costs and within shorter timeframes. In this perspective, Saipem's goal will not only be that of continuing to operate as a contractor that can develop complex projects in remote areas, but rather to become a global solution provider in the energy sector; a reliable partner for our customers that can co-develop solutions and innovations to create value during the entire life cycle of a project – from the early engagement phase and during the entire lifetime of the infrastructure.

The process of change embarked upon by Saipem in 2015 was based on five core pillars: (i) refocusing the business portfolio, (ii) de-risking the business model, (iii) a cost efficiency programme, through optimising and reviewing processes, (iv) a focus on technology and innovation, (v) debt reduction and financial discipline.

In terms of internal organisation, starting from May 2017 the company has radically changed its structure and put in place a new divisional model. This important change allows for flexibility in decision-making, more consistency between accountability for results and decision-making powers and a greater focus on project delivery.

We also established the new XSIGHT division dedicated to high value-added engineering services that is focused on early engagement with customers. This division stems from the realisation that, in a market that is called upon to optimise infrastructure construction costs, our experience as a "turnkey" contractor can be a vast source of added value. Specifically, in the initial phases of a project, when strategic decisions are made and the architecture of an investment is defined, XSIGHT puts itself

forward as an accelerator of efficiency in the industry that can define innovative solutions by listening to and acknowledging customer requirements.

Aside from generating efficiency through new and more streamlined operational processes, the new organisation - with the five Divisions and the Corporate Governance structure - will allow us to assess potential strategic options more rapidly. The company has completely revised its portfolio of activities and has identified offshore construction as its core business area. The onshore construction business - which has experienced the greatest problems in recent times - is undergoing a complete turnaround which will also involve the management structure and a review of the organisation and its processes.

Drilling businesses remain important and are adapting their operating models to maximise operational efficiency and take on a leaner configuration in terms of assets, including through leasing from third parties. Strategic assessments concerning the retention of the drilling businesses and the corresponding value are ongoing. These involve potential options for conserving and extracting as much value as possible from these business areas, for example through partnerships with other companies or sharing financial costs with new entrants to the sector.

## 4. SUSTAINABILITY: FOR A LONG-TERM VISION

The term sustainability appears very frequently – indeed, it could be argued that it is somewhat overused – and is difficult to pin down precisely. It is multi-faceted in scope and concerns a myriad of sectors– from the industrial sector through to finance – which also extend transversely through a company's different functions and business areas. Sustainability touches upon themes ranging from ethical principles, through to diversity and inclusion; that which was once referred to as local content, the development of talent and human capital, through to the protection of people's health and safety and the environment.

Until a few years ago, there was a widespread view that attention towards environmental impact was part of a company's social responsibility - with implications that were merely legal, ethical and moral – but had no connection with its business model and the market's expectations. Today we are witnessing a rapid evolution as sustainability ceases to be merely environmental and extends its boundaries to a company's "sustainable" business model. The organisational evolution of sustainability functions within organisations over the years tells us a great deal about how sensitivities - of companies and individuals – are evolving from a separate area or one which is connected to functions (HSE, HR,

compliance, etc.) to a means of operating and running a business, that looks differently at the present and the future.

Sustainability has a holistic dimension which encapsulates various perspectives that coexist in a dynamic balance that is attentive to external changes, such as:

– business: regardless of the future energy mix, design new proposals to develop tomorrow's infrastructure and structure the organisation to manage these changes;

– technology and innovation: invest in new technologies – of both the conventional and more ground-breaking varieties – to support traditional business activities and seize new opportunities deriving from the energy transition;

– people and mentality: sustainability is also about the value of people. The opportunity to develop and advance their know-how, the ability to attract new talent and retain the talent we have, as well as the commitment to contribute to the development and employment of local people. Sustainability is also about a personal attitude and corporate culture that is open to change, innovative thinking and constant evolution;

– shared value: Saipem is a company that has always focused on sustainability: this is integrated within its business model and aims to create value that is shared with stakeholders in the countries in which it operates, through the creation of jobs, the transfer of know-how and cooperation with suppliers and subcontractors to drive economic growth through its business activities;

- Vision: a long-term vision that is essential for the sustainability of the business, to be the natural partner in the supply chain of customers who want to lead the way in developing energy infrastructure in the coming years.

In this regard, following the rating assigned to it by the international sustainability agency Sustainalytics, Saipem was recently classified in first position in the Morningstar ESG Score (Environmental, Social & Governance) amongst Italian companies listed on the Milan Stock Exchange. Saipem was also included in two sustainability indices:

– for the eighth year running, it is in the FTSE4Good stock market index which assesses companies' performances on environmental, social and governance matters through an analytical process of the suitability of corporate system and compliance with stringent sustainability requirements;

– the Dow Jones Sustainability World and Europe Index (DJSI), internationally accredited sustainability indices, where Saipem occupies a leading position amongst companies from the Energy Equipment Services sector.

## 5. TECHNOLOGY FOR CREATING RESILIENCE

In an energy market where major changes are afoot, a long-term vision is essential for ensuring a business's sustainability and enabling a company to maintain its competitive position over time. Investments in the development of new technologies allow us to continue offering our customers a diversified range of solutions in line with the strategy of evolving towards a model of a global solution provider in the energy sector. The main fields of study and development are:

– renewable energy and the storage of energy;

– the sustainable use of traditional fossil fuels (including hybrid configurations);

– the use of natural gas and the management of the entire CO2 production chain.

## 6. RENEWABLE ENERGY

In the next ten years, alongside gas, clean energy will represent about 60% of our portfolio. Saipem will increase its presence in low CO2 emission markets, like offshore wind, the conversion of biomasses, solar power and geothermal power. Moreover, innovative solutions will be developed in emerging areas like high altitude wind power - both onshore and offshore - and marine energies.

In terms of profitability, the renewable energy sector will have lower margins than the traditional Oil & Gas segments, but this will be compensated by higher volumes and lower risk profiles for the respective activities. Moreover, the delivery of these projects will also require resources, skills and assets that are found in the traditional Oil & Gas sectors, which will result in natural synergies and diversification.

## 7. NATURAL GAS

There is clear evidence of a strong acceleration by our customers in terms of decisions to invest in new facilities. In this regard, technology will play a pivotal role in the reduction of the overall cost of investments or, for example, in the development of modular or scalable solutions to improve profitability.

We are also still working on the definition of a proprietary process for the liquefaction and re-gasification of natural gas on a small scale, for the development of floating LNG. Saipem owns various solutions, including Liqueflex™, a new proprietary technology that uses natural gas as the cooling agent and, Moss Maritime, a company of the Saipem group, has

recently acquired pioneering experience in the market of the conversion of LNG carriers to floating LNG units.

## 8. DECARBONISATION

On the topic of decarbonisation, Saipem is developing numerous diversified actions to reduce CO2 emissions. Saipem can manage the entire chain of Carbon Capture & Storage (CCS), which is necessary to continue exploiting fossil fuels.

In the medium to long term, with the aim of progressive decarbonisation and an overall reduction of emissions, Saipem is pursuing numerous activities linked to CO2 management through a portfolio of technologies for the purification of natural gas in deposits with a high CO2 content and for capturing CO2 from the flue gas of electrical power plants and industrial processes. Moreover, it will reduce emissions of its own assets and develop hybrid solutions to integrate the production of renewable energy within traditional Oil & Gas operations.

## 9. DIGITALISATION

Digitalisation, process automation and robotics are central issues for Saipem. Efficiency can be improved by extending the automation and digitalisation of production processes on board drilling and construction vessels. Saipem has for some time been committed to an extensive innovation programme, which includes the automation of proprietary Field Joint Coating systems that can also be controlled remotely; the digital replication of assets (“Digital Twins”); and monitoring systems for operations on board the CastorONE pipelayer, that can be replicated remotely. In 2018 we also saw the implementation of the XDiM platform, a new collaborative digital and data-centric methodology for the management of the entire project life cycle (xDIM™). In terms of robotics, since 2016 the Hydrone programme has been underway, which will involve the industrialisation of a platform of submarine drones that can automatically conduct inspections, maintenance and repair work on infrastructure and assets installed on the sea bed, without the need for personnel and using equipment that can remain in place for months without the need for interventions. This programme capitalises on proprietary technologies based on machine learning, artificial intelligence and subsea Wi-Fi networks, and aims to adapt operational paradigms to improve safety, efficiency, speed in the exchange of information and the operational management of assets.

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