

Preparing and promoting the energy transition

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The theme of the 21st World Petroleum Congress is a call for the oil and gas industry to be responsible energy suppliers. There are two components to this responsibility. Not only do we have to meet energy demand by delivering steady supply at reasonable prices, but in doing so we also have to provide customers with better energy in order to meet the requirements of challenging climate change.

Moscow is an apt venue for the Congress. Russia is a key player on the global energy stage, through both the scale of its oil and gas production and resources and its geographic situation at the crossroads of Europe and Asia. The latter region accounts for a growing share of its markets. Russia's combined oil and gas output makes it the world's number one producer, and the country is home to the world's biggest gas reserves.

Global energy demand is forecast to grow by more than 30 per cent to 2035. Most of this growth will be led by emerging economies, driven primarily by increasing electricity consumption and car ownership.

It will take all types of energy to meet this higher demand. Renewable energies will experience strong growth, but will still only account for a small share of the energy mix in 25 years' time. In our scenario, which is close to the International Energy Agency's, we anticipate that the share of new energies – mainly wind and solar – will rise from one per cent in 2010 to six per cent in 2035; such an increase represents a real challenge and I do not think that we can realistically expect more. Fossil fuels are expected to continue to dominate; we estimate that they will still make up 74 per cent of the energy mix in 2035. While oil's relative percentage will fall to 28 per cent, the amount consumed will be slightly more than today, growing at 0.6 per cent per year. We predict that natural gas' share of the energy mix will increase from 22 per cent to 25 per cent, as its use as a substitute for coal in power generation spreads. That is because natural gas is abundant and flexible and emits only half as much carbon dioxide as coal.

Oil and gas will continue to play a vital role in energy supply because they are very convenient and effective energy sources and considerable resources of them remain. Advances in technology and the unconventional oil and gas revolution mean that estimates of resources have been revised sharply upward. Oil resources, excluding oil shale, are currently estimated at 80 years of consumption; natural gas, excluding gas hydrates,

at 140 years. And these figures may climb again, since so far North America is the only region where unconventional resources have been inventoried with any degree of accuracy.

But the existence of abundant resources is no guarantee that demand will be met. The challenge for our industry is to make them available. The fact that there is no "peak oil" does not protect the world against the risk of a capacity peak. To meet slightly increasing oil demand and offset declining production from mature fields, we have to develop 55 million barrels per day of new production capacity by 2030. That is equivalent to replacing 60 per cent of current capacity. For natural gas, which will experience stronger growth, we will have to create as much capacity again as currently exists, by 2030. And with the LNG market expanding at five per cent a year, more than a doubling of capacity is required by 2030.

The issue of project costs and profitability is crucial for our industry. Today, new developments involve more complex geological formations and harder-to-access areas. Project technology, size and costs are all rising. Expectations in terms of safety, environmental impact and social responsibility are rightfully growing. Meeting them requires tremendous effort, having a significant impact on our development and operating costs. This occurs in a context of continuing double digit project cost inflation. Upstream spending jumped by more than 15 per cent a year from 2002 to 2012, while oil and gas production only increased by 1.8 per cent a year. It has reached a point where the sustainability of the overall model is now at stake, leading possibly to underinvestment in the short term, and potentially putting at risk the ability of the industry to meet demand in the medium term.

Keeping project costs under real control is essential, as well as being more selective in the definition of project architecture and in the process of project approval.

At Total, we have done our share of investing to bring new resources on stream. Our capital expenditure peaked at US\$28 billion in 2013, with 80 per cent allocated to the upstream. We have a number of major projects under way that illustrate the diversity of our technological expertise and our global reach; let me cite, among many others, Yamal LNG (Total 20 per cent) in Russia, the Fort Hills oil sands development in Canada (Total 39.2 per cent) and the deep offshore Libra licence in Brazil (Total 20 per cent). We are on our way to more than doubling our LNG and deep



offshore production capacities from 2007 to 2017. Our current projects should enable us to lift our oil and gas production from 2.3 million barrels of oil equivalent per day (boe/d) in 2013 to 2.6 million boe/d in 2015. Ultimately, our objective is to raise our production potential to 3 million boe/d by the end of 2017.

Globally, the considerable investment with a high technology content required and the need for tighter cost control mean that everyone – international oil companies, national oil companies, service companies, contractors and suppliers – will have to contribute and to cooperate more closely and intensively with each other. Majors will play a key role in leading the way for the industry into finding appropriate solutions. National oil companies from producing countries that control the majority of reserves have a particular responsibility. The international expansion of Chinese companies over the past decade has been remarkable, and Total has forged many partnerships with them on major projects in different regions of the world.

Developing sustainable energy

Climate change must be taken into consideration in any discussion of the energy future. As the work of the Intergovernmental Panel on Climate Change has determined with a very high degree of certainty, greenhouse gas emissions from human activities are a factor in global warming, which is worsening alarmingly. Sixty per cent of greenhouse gas emissions come from the production and consumption of fossil fuel-derived energy. That puts oil and gas companies directly on the front line when it comes to tackling the problem.

Global warming is, as its name implies, a global issue. Solving it requires a concerted international response involving the main "offenders": China accounts for 24 per cent of global carbon dioxide emissions; the United States, 18 per cent; and the European Union, 12 per cent. Only the European Union has managed to reduce its emissions — by 14 per cent — from 1990 levels, versus an increase at the global level of 48 per cent. The UN Climate Change Conference that will be held in Paris in 2015 must produce genuine reduction commitments by the biggest emitters.

At our level, we in the oil and gas industry have the ability to take steps to help reduce emissions. Providing our customers with better and cleaner energy is our duty and our responsibility. Substituting natural gas

for coal on a large scale is an efficient way to do this. I believe that natural gas can play a key role in meeting the challenges of more sustainable growth. Shale gas development in the US, with the resulting decrease of emissions, is a good example of this.

Enhancing the energy efficiency of our operations and reducing flaring are also important avenues. At Total, we cut our associated gas emissions by 40 per cent between 2005 and 2013. Our target is 50 per cent by the end of 2014. And we offer our customers better solutions and advise them how to make their energy use more efficient.

I think it is important for oil and gas producers to report more uniformly and transparently about what they are doing to protect the climate and to prepare the energy transition, what targets they are aiming at and how well they are performing in this area. This will facilitate dialogue with stakeholders and allow us to build mutual trust and to gain a better shared understanding of solutions to be implemented. We have proposed an initiative of this type to our peers in the industry.

We also have to help diversify the energy supply. This is a necessity in the long term to meet demand. First, it contributes to climate protection. Second, host countries are increasingly asking us to help them develop alternative energies so that their oil and gas resources will last longer. And third, in many developing countries that lack adequate energy infrastructure, renewable energies can be a faster path to access to energy. We believe that meeting these aspirations and expectations are part of our responsibilities. That is why we have developed our activities in the areas of solar energy and conversion of biomass into transportation fuels and petrochemical feedstock. Our 66 per cent-owned affiliate SunPower is a global leader in photovoltaic solar energy and the leader in terms of technology, with large scale solar projects in various areas of the world.

Our industry faces many challenges – satisfying continuously growing energy demand, increasing oil and gas production capacity, helping to develop renewable energies and reducing carbon dioxide emissions to protect the climate. It will take a combination of technological excellence, careful monitoring of development costs and a strong sense of responsibility to successfully accomplish all this. If these conditions are met, the oil and gas industry will have the bright future it deserves. ■