2nd NOC-IOC Forum

7-8 April 2011, Paris, France

Bringing Together Distinctive Competencies for Common Challenges

Background Paper

Background

Ministers at the 11th IEF (Rome, April 2008) discussed how the framework conditions for NOC-IOC cooperation could be improved to optimise its potential with due respect to the laws, rights and expectations of all parties. Ministers and industry leaders "advocated increased cooperation between NOCs and IOCs as a major opportunity in addressing key challenges facing the industry".

Given the multidimensional nature of the challenges ahead (technological, economical, environmental, political), combining the efforts of all relevant stakeholders offers the most promise in addressing such challenges. Improved cooperation between NOCs and IOCs would better optimise investment in the oil and gas industry, and help secure its development.

In 2008, participants at the two extraordinary IEF Energy Meetings (Jeddah June and London December) called for enhanced cooperation between national and international companies from producing and consuming countries in investment, technology and human resources development.

The 1st IEF NOC-IOC Forum, held in March 2009 in Kuwait was recognised by industry leaders as an important step forward in promoting global energy dialogue and enhancing global energy security. Participants discussed key challenges facing the oil and gas industry in a volatile market and uncertain times. They noted that the relationship between NOCs and IOCs has changed over the years. Highlighting successful examples of long-term cooperation between NOCs and IOCs, participants exchanged views on how the framework conditions for NOC-IOC cooperation may be improved to optimise its potential and to further enhance global energy security.

Participants underlined that regular contacts between NOC and IOC leaders provide a useful platform for industry to discuss the changing business environment and its impact on stakeholder relationships, and called on the IEF to ensure that the key messages of this first NOC-IOC Forum were developed and transmitted to the 12th IEF Ministerial meeting in Mexico, 29-31 March 2010.

At the 12th IEF, Ministers and industry leaders welcomed the establishment by the IEF of the NOC-IOC Forum, expressed satisfaction with the key findings of the 1st IEF NOC-IOC Forum and stressed the importance of developing innovative models for cooperation and value-driven, long-term partnerships between NOCs and IOCs. Looking forward to the second NOC-IOC Forum it was suggested to attempt to draw up IEF general principles or guidelines on NOC-IOC cooperation, based on best practices around the world, as a possible concrete tool to facilitate this cooperation.

The objective of the 2nd IEF NOC-IOC Forum being held in Paris on 7 & 8 April is to promote discussion and understanding of some of the key issues and common challenges facing the oil and gas industry. The Forum will gather senior decision-makers from NOCs, IOCs,

representatives from producing and consuming countries, as well as service companies, and experts to exchange views and formulate recommendations on how to enhance NOC-IOC cooperation.

The purpose of this paper is to provide background considerations on key topics to be discussed at the Forum. The proceedings and outcome of the 2nd IEF NOC-IOC Forum will help the IEF in preparing recommendations for Ministers and CEOs who will gather at the 13th IEF and 5th IEBF in Kuwait in 2012, and draw from the NOC-IOC Forum discussions a set of guidelines to enable successful and long lasting partnerships among industry players.

1 - Introduction

The energy equation is increasing in complexity as the industry is faced with multiple challenges and unprecedented uncertainty. In addition to the existing challenges relating to global energy security, long term sustainability and the uncertainty surrounding the investment framework, the oil and gas industry will face “new” challenges in the future.

The world is recovering from the greatest economic shock in more than 75 years, and there is still considerable uncertainty regarding the sustainability and pace of the recovery. Nevertheless, future energy demand is expected to grow substantially and massive investment is needed in the oil and gas sector.

The recent growth of unconventional gas production in the US has altered the gas market outlook not only in North America but also in other parts of the world. This adds to existing uncertainties over investment decisions and raises many questions. How unconventional gas development in US will affect global gas trade? Will the development of unconventional gas outside the US follow the same patterns observed in the US so far?

The recent oil spill in the Gulf of Mexico will certainly lead to new regulations and more stringent operating procedures. In addition, the industry will have to restore public’s confidence in its ability to deliver energy safely and show that it has learned lessons from the disaster.

These dramatic changes have led all stakeholders, industry and governments to reassess their business plans and policies and oil and gas companies to face new challenges and increased uncertainty.

2 - Common challenges and shared interests

2.1 - Asia, the energy centre of gravity

Levels of energy needs and economic development are strongly related. A growing world population with aspirations for higher standards of living implies a surge in energy demand, which will rely heavily on hydrocarbon fuels for many years to come. At the same time efforts have to be directed towards achieving a low-carbon and more sustainable energy future.

Global primary demand is set to grow in the future under any scenario, although at a slower rate than in recent decades. According to recently released projections the growth of global energy demand over the next two decades is estimated at around 40%.

Under most mainstream scenarios, fossil fuels are expected to remain the main source of energy in the primary energy mix over the next two decades. Oil remains the dominant fuel in the primary energy mix during the outlook period; but its share is expected to fall. Natural gas is expected to grow at a higher rate than that of the other fossils fuels, increasing its share in the overall energy mix.

The geographical structure of global energy demand is changing with non-OECD countries capturing the future additional demand, while the OECD region will see its demand level off or decline. The faster pace of growth in primary energy demand that has occurred in non-OECD countries over the last few years is set to continue. Non-OECD countries are expected to account for over 90% of the total increase in primary energy demand. Total non-OECD energy consumption will increase by almost two-thirds over the next two decades. Within non-OECD area, global energy demand is shifting to developing countries with Asia and the Middle East (and to a lesser extent Africa and Latin America) playing an increasingly important role.

2.2 - Unprecedented uncertainty surrounding investment

There is a dominant understanding within the energy industry that oil and gas resources are sufficient to meet projected demand for the coming decades. However, huge investments are required to produce, transform, transport and deliver the end-products to consumers. Timely and accurate investments along the supply chain are important for an efficient and secure functioning of energy markets.

The most recent estimates (IEA WEO 2010) indicate that the cumulative investment required to enable the replacement of reserves and production facilities as well as the expansion of production and transport capacity to meet projected energy demand over the period 2010-2035 amounts to $33 trillion, equal to $1.3 trillion per year on average. Out of this total, the oil sector needs some $8.1 trillion, (25% of total investment), i.e. $310 billion per year, with 85 % of this amount to be directed to the upstream. The gas sector is expected to account for $7.1 trillion (22 %), i.e. $270 billion per year. 64 % of the total investment is needed in non-OECD countries, primarily in Asia (30%), where production and demand are expected to increase most.

Over the most recent years, energy investment has fallen in the face of the financial and economic crisis, and the subsequent weakening demand. In the oil and gas sector, most companies have announced cutbacks in capital spending. Total upstream capital spending on oil and gas which fell by 15% in 2009 is expected to have risen by 9 % over the course of 2010.

Mobilising this huge level of investment is a major challenge for the oil and gas industry, NOCs, IOCs and services companies, in the face of unprecedented uncertainty over key determinants. The rate of economic growth in the next decades is a crucial factor determining the increase of

energy demand. In addition to economic growth rate, some key determinants can also influence investment in the oil and gas sector. Energy and environmental policies, upstream costs, human resources adequacy, access to new and more difficult reserves, oil price path, technological development, the issue of sustainable development and the need to tackle energy poverty are all likely to play significant roles in affecting the level of investment in an industry characterised by long payback periods.

The amount of investment required to meet future demand varies widely among the many existing scenarios and may hamper appropriate and timely investment, with the subsequent risk associated with both under- and over-investment. Underinvestment or delays in investment may lead to shortfalls in new capacities required to meet demand, resulting consequently in price hikes. Conversely, overestimates of investment requirements may lead to over-capacity causing prices to collapse. In simple terms demand uncertainty equates to a significant perceived risk which discourages investment and constrains capacity development.

Due to the surrounding host of uncertainties, strategic planning and investment decisions are becoming more problematic. The challenge facing the industry is to continue to take the long term view and invest in the oil and gas value chain despite the many uncertainties.

2.3 - *Human Resource adequacy and skill management*

To meet future energy demand, the industry will explore, develop and produce oil and gas in increasingly severe conditions. The ability to plan and execute large-scale, complex development projects requires a highly qualified and experienced work force, yet professionals with the required skill-set are a scarce commodity, as many of them are in their late 50s and will shortly retire. Both NOCs and IOCs are facing a real challenge that may have an impact on expansion and growth plans, a challenge that requires commitment, cooperation, investment and new approaches in developing, managing and retaining the talent pool.

The oil and gas sector has long been characterised as a boom-bust industry. In boom periods companies have traditionally boosted their capital expenditure and recruited more staff. In bust times, the situation is normally reversed. Human resource management in a “boom-bust” industry is a structural issue and is therefore a real cause of concern and a major challenge to NOCs and IOCs as well as services companies.

Against this backdrop, there are many issues that call for an answer. How should companies adapt their strategies in the face of slowing growth and lower investment? How can NOCs and IOCs avoid ranging back and forth between skill shortage and skill surplus? Is there potential value in NOCs and IOCs joining forces, learning lessons and avoiding repetition of past mistakes?

The challenge facing NOCs and IOCs is to find new approaches and identify sustainable long-term solutions to manage workforce demographics, both in boom and bust times.

Partnership between NOCs and IOCs can contribute to addressing the sector's human resource challenge. Collective collaboration and coordinated cooperation between government, academic and industry on the various issues related to curricula, employment and social policies, and programme financing will achieve more in the long-term than isolated initiatives.

2.4 - Unconventional resources: a game-changer for the global energy markets?

Unconventional resources and particularly natural gas have gained much recognition recently as breakthroughs in technology facilitate massive exploration and large scale production of shale gas in North America.

Increased production of unconventional gas over the past few years in the US has profoundly altered the global market dynamics and attracted increased interest from major oil and gas companies, eager to participate in this new development. Technology is the key to developing unconventional gas and to shorten the acquisition or by-pass the development path; IOCs service companies and more recently some NOCs have been acquiring acreage or taking over existing companies which possess key technologies. Given the capital requirements of extraction, processing, storage and distribution, it is expected that oil majors will play a significant role in the shale gas sector inside and outside North America.

Outside North America, interest in unconventional resources is spreading rapidly and the prospects are promising. However, the conditions that enabled rapid development in the US - subsurface rights, the relatively low population density around unconventional resources and a large, integrated, and open-access pipeline system – are less favorable elsewhere.

The oil and gas industry is facing a new challenge as pressure on gas prices will have an impact on investment in gas projects (conventional and unconventional) and subsequently future capacity. In addition, a boost to spot gas markets will undermine long-term contracts that many consider to be both the backbone of NOC-IOC partnerships in natural gas and a guarantee of energy security.

Low gas prices affect NOCs and IOCs revenues and reduce their capacity to finance capital-intensive projects. Changes in the relationship between oil and gas prices would put pressure on long-term oil-indexed contracts and subsequently add to uncertainty over future investment.

Is this situation a structural change or a temporary shift? How can NOCs and IOCs face and adapt to the situation and preserve contracts and long-term partnerships? How will the global LNG market be impacted? Will unconventional gas be economically viable in the long term and to what extent will it be affected by environmental constraints?

3 – The Macondo accident: what impact on the oil and gas industry?

The Gulf of Mexico oil spill may be in many aspects a game-changer for the oil and gas industry, with probably significant repercussions for deepwater and new frontier exploration

worldwide. Reviews of both industry practices and government policies are already underway. The catastrophe at Norway's Ekofisk field in March 1980, led to stricter rules and procedures. The 1988 Piper Alpha explosion in the UK North Sea led a restructuring of UK offshore regulation.

Macondo was a tragic wake-up call for the industry. New regulations will most probably affect exploration and production not only in the Gulf of Mexico, but also in other regions with deepwater production and new frontiers (such as the Arctic). With potential regulatory changes on the way, the investment framework will be impacted and the industry will have to factor even more uncertainty into its equation.

The US "National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling" released its report early January and recommended changes across the entire offshore drilling process from initial review of companies' exploration plans to the monitoring of rigs and equipment at sea. The report recommends raising the liability cap on economic damages for companies found responsible for a spill particularly that the industry is heading to greater depth and new frontiers. The report notes that "both industry and government will have to demonstrate standards and a level of performance higher than they have ever achieved before".

An investigation panel requested by the US DOI has been tasked with recommending technologies, practices and standards that could govern future offshore drilling for oil and gas. Its final report is due in June 2011.

The findings and recommendations of these reports are likely to provide the basis for new legislation. The US administration is preparing additional regulation that would require companies to have exploration plans certified by an independent entity before the federal government will sign off on them and to present "spill-response" plans and procedures as part of future upstream license awards.

The industry has also set up a number of task forces with the objective to address technology and procedures and to review and strengthen practices and operating procedures.

A slowdown in the issue of permits as well as exploration and production operations and the possible increase in the liability cap for economic damages from oil spills will contribute to driving costs up. Deepwater exploration and development costs are expected to increase by up to 20-25 %, according to some estimates. A recently released report noted that "excessively stringent regulation could result in higher operating costs to the point that some companies find it uneconomic to drill in the deepwater Gulf".

The Gulf of Mexico oil spill will probably affect contractual relationships between partners and contractors not only to clarify liabilities and responsibilities but also to ensure the contractors expertise and financial strength and the highest levels of safe operation.

What lessons can the industry take from the recent incident? How would new regulations impact production and costs? How can the industry adapt to stricter regulations? What will the industry's response be? Are these new regulations opportunities for enhanced NOC-IOC partnerships? Is safety a new area of cooperation between NOCs and IOCs to share best practices? Could rising drilling and operating costs present NOCs and IOCs with new partnership opportunities to share costs and risks?

The Gulf of Mexico catastrophe has severely damaged the reputation of the industry and contributed to reduce public confidence. What steps is the industry taking to restore that confidence, rebuild trust and improve its image? How should the industry present itself to the public?

The lessons learned should be shared across the industry and existing collaboration should be expanded to the entire industry and provide new opportunities for NOC-IOC cooperation

4 - New models for NOC-IOC Cooperation

4.1 – Increased role for NOCs

The relationship between NOCs, IOCs and service companies is changing. In the seventies and early eighties, the integrated oil and gas majors dominated the upstream sector; NOCs looked to IOCs to provide the technology, capital, and human resources to maximize exploration and production of hydrocarbons. Mergers and acquisitions among the major oil companies in the 1980s resulted in IOCs outsourcing their R&D activities. Service companies recognised the opportunity to develop and commercialise technology and subsequently technical services contracts between NOCs and services companies grew in size and importance. Additionally, NOCs have built technical expertise and improved access to capital, they extended their activities from domestic to international and many NOCs operate as an IOC and evolved to quasi IOC or INOC (International National Oil Company). Some NOCs (China, India…) are competing directly with IOCs for access to reserves in foreign markets.

Today the IOCs' share of oil and gas reserves has fallen considerably. NOCs control more than 90% of the world's oil and gas reserves while the six major international integrated oil companies currently control less than 5%. Three countries control more than half of the world's natural gas reserves. 10 NOCs produce 40% of global oil production while the production of the six major IOCs amounts to less than 14%. 10 NOCs control 72% of the world's total reserves while the six major IOCs currently control less than 4%.

The concentration of hydrocarbon access in the hands of a small number of NOCs was one of the most noticeable developments over the last decade. In the recently released PIW oil and gas companies ranking, there are more NOCs in the top 50 than IOCs. In the top 25, NOCs dominate the oil company landscape, with 17 positions, and NOCs occupy higher positions with four of the top five ranks.

4.2 – New expectations call for innovative approaches

The current investment environment characterized with increased uncertainty could provide new opportunities for NOCs and IOCs to partner in long-term sustainable partnerships and alliances, to share the operational and financial risks, particularly for mega-projects or in difficult environments.

Today the partnership environment is more demanding. NOC-IOC partnerships are built not only on economic considerations but also with environmental and social implications. NOCs and IOCs are looking at new models of cooperation that go beyond simple resource development, and integrate host countries expectations such as economic development, technology transfer, infrastructure development and support of local contractors. Social and environmental concerns are increasingly integrated into project planning and development in oil and gas sectors.

NOCs' governments view their natural resources as a tool for financing social and economic development, and long-term, integrated partnerships designed to the specific needs of the host country are those likely to be most successful agreements.

During the last few years a number of NOC-NOC partnerships have been announced through governments of exporting and importing nations. In these mutually beneficial arrangements, in return for future supply, importing nations through their NOCs offer finance and technical expertise to develop projects in the hydrocarbon sector.

Another development is the NOC-IOC partnerships outside NOC home country, focusing on specific projects and alliances that creates added value for all stakeholders, NOC, IOC, NOC's government and host country of the project.

Some industry leaders raised at the 1st NOC-IOC Forum the possibility to "combine" IOCs with technology and capability with NOCs with resources. The new model would be different from conventional joint venture, NOC and IOC could team up and form a new separate entity.

In an increasingly competitive and demanding environment, NOCs and IOCs are seeking ways to develop and maintain long-term relationships equitable to all parties. An example of this integrated approach is partnership between NOCs and IOCs in "integrated gas projects" where the relationship covers the whole value chain from resource development to gas transportation and transformation (LNG) to downstream marketing, and high-tech training centres to develop local skills. Another example is the development of domestic refineries in host countries through NOC-IOC joint investment (such as the 400,000 b/d refinery in Jubail developed jointly by Saudi Aramco and Total).

The recently announced BP-Rosneft strategic alliance, under which the two companies plan to jointly explore for offshore oil and gas in the highly prospective South Kara Sea in the Arctic, could be a new model of NOC-IOC partnership. This alliance is the first major NOC-IOC cross-shareholding in the oil and gas industry.

Could this share-exchange deal be a “new template” for NOC-IOC partnership? Whether this NOC-IOC equity swap becomes commonplace will depend on whether it will last and prove to offer mutual advantage to the parties involved.

4.3 – Natural gas: a showcase of necessary long-term NOC-IOC cooperation

As global gas trade and interdependence among producer and consumer countries increase, multilateral agreements and intergovernmental solutions are needed to support or bring forward new infrastructure, to jointly explore, exploit and deliver reserves from increasingly remote production areas to markets. Such pattern will require long term involvement of gas producers and consumers, as well as transit countries, within adequate frameworks that preserve the interests of all parties (trade and transit agreements, investment protection agreements, etc.).

IOCs are diversifying their gas portfolio to include assets in multiple locations, and various parts of the gas value chain, upstream, liquefaction, regasification and marketing, through a combination of partnership, acquisition and asset investment. NOCs are moving downstream, in the regasification and gas distribution sectors. Vertical integration and crisscross investment improve energy security and reduces economic risk. The “traditional” roles along the gas value chain are changing and the boundaries distorting.

Driven by long-term economic considerations, the interests of NOCs and IOCs are more likely to converge in the natural gas sector. Stronger partnerships, multifaceted cooperation and innovative arrangements between NOCs, IOCs, and services companies are developing particularly in the face of developing remote and difficult gas resources.

5 - Conclusion

The energy sector is in a period of flux. The scale and complexity of the challenges that face nearly every element of the industry are daunting, but they are not without solutions. The industry has consistently demonstrated its ability to adapt and evolve to meet rising challenges.
But unlike previous tests, the uncertainties laid before the industry today demand ever greater cooperation from within the sector. Governments, NOCs, IOCs, and policymakers must come together to promote cooperation to address common issues.

As the industry is moving to difficult environment operational challenges will grow significantly. The industry will need to develop skilled personnel, manage costs and develop new technology. This situation creates new challenges and new uncertainty, but also new opportunities for cooperation and partnership between NOCs, IOCs and services companies, to share risks, technology advances and invest in R & D.

NOCs and IOCs have their specific skills and expertise and successful models of cooperation that bring together these strengths and competencies exist. In a more demanding environment, NOCs and IOCs need to develop and maintain new models of cooperation that go beyond

simple resource development, and integrate host nation's expectations. Developing local forces and supporting economies are part of successful long-term partnerships. Long-term, integrated partnerships including technology, capital and expertise, are those likely to be "win-win" and most successful agreements, with strategic and cross-shareholding alliances suggesting a "new template" for NOC-IOC partnership.