2nd IEF-IGU Ministerial Gas Forum

The Role of Natural Gas in a Sustainable Energy Future

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Background Paper

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1 - Introduction

In addition to global energy security and price volatility, growing environmental concerns brought gas high on the agenda of policy makers and industry leaders. The sustainability of the global energy future and the need to develop a sustainable response to climate change - a response that balances both environmental and global energy security concerns - has the full attention of the world's policymakers.

Given its availability, environmental qualities and advances in technology, natural gas could constitute a key part of an efficient global low-emission economy. Natural gas consumption and trade have been growing steadily over the past two decades and gas has strengthened its position in the world energy mix. Although gas demand declined in 2009, as a result of the economic slowdown, it is expected to resume growth in both emerging and traditional markets in the coming decades.

The structure of global gas demand has changed as developing countries have begun to use more natural gas and the traditional markets have seen their demand level off or decline. The projected increase in natural gas demand is expected to come primarily from non-OECD countries, with Asia and the Middle East playing an important role.

The recent growth of unconventional gas production in the US has also altered the gas market outlook not only in North America but also in other parts of the world. New, indigenous supply in the US, one of the largest natural gas consumers, is likely to impact the LNG industry for years to come.

In the concluding statement of the 12th IEF held in Cancun (30-31 March 2010), Ministers noted that "the broadening of the producer-consumer dialogue to natural gas has made significant progress" and welcomed "the establishment of the IEF-IGU Ministerial Gas Forum". Ministers observed that "the trend towards globalization in the gas markets, the investment challenge and the urgent need to enhance gas market transparency are key topics to focus on in future work" and proposed an initial meeting on gas dialogue that will report back to the 13th IEF.

To advance this dialogue, the IEF and IGU will organise further forums as part of a regular platform for debate, discussion and rise of awareness among consumers, producers, governments and industry.

To emphasize the importance of a sustainable energy supply IGU has, with the expertise of its members, produced several publications like the report "Natural Gas Unlocking the Low Carbon Future" and an Industry Study of developments in the gas industry looking forward to 2030.

This paper is intended to give a background to participants of the 2nd IEF-IGU Ministerial Gas Forum. The Forum will gather Ministers and gas industry leaders from gas producing, consuming and transit countries to discuss "The Role of Natural Gas in a Sustainable Energy

Future". The 1st IEF - IGU Ministerial Gas Forum, held in Vienna, Austria, November 2008, was recognized as an important step forward in the promotion of healthy dialogue between natural gas producers and consumers.

2 - Gas markets: Recent development and long-term prospect

The share of natural gas in the world energy-mix has increased substantially during the last two decades, from 17 % in 1980 to about 21 % today. This increasing importance of natural gas resulted from the combination of its attractive economic and environmental characteristics and its expanding infrastructure. Natural gas has become a fuel of choice in many countries, although there are still substantial differences across regions.

Conventional gas reserves are sufficient to meet future demand, subject of course to adequate and timely investment to bring them to market. The world remaining resources of natural gas are ample enough to meet demand over the next decades; at current global demand, the natural gas reserve to production ratio is of more than 60 years. The recent rapid development of unconventional gas resources in the US during the last three years has transformed the gas outlook not only in North America but in other parts of the world as well.

The power generation sector is the main driver behind natural gas demand growth. Gas-fired power generation plants are more flexible in operation, more efficient, less expensive compared to other options, faster to build and more environmentally-friendly. In addition, natural gas can combine with less flexible and intermittent supply of some renewable energy to provide optimum solutions for power generation, heating and cooling.

Due to economic recession, world gas demand dropped in 2009 by 2.1% with wide regional disparities. Mainly used for industry and power generation natural gas demand is more impacted by the economic climate than oil. Demand dropped in the OECD region (-3.1 %), Europe being the most affected, and in some non-OECD countries such as Russia (-6.1 %), while China, India and the Middle East where the economy continued to grow, have witnessed strong gas demand growth with respectively 9.4 %, 25.9 % and 4.4 %.

The evolution of the natural gas markets has been affected by the confluence of major forces during the past two years; a surge in volumes coupled to a weak demand resulted in a global gas over supply. Two factors on the supply side, the increase of liquefaction capacity and the so-called "quiet revolution" of continued growth in shale gas production in North America. As a result of investment decisions taken in 2004-06, the gas industry experienced a significant increase in LNG capacity and greater LNG supply was coming to the market in 2009-2010. LNG production capacity exceeded volume committed to long term sales and purchase agreements and the LNG spot market experienced a glut. On the demand side, the global economic recession in 2008 had a depressing effect on gas demand worldwide; it affected the industrial and the power generation sectors.

Natural gas demand is expected to resume its upward trend in the future, though at a slower pace, both in traditional markets and newly emerging consuming countries (Middle East, China, India) on the back of growing environmental concerns, expanded infrastructure and technological innovations. Natural gas will continue to play a significant role in global energy demand for many decades to come as demand will continue to increase especially for power generation and gas will remain the fuel of choice for this sector in many parts of the world.

According to IEA (WEO 2009), demand for natural gas will grow on average by 1.5 % per year from 3049 bcm/y in 2007 to 4313 bcm/y in 2030. This is below the growth rate of 2.6 % per year for the period of 1980-2007. Over 80 % of the increase over the projection period is occurring in the non-OECD countries, mainly in Asia but also with significant growth in the Middle East, which is now emerging as a major consumption center (30 % of the increase in non-OECD region). Within Asia, China will show the largest growth in gas demand. Natural gas in China increased from 22 bcm in 2000 to 80 bcm in 2009 and is expected to rise to 242 bcm in 2030 that is an average growth rate of 5.3 % per annum. The size of this growth might well be more than is generally expected and can have a huge impact on global gas markets.

The power sector is expected to remain the largest driver of gas demand in all regions, accounting for 45 % of the increase in world demand over the projected period and increasing its share of the world gas market from 39 % to 41 % in 2030.

The key question facing the gas industry today is how long the gas supply surplus will last as uncertainty remains on the pace of the economic recovery, the primary determinant of natural gas demand.
The development of unconventional gas in the US is a new variable that will impact long term projections. The economic and financial crisis combined with the increase in shale gas has changed the projected supply-demand balance for natural gas and added uncertainty to the market outlook.

In the 1st IEF-IGU Ministerial Gas Forum, ministers recognized that “data transparency is essential to efficient oil and gas market stability as greater transparency aids in price discovery and limits volatility, thus reducing uncertainty”. While acclaiming the role of JODI in improving transparency in the oil market, Ministers and industry leaders noted that “improving transparency on gas market information such as prices and flows will contribute to the reduction of uncertainties, improve predictability and project planning and leads to better allocation of gas resources across the globe”. Ministers and industry leaders discussed the relevant issue whether a mechanism of gas data reporting similar to JODI would enhance gas market transparency and encouraged the IEF Secretariat to assess with other relevant international organizations possible extension of JODI to cover natural gas data.

In the Concluding Statement of the 12th IEF (Cancun 30-31 March 2010) Ministers welcomed the progress made in preparing the extension of JODI to natural gas to cover monthly natural gas data, called on all relevant organizations to step up their efforts on boosting gas market

transparency, and asked the IEF Secretariat to report at the 13th IEF Ministerial meeting on progress.

3 – Gas and sustainability

In the past decade the energy equation has become more complex. Energy security and affordability are no longer the only main parameters in the equation, sustainability has entered the discussion very prominently as the climate effects of energy use have been acknowledged.

Access to energy and economic development are strongly related, a growing world population and increasing life standards will imply a surge in energy demand. This growth in energy demand will, for many years to come, be met by hydrocarbon fuels. At the same time efforts have to be directed towards achieving a low-carbon energy mix, because climate change is considered one of the biggest challenges facing mankind today. Natural gas can play an important role to meet this challenge due to its qualities and availability.

New policies pose new challenges for the energy industry. Introducing renewables like wind and solar means that one needs a solid and flexible back up capacity in case the sun does not shine or the wind does not blow.

What are the implications of these developments? How will the gas market be influenced? What role can natural gas play to balance this new equation? How will regulation influence the energy market of the future?

In the European Union, for example, so called 20-20-20 goals have been developed; in 2020 20% of the energy consumption shall be renewable, CO_2 emissions shall be decreased by 20% compared to 1990 levels and the primary energy consumption is set to decrease by 20% compared with previous forecasts. Whilst this provides a clear target there is also a danger that when the simple 'headline' is implemented, governments fail to recognize that natural gas should be an essential part of the global solution to climate change.

The UN Climate Change Conference held in Copenhagen in 2009, (COP15) did not achieve binding agreements regarding worldwide reduction targets in emissions, but the momentum for effective action was maintained. On 13 December 2009 IGU organized a very successful Gas Event during COP15 in Copenhagen titled "The Contribution of Natural Gas towards a Sustainable Energy Future" which highlighted the role of natural gas in climate change mitigation.

IGU acknowledged by this initiative the importance of communication and co-operation between policy makers and the gas industry to reach common goals of a sustainable energy future. On 5 December 2010 IGU will, together with the Worldwatch Institute, organize a similar event during COP16 in Cancun, Mexico under the title "The role of Natural Gas in a Low-Carbon Economy".

Climate researchers believe the only way to limit the rise in global temperatures by a tolerable 2°C is to halve global emissions of greenhouse gases in the long term, with the industrialized world playing a leading role.

With its highly efficient combustion and low carbon emissions compared to other fossil fuels, natural gas can contribute significantly to a solution to the world's economic and environmental challenges in a secure and sustainable way.

When burnt to heat homes or for industrial uses, natural gas releases 25-30% less CO_2 than oil and 40-50% less than coal per unit of energy produced. When burnt to generate electricity, it releases around 60 % less than coal for every kWh sent out. By replacing five coal-fired plants with five gas-fired plants the same volume of CO_2 emission reduction can be reached as with 9,000 Megawatts of new wind power.

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4 – Unconventional gas: A quiet revolution

In the past five years rising shale gas production has underpinned an average 3.9 % per annum increase in overall US gas output. It is now widely agreed that the US will have enough indigenous gas supply for the next 100 years. US - EIA 2010 reference case scenario estimates technically recoverable US shale gas resources at 9800 bcm up from a 2009 estimate of 7500 bcm.

The rise of unconventional gas in the US has reduced imports of LNG and Canadian gas and driven down North American gas prices. It also raises many questions. Is such a revolution possible outside the US? How are major companies reacting? What will be the impact on the global LNG market?

Many countries in Europe, Asia and Latin America are investigating their unconventional gas potential. However, the conditions that enabled a rapid development in the US - subsurface rights, relatively low population density around unconventional resources and large, integrated, open-access pipeline system – are less favorable elsewhere.

Europe is expected to hold a lot of shale gas; preliminary studies have revealed the presence of shale gas in Germany, France, the UK, Poland and Turkey. In China, the potential for unconventional gas resources is huge; shale gas reserves in place are estimated at about 30 trillion cm, but development faces serious challenges and the country has a long way to go before shale gas becomes the game-changer it is now in the US.

Outside the US, shale gas will not be easy to develop. Will it be economically viable? The costs will certainly be affected by environmental constraints. It is hard to assess how quickly other shale gas reserves can be brought into production.

In addition, unconventional gas development will also face challenges similar to conventional gas, such as investment, pricing and fiscal conditions and transport infrastructures.
Recent reports expect that shale gas development outside North America will be slower as it faces important challenges, such as economic and environmental issues and local opposition.

Over the past two years unconventional gas has attracted increasing 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 path, large oil and gas companies have been undertaking acquisition of acreage or takeover of existing companies which possess technology.

A number of joint ventures have been signed since 2008 and we have seen the entry of major companies into the shale gas sector. All these deals underline the potential and growing importance of the North American shale gas sector.

The US market is of particular interest to LNG industry players because of its arbitrage opportunities and the fact that it can meet peak-shaving needs. LNG demand in the US depends on the consumption in the power sector, which can switch to other energy sources, depending on prices.

US shale gas has profoundly altered the global market, cutting US LNG import requirements and pushing down prices worldwide. In 2009, US LNG imports declined to a low level and averaged 35 million cm in 2009. This development is expected to have significant impact in the medium term, not only in the North American market, but also on inter-regional LNG trades. A combination of weak demand and the success of shale and non conventional gas may be making the US virtually self sufficient in gas for the first time in almost four decades. The impact of the US shale gas boom is spreading fast to global markets.

Unconventional gas now accounts for more than half of US gas output, which means the US could eventually “withdraw from the LNG market” and wouldn’t support global LNG demand growth in the near term. According to the latest edition of the US EIA Short-Term Energy Outlook, after having fallen by 1.5% to 645 bcm in 2009, US natural gas consumption is going to remain unchanged in 2010 and 2011. The US market will need only 5 bcm of LNG more than in 2009 and only 1 bcm more in 2011.

Is the US moving to an exporting role? In November 2009, the US Sabine Pass terminal re-exported LNG from the US and is now seeking to equip its LNG receiving terminal with liquefaction units, to take advantage of the supply and price opportunities. This could be seen as a major change in the LNG global equation.

However, questions are raised about the sustainability of unconventional gas in the US given low prices and tightening safety and environment rules after the Macondo oil spill. Plus, domestic shale gas development may require huge investment and therefore may need more long-term contracts.

5 - Rising domestic gas demand: A key challenge for gas producing countries

Gas demand and gas share in many producing countries have been growing sharply over the past two decades and will continue to grow. Gas remains the fuel of choice for power generation as well as for enhanced oil recovery. This trend has implications for producing countries as well as energy markets globally, as increasing domestic demand impacts exports and reduces export revenues.

Middle East and former Soviet Union countries hold 41% and 31 % of proven global gas reserves respectively and are therefore expected to be the main sources of most incremental gas production to meet future global demand.

In the Middle East Gas demand challenges have been increasingly prominent themes over the past few years. The region is posting the largest absolute production growth in the last decade. Marketed production has more than doubled over the past decade, rising from 195 bcm in 1999 to 407 bcm in 2009. The share of the Middle East in the world gas production increased from 8.3 % to 13.6 % over the period. Primary gas use increased by 91 % during 1999-2009, reaching 346 bcm or 11.8 % of world consumption. As in most other regions the power sector is the main driver of demand growth underpinned by economic development, subsidized tariffs and rapid population growth. Energy-intensive petrochemicals and water desalination account for most of the rest of the increase. According to IEA WEO 2009, gas production is projected to rise from 383 bcm to 810 bcm over the period 2008-2030, while demand is projected to almost double, from 332 bcm to 600 bcm. Beside its importance as a supplier to the world market, the Middle East is emerging as an important consuming center.

Soaring domestic demand is becoming an issue for many countries in the Middle East. For gas exporting countries, it will cut into exports and revenues unless new supply will come on stream; it also raises the question of gas supply availability and gas infrastructure deficit. Low domestic prices are hampering gas development. According to a recent APICORP estimate, the MENA gas sector may need up to $170 billion of investment in the next five years.

Many countries face difficulties accessing enough gas to meet surging demand. Saudi Arabia has not made an allocation of gas to industry during the last few years, the UAE is considering alternatives to gas for power generation, Oman is limiting its LNG exports and Iran, despite huge reserves, is a net importer. A major export center for LNG, the region emerging as an important importer; Kuwait is already importing LNG to cover summer peak power demand, Dubai and Bahrain may also join as LNG importers.

In many producing countries, the sustainability of internal gas demand is being questioned; energy conservation policies and reduction of subsidies seem to be key challenges. Domestic prices will eventually be allowed to rise to levels that encourage viable exploration and production and an efficient utilization of energy and reduce the effect on export revenues. There is an urgent need to ramp up energy efficiency and energy saving to curb demand growth and also tackle the issue of phasing out, over the medium term and in a socially acceptable way, unsustainable fossil fuel subsidies.

6 – Expanding LNG trade: A driver for interconnected gas markets

During the last decade, inter-regional natural gas trade expanded and price interactions increased. Regional gas markets are also increasingly interconnected as LNG trade, especially spot trade, is expanding rapidly.

Over the past decade, world gas trade witnessed a 6 %/year growth on average, with a 7.1 % growth rate for LNG and a 5.7 % for pipe trade. The recent trend toward globalization of gas markets has already transformed the markets with an increase of players, importers working to secure multiple sources of supply and exporters seeking multiple markets.

During the past decade, global natural gas trade increased by 79 %, while the global LNG volumes almost doubled, on the back of the massive extension of LNG liquefaction capacity. Over the same period the volume of spot and short-term LNG traded worldwide experienced a sharp increase of 40 % per year on average.

LNG trade grew by 5.7 % in 2009 and gained market share from international piped natural gas. More LNG markets are emerging around the world taking advantage of expected incremental availability of LNG supply in coming years.

The global spot market is gaining maturity which implies a more liquid market with greater potential for narrowing price differences between regions. In the past couple of years, higher gas prices and tighter market balances accelerated some global exchanges of LNG cargoes from the Atlantic to the Asia Pacific markets. New players entered the game, Russia and Yemen as new LNG exporters while Chile, Brazil and Kuwait started importing LNG. Middle East and South America are emerging as new zone of gas consumption and new LNG importing regions. However in 2009, the increase in shale gas sources has reduced imports of LNG in the US and some industry experts predict the US to “disappear” from the LNG picture in the next few years, with some adverse consequence on the globalizing trends of the gas markets. Is the global trend towards globalization slowing down with the new equation in the US market?

IGU addressed this “gas market integration” as a “cornerstone for sustainable development” in their 2008 strategic statement.

7 - Natural gas price evolution: A breach in the link between gas and oil?

Gas prices in long-term oil-indexed contracts have generally been higher than spot gas prices, but the gap has widened significantly in 2009, spot gas prices have fallen dramatically in the world's two major spot markets to around $ 4-5 mmbtu, compared to $12-13 reached in 2008.

Several factors have contributed to the divergence between spot gas prices and oil-indexed prices. On the demand side gas markets have been hit harder than oil markets with world demand declining by over 2 % versus 1% for oil. On the supply side, the gas markets have been affected by expanded LNG supply and the increase in unconventional gas production in North America.
European and Asian buyers called for more flexibility and competitive prices in long term oil indexed contracts. Adjustments are being introduced in long-term contracts to reflect spot market conditions and hybrid spot/oil indexed formulas are increasingly included in long term contracts.

Does this change in oil-indexed contracts means the end of the long-term contracts? Are we observing a beginning of a structural shift which, if taken further, could end up with the future disappearance of the link between gas prices and oil prices?

There are two sides of the debates. For buyers, indexation to oil prices is no more relevant in particular in the power generation sector, where the role of oil has been declining over the last decade and is today minor. An indexation to spot price would improve transparency, competitiveness of gas and accelerate demand recovery and eventually increase market share against other energy sources. For suppliers, oil-indexed long term contracts provide buyers and sellers with security of supply and demand, protect huge investment in gas value chain and secure incentives for future upstream investment. Besides, liquidity of spot markets is insufficient which means that demand and supply may be subject to manipulation and volatility is too high for large-scale long-term indexation.

Major players in Europe, while calling for more "flexibility" and "market conditions" to be reflected in long-term contracts by incorporating some element of spot price indexation, acknowledge however that long-term oil-indexed contracts will remain predominant as they underpin huge upstream and infrastructure investments.

The evolution of oil-indexed prices will depend on when the global gas market will recover and how the demand-supply balance in the three regional markets will evolve. However, a single price approach cannot be imposed on what are still essentially three regional markets, North America, Europe and Asia, characterized by different pricing methodologies, opportunities and risks, depending on oil price levels and buyers' and sellers' strategies and relations.

North America and the UK, where gas-gas competition is established, significant volumes are not likely to turn away from this mechanism as long as confidence in the liquidity of the markets

is maintained. In Europe, liberalization, gas-gas competition and acceptable liquid trading hubs have been slow to emerge. None of the continental European hubs could serve as a reliable price index for the European market, as they all lack depth and liquidity.

The recent introduction of spot price in the long-term oil-indexed contracts is seen as a softening of the oil-indexed price mechanism rather than a transition away from oil-indexed price. Buyers and sellers are confident that the gap between spot and long term contracts would eventually narrow when demand will resume on the back of economic recovery.

8 – Investment: The long term view

Worldwide, gas resources are sufficient to meet projected demand for the next decades, subject to adequate investments. The gas industry is highly capital-intensive and huge and long-term investments are required through the entire value chain to produce and deliver natural gas to end-consumers. Gas projects very often involve a multiplicity of stakeholders, both public and private, across different countries.

Over the year 2009 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. IEA estimates upstream oil and gas investments budget reduction for 2009 at around 19 % compared to 2008, a diminution of over $ 90 billion.

In two years, markets have moved from tightness to oversupply. The unconventional gas revolution coupled with continuing uncertainty about the pace of economic recovery has created new uncertainties on the projected supply and demand balance and consequently where and how much to invest in the gas value chain.

According to IEA (WEO 2009), the cumulative investment required to meet projected energy demand over the period 2008-2030 is projected to amount to $26 trillion (in 2008 dollars), equal to $1.1 trillion per year on average. From this amount, the gas sector is expected to account for $5.1 trillion or around $ 220 billion per year, 60 % for exploration and development, 10 % for LNG facilities and the rest for transmission and distribution. More than half of this amount is needed in non-OECD countries, primarily in Eurasia, Asia and the Middle East. The Middle East accounts for almost half of total liquefaction investment worldwide.

The current market situation has led to delay in investments, and some projects have been cancelled or postponed. If investment decisions continue to be deferred then this would result in a supply crunch, taking into account the long lead times in the gas value chain, upstream, liquefaction and regasification units, transportation and storage infrastructures.

In many parts of the world, gas will remain the preferred generating fuel for economic and environmental reasons and demand for natural gas is projected to increase.

In China and India the demand for gas is growing, and in the Middle East gas demand is projected to double in the next two decades. The challenge facing the industry is to take the long-term view and continue to invest in the gas value chain despite uncertainties surrounding the economic situation and current market conditions characterized by a gas glut and low prices.

9 – Natural gas: A vector for NOC-IOC cooperation

As global gas trade and interdependence among producer and consumer countries increase, concerns about security of supply and security of demand will become progressively more important. Increasingly, multilateral agreements and intergovernmental solutions will be needed to support or bring forward new infrastructure, to jointly explore and exploit new gas reserves, and to help establish robust and secure markets to the benefit of all parties. Gas demand growth and declining reserves in established markets will require more long-distance pipelines to deliver reserves from remote production areas to new and established markets. This will require long term cooperation between gas producers and consumers, and transit countries, including trade and transit agreements, investment protection agreements, etc.

Rapid development in global trade will require and gradually help forge constructive bilateral and multilateral government relations to ensure that growing interdependence does not add to the increasing concerns about security of supply and security of demand. International markets present new opportunities to gas companies, many of which have expanded from their home territories to join the increasing number of companies active in the global market.

International oil and gas companies are diversifying their gas portfolio to include assets in multiple locations, and various sector of the gas chain value, upstream, liquefaction, regasification and marketing, through a combination of partnership, acquisition and asset investment. National oil and gas companies are moving downstream, in the regasification and gas distribution sectors. Vertical integration and criss-cross investments are generally viewed in the industry as a positive development that improves 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 business. Stronger partnerships, multifaceted cooperation and innovative arrangements between NOCs, IOCs, and services companies are developing particularly for the challenges of developing remote and difficult gas resources.

In the Concluding Statement of the 12th IEF (Cancun 30-31 March 2010) Ministers welcomed the establishment by the IEF of the NOC-IOC Forum. The first one, held 30-31 March 2009 in Kuwait, stressed the importance of developing innovative models of cooperation and value-driven, long-term partnerships between NOCs and IOCs. Looking forward to the 2nd IEF NOC-IOC Forum to be held 7-8 April 2011, in Paris, it was suggested to attempt to draw up an 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.

10 - Natural gas: A clear message for a sustainable future

Natural gas has long been the fuel of choice not only because of its efficiency and environmental qualities, its flexibility and economic characteristics but also for a better public acceptance compared to both nuclear power and coal-fired plants.

The natural gas industry has the scale, technology, and resources to help reduce CO_2 emissions. This positive contribution that natural gas is making in climate change mitigation and delivering a sustainable energy future should be highlighted in international fora and debates. Natural gas is the most efficient and the most environmentally-friendly, producing the lowest CO_2 emissions per unit of energy generation than any other fossil fuel. Natural gas is therefore the fastest and easiest way to reduce GHG emissions significantly. Renewables will need time to develop and have a significant impact on GHGs emission levels.

Based on today's figures, natural gas reserves are sufficient to meet demand for at least the next 60 years and future exploration and appraisal will undoubtedly add many decades to the potential supply of gas. Transportation infrastructures and distribution networks are well developed to bring gas to the end-user.

Natural gas is an essential part of the global solution to climate change. It can play a major role in accelerating the development and deployment of technologies that contribute to GHGs reduction such as carbon capture and storage technology. With Sleipner and Snohvit (Norway) and the In Salah (Algeria) projects, the natural gas industry has pioneered the climate mitigation concept of CCS. It is expected that several more projects will follow in the coming years and the natural gas industry is therefore expected to take a wider CCS role. It has the knowledge and experience to transport and store in geological formations CO_2 emitted by other sources such as power plants and the petrochemical industry. It is however necessary to develop the regulatory and legal frameworks making CCS commercially attractive.

Along with regulatory and legal framework, participants to the 2nd IEF-GCCSI symposium on CCS, held in Algiers, 30 May-01 June 2010, recognized the need to tackle public perception, reduce CCS costs, establish an effective and stable price for CO_2 and include CCS under the Clean Development Mechanism (CDM) or any other post-Kyoto mechanism.

Natural gas can be an "enabling fuel". It can play a role of a "dual" or a complementary fuel to renewables by enabling increased deployment of energy supply from intermittent renewable technologies, contributing therefore to their development. Gas fired power plants can be brought on line quickly making them an ideal backup for solar and wind power. Hence, a sustainable energy future should be one where all types of clean energies are used; natural gas is more than a bridge, it's a destination fuel.