

# FOURTH IEF-IGU MINISTERIAL GAS FORUM



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## IEF BACKGROUND PAPER

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THE ROLE OF GAS IN ENERGY SECURITY AND SUSTAINABLE  
ECONOMIC DEVELOPMENT

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## 1. KEY DIALOGUE DRIVERS: THEMES THAT FEATURE PROMINENTLY IN THE CURRENT GLOBAL ENERGY DIALOGUE ON NATURAL GAS

- There is an apparent discrepancy between short/medium-term outlooks and long-term outlooks regarding expected gas demand levels. Over the near term, the prospects for gas demand are less optimistic than over the long-term.
- The future of natural gas does not depend on the future of unconventional gas. What makes unconventional gas interesting is the new geography it represents, with players such as Argentina, Canada and the United States.
- More dialogue is required regarding the possible impacts of lower oil prices on unconventional gas production in the United States and Canada.
- Asia is expected to be a major battleground for gas versus coal competition.
- Some experts are advancing the theory that a nuclear restart in Japan (and elsewhere), coupled with slowing Asian demand, might engender an oversupply of gas that would send prices lower--possibly strengthening the price competitiveness of gas *vis à vis* coal.
- As more floating LNG comes on stream and shipping on FOB terms rises, the market will likely start to see spot LNG prices.
- By some accounts, destination clauses are already becoming a thing of the past. The European Commission decreed that all imported LNG can be redistributed freely within the Eurozone. New LNG contracts between Middle Eastern suppliers and Asia buyers appear to incorporate more flexibility.
- More dialogue between LNG exporters and importers to craft flexible contracts that feature profit-sharing arrangements may well be the way forward. The future will belong to the LNG producers that embrace flexibility.
- Concerns of an LNG supply glut appear exaggerated, given the fact that virtually all of the new LNG coming on stream has already been purchased. Aside from potential increases in reloaded LNG shipments, scenarios involving dozens of LNG tankers floating with no where to offload their cargoes appear unlikely to materialise, at least in the short- to medium-term.
- To safeguard secure and sustainable energy markets for decades to come, dialogue is needed on the inter-relationship between gas and coal in the context of carbon pricing policy and technology deployment.
- Gas and renewables can be allies where capacity is concerned, but with electricity generation they can also be competitors.
- Gas exporting countries continue to struggle to gain better visibility into future expected demand from importing countries, which is necessary to justify additional investments in capacity expansion.

## **2. THE FOURTH IEF-IGU MINISTERIAL GAS FORUM: EVENT OVERVIEW**

The themes to be discussed at the 4th IEF-IGU Ministerial Gas Forum include the role of gas in sustainable economic development and its interaction with other sources of energy, long-term investment and LNG trade in competitive but unsettled gas markets, and the overall interaction between policy and private sector strategy in this capital-intensive and long-term oriented sector. The selection of these matters represents a continuation of central topics discussed at the Third IEF-IGU Ministerial Gas Forum (Paris, November 2012), which included the inter-dependence of gas, coal, renewables and nuclear, the importance of policy and clear “rules of the game” to promote long-term investment, and the widely-held acknowledgement that natural gas demand and production hold great potential to increase in the years ahead.

This 4th IEF-IGU Ministerial Gas Forum, like previous joint conclaves, is a platform for Ministers, industry executives and senior decision-makers to explore how policy, long-term partnerships and enhanced cooperation can help to address the core challenges of energy security and sustainable economic development. What is more, the sharing of good practices, key learnings and successful policy approaches among advanced and developing economies represents a realistic avenue for cooperation on natural gas, and one that the organisers hope to facilitate in this Forum.

## **3. THEN AND NOW: TRACKING THE EVOLUTION OF THE GLOBAL ENERGY DIALOGUE ON NATURAL GAS SINCE THE 3RD IEF-IGU MINISTERIAL GAS FORUM IN 2012**

The table on the following page represents an effort by the IEF to analyse how the energy dialogue on natural gas has evolved since the Third IEF-IGU Ministerial Gas Forum held two years ago. The left column lists a number of key points and assumptions that were central to the conversation on natural gas back in November 2012. Since then, the IEF and numerous stakeholders have explored many of these themes in a variety of fora: several IEF Thought-Leader Roundtables, the Fifth Asian Ministerial Energy Roundtable (Seoul, 2013), and the 14th International Energy Forum (Moscow, 2014). Based on the discussions at those and other events over the last two years, the IEF has identified in the following table where the dialogue on natural gas has progressed, and where some of the commonly held beliefs have remained unchanged.

**IEF ASSESSMENT OF THE EVOLUTION OF  
THE GLOBAL ENERGY DIALOGUE ON NATURAL GAS**

<b>NOVEMBER 2012</b>	<b>NOVEMBER 2014</b>
Asia Pacific will drive future natural gas demand.	Unchanged.
An integrated global gas market is not likely in the near term.	Unchanged, though there is now talk of a possible LNG spot price.
The logic for establishing a regional gas-pricing hub in Asia is questionable.	Unchanged, though some nations continue to push for this.
Oil-indexation of gas prices has clear merits, but some sellers have won business by applying a more flexible formula.	Unchanged, with the trend towards greater flexibility on the part of LNG exporters.
It is difficult to talk about gas in isolation because of its links to electricity, coal and renewables.	Unchanged, though some view gas as more of a complement than a competitor.
Improving the availability, quality and timeliness of gas data will reduce uncertainty and promote investment.	Unchanged, with gas data access enhanced through the launch of JODI-Gas in May 2014.
Policymakers must continue to balance ambitious renewable targets with the realities of economics.	Unchanged, with coal gaining market share.
Destination clauses in LNG contracts are ironclad and non-negotiable.	<b>Changed:</b> European Commission ruling, greater exporter flexibility.
There are conflicting messages about gas in the marketplace (clean fuel versus "fracking" concerns)	<b>Changed:</b> gas has gained prominence as a clean fossil fuel that can advance climate goals.
Companies entering into joint ventures with US-based unconventional players will benefit from technology transfer, accelerating the spread of the so-called unconventional revolution.	<b>Changed:</b> geology differs so dramatically from play to play within the US that the transfer of knowledge to China and beyond is not straightforward.
In the wake of the Fukushima disaster, Japan will cease using nuclear power indefinitely.	<b>Changed:</b> Japan likely to bring some nuclear back on line in 2015.

## 4. THE ROLE OF GAS IN SUSTAINABLE ECONOMIC DEVELOPMENT

Open questions remain about the implications for the global climate in a scenario where large-scale deployment of cleaner energies, including natural gas, is delayed. For most observers, it will be very difficult to limit emissions to a level consistent with the 2°C increase in global temperature agreed upon in climate change negotiations. The window of opportunity to reach this goal, they emphasise, is closing. Decisive, coordinated action is therefore required to decrease energy intensity across regions while expanding renewable energy capacity.

The promise of renewable energies and the progress made so far on energy efficiency is nonetheless facing the reality that the most significant reductions in emissions have come from greater use of natural gas and nuclear energy. This is why natural gas is seen as a possible “bridging fuel” towards a future where more clean energy technologies will be deployed. It remains unclear at this point whether or not the bridge will consist primarily of back-up capacity to support investments in renewables, or if it will actually compete with them and slow their widespread deployment. The answer will involve, as always, the relative costs of natural gas with respect to its alternatives, and will require addressing the intermittency of renewable sources and carbon pricing policies, as well as technological advances in carbon capture and electrical energy storage.

In recent years world energy markets have experienced major advancements in energy efficiency and the deployment of renewable technologies. Renewable energy sources continue to meet an increasing share of energy demand, and are expected to account for just below 18 per cent of the overall energy mix 25 years hence. The introduction of new, more efficient technologies has sparked improvements in energy efficiency in all major energy-intensive industries worldwide. Many market actors do not fully grasp, however, the extent to which renewables need gas as a back-up fuel, nor the extent to which coal may be edging gas out of that role. While the future path remains undefined, there does appear to be consensus on the notion that the world will need every unit of energy possible in the future. Therefore, when discussing sustainability, one should endeavour to embrace a holistic approach to energy matrices.

Finally, while gas demand appears to have levelled off in OECD Europe and may expand at a more moderate pace in Asia (as a function of slowing economic growth), long-term sustainability and climate-related goals remain in place. Accordingly, gas producers and governments alike have been seeking to identify new market segments for natural gas, such as the transportation and petrochemical sectors.

## 5. LONG-TERM INVESTMENT AND LNG TRADE IN COMPETITIVE BUT UNSETTLED GAS MARKETS

For years, uncertainty over energy policies has been a matter of paramount importance because the expected level and composition of future demand affects investment decisions today, which in turn affects the future demand-supply balance. Large investments are needed upstream to develop resources, midstream to transport the gas, and downstream to establish robust markets that provide security of demand at the end of the gas chain. Regulatory instability, or “rules of the game” that are unclear or change frequently, can delay or prevent necessary investments and lead to sub-optimal outcomes. Many Energy Ministers face the challenge of fulfilling short-term political objectives while safeguarding long-term energy security for their nations, and these twin

objectives can at times be at odds with each other. Building trust and deepening communication between government and industry is one means to address the challenge.

More recently, the global energy conversation has experienced a shift in focus, driven to a large extent by the effects of advances in methods of extracting and producing oil and gas. The most visible and high-impact effect of these advances is the so-called unconventional revolution, as the expansion of gas supply from shale deposits is now called.

With the advent of this incremental supply, many analysts expect to observe changes in the inter-regional structure of gas prices, the process of price formation, the direction of trade and the global energy mix. Some of these changes are already taking place, such as the increase in gas price divergence between Asia and North America (which has recently narrowed), the re-direction of Middle Eastern liquefied natural gas (LNG) cargoes originally destined for North America to Europe and Asia Pacific, and the displacement of North American coal to European markets.

Among the most talked-about topics is the prospect for Asian consumers to diversify further their sources of LNG supply, much of which comes from the Middle East, by increasing their purchases from Africa, Oceania and North America. Asian consumers see in greater LNG trade an opportunity to strengthen their energy security and to foster price convergence among Asia, Europe and North America. They also envision the possibility of restructuring the regional pricing mechanism for natural gas to rely less on oil-price indexation and to incorporate spot prices, much along the lines of North America's Henry Hub model. Consumers are exploring options for establishing similar market hubs in Asia, recognising the need for greater liquidity and the build out of related infrastructure.

Producers of natural gas recognise the arbitrage opportunities involved, as well as the contribution that diversification of natural gas supplies brings to energy security, but warn that a shift in the pricing mechanism could be disruptive and may fuel uncertainty to a degree that might discourage new investments to expand gas supply. They advise against changing a system that from their viewpoint has worked and is still needed to forge long-term investment partnerships, and emphasise that certainty about pricing mechanisms, consumption plans and policy is key to sustaining necessary investment levels and solving coordination challenges. Without this certainty, a boom-bust cycle may follow. As the saying goes, "Nothing cures high gas prices like high gas prices".

Viewed more broadly, the effects greater gas production and trade may have on geopolitics and the environment also merit attention. There may be a realignment of long-standing producer-consumer relations, renewed emphasis on pipeline politics and the protection of maritime trade routes, and shifts among the positions of key players in climate change negotiations, to mention a few. All of these points will affect how gas markets will ultimately evolve.

## 6. NATURAL GAS AND LNG: FIVE WIDELY-HELD PERCEPTIONS AND RELATED EXPERT INSIGHTS<sup>1</sup>

From newspaper headlines to energy conference agendas, there are numerous and at times conflicting opinions regarding the future path of LNG markets. Will new production from multiple regions come on stream, flooding the market and creating a global (or at least regional) gas glut? Or will the realities of the market determine that precious few LNG export facilities will be constructed, yielding a more muted impact on market dynamics that some optimistic media headlines might lead us to believe?

The potential game-changing nature of the expected rise in LNG trade has engendered a number of commonly-held perceptions that some experts believe to be inaccurate. In the interest of stimulating dialogue and understanding, the IEF--together with the Korea Energy Economics Institute and Hart Energy Research and Consulting--analysed a number of commonly held perceptions in an attempt to focus the lens on these points and to stimulate dialogue.

**Commonly-held Perception 1:** The advent of shale has given North America more natural gas than it knows what to do with. Therefore, if a company can build a liquefaction facility, it will have abundant, cheap feed gas for its project.

**Related Expert Insight:** Recent demand and supply forecasts from the US Energy Information Administration (EIA) suggest that all announcements of new liquefaction capacity will not materialise, among other reasons because of potential constraints in natural gas supply. The EIA expects production in Canada and the US to be sufficient to meet consumption in Canada, the US and Mexico by 2017 but only by a slim margin, in part because of a strong expected demand/supply imbalance in Mexico. The surplus is forecast to grow every year, but not at a fast enough rate to keep up with announced liquefaction capacity. While LNG export projects may well come on stream, feed gas for the plants may not be as cheap as operators might want or expect.

**Commonly-held Perception 2:** If a company can build a liquefaction plant, it can market the off-take easily and at commercially-attractive prices.

**Related Expert Insight:** This might have been true as recently as five or ten years ago when LNG had a few major suppliers. In the short- to medium-term, there will likely be more sourcing options for LNG. Several plants will come on stream in Australia by 2017, and the US and Canada are attempting to launch at least a few plants by 2020. Positive news is also coming from potential East African LNG suppliers. Given that there are many contracts being renewed over the 2017-2020 timeframe, buyers may well have more choices of supply. Some LNG suppliers are reportedly facing challenges in locking in long-term contracts with Asian buyers, who are holding out for cheaper gas.

<sup>1</sup> Based on analysis performed by Hart Energy Research and Consulting, the International Energy Forum and the Korea Energy Economics Institute.

**Commonly-held Perception 3:** Market actors will collectively be able to learn from the miscalculations that caused cost overruns in Western Australia, and as a result will be able to build new plants on schedule and on budget.

**Related Expert Insight:** Three Australian coal-seam projects (QCLNG, APLNG, and Gladstone) have exceeded their original budgets by at least 25%. Gorgon is the most expensive liquefaction project in the world, exceeding its initial budget by nearly 100%. With projects in British Columbia, East Africa, and the US West Coast share many of the characteristics of West Australian projects (lack of infrastructure, need for imported labour force, and/or isolated offshore gas reserves), there is a chance that these future projects may face many of the same problems experienced in Western Australia.

**Commonly-held Perception 4:** There are so many proposed liquefaction projects, particularly in North America and Australia, that gas prices in Asia are bound to drop.

**Related Expert Insight:** The road from proposed to operational liquefaction facility is a long and arduous one. This is likely to play out in North America. By some estimates, there are over 40 proposed liquefaction plants on the continent that have plans to export on a global scale. Yet some experts believe that fewer than ten of those will come on stream by 2030, dramatically reducing the anticipated supply increase. Furthermore, Asian demand, especially that in China, is expected to grow at an equal or greater rate than marginal supply coming on stream, thus tightening the market.

**Commonly-held Perception 5:** The low cost Henry Hub gas that is available to U.S. liquefaction projects will mean extremely high margins for the terminal operators if the LNG can be sold long-term in Asia.

**Related Expert Insight:** This is only partially true. High margins are certainly achievable if Asian prices remain three to four times higher than Henry Hub, but the profits will not necessarily be realised by the terminal builders and operators. Most of the Gulf Coast projects operate on a tolling model, meaning the terminal's liquefaction capacity is being leased out for a set fee that is smaller than some of the potentially lucrative arbitrage opportunities in Japan and Korea. The capacity is leased out to a separate entity whose responsibility it is to provide feed gas to the facility on the front end and then find a buyer on the back end. By removing the commodity risk from the equation, the terminals -- including Cameron, Freeport and Cove Point, among others -- have both limited downside and limited upside.

## 7. ENHANCED NATURAL GAS DATA TRANSPARENCY

At the 11th International Energy Forum Ministerial (Rome, April 2008) and at the Jeddah and London Energy Meetings (June and December 2008), Energy Ministers identified the growing role that natural gas would play in the global energy mix and called for the extension of the Joint Organisations Data Initiative (JODI) platform to cover natural gas. Following the example of JODI-Oil, Ministers recognised that sharing energy data benefits both producers and consumers alike:

### **Why should producers want to share more information?**

To ensure that buyers of oil and gas--their customers--have a good idea about expected future supply levels and can plan their off-take accordingly.

### **Why should consumers want to share more information?**

So that producers have a better idea of expected future demand levels, and can plan their infrastructure build-out to ensure adequate and uninterrupted supply.

Six years later, the eight JODI Partners<sup>2</sup> publically-launched the JODI-Gas World Database at the 14th International Energy Forum. 77 countries and economies are now participating in JODI-Gas, representing around 89% of global natural gas supply and 85% of global natural gas demand. While the first JODI-Gas participation assessment (smiley faces) has not yet been published because the launch of JODI-Gas was so recent, 46 countries and economies--or roughly 60% of those participating in the Initiative--submit data with a one month time lag (M-1). This is an impressive achievement, as the official mandate for JODI-Gas is to submit on an M-2 basis.

**Short-term:** annual budgeting, purchase decisions for power generation, trading decisions, short-term market analysis.

**Long-term:** strategic planning (modelling and developing outlooks), upstream investment decisions, LNG fleet decisions, and long-term contract decisions.

In nearly all discussion settings, participants have highlighted the importance of cooperation to increase market data transparency, which is fundamental for sound policy and investment decisions. Significant progress has been made to increase oil and gas data availability under the JODI platform, but enhanced cooperation will be needed to expand the database and guarantee its reliability.

There is saying frequently cited by the JODI Partners, which eloquently describes the need for the on-going support of the Initiative: "JODI is not a database. JODI is a commitment". A sustained commitment from all market actors involved in the JODI supply chain will be necessary to maintain and enhance this important energy data transparency undertaking.

<sup>2</sup> The eight JODI Partners are APEC, Eurostat, GECF, IEA, IEF, Olade, OPEC, UNSD.

## 8. CONCLUSION

A fundamental objective of international energy cooperation is to promote energy security through markets that are stable, transparent, and sustainable. These three characteristics are interrelated and can only be pursued as objectives to the extent that progress is made in understanding their determinants. Market stability is closely linked with adequate investments on both the supply and demand side, sufficient to create necessary buffers for production and consumption to adapt to changing market circumstances. Better data are required to improve investment planning and execution, which have considerable impact over the medium- and long-term behaviour of price signals. Sustainable national energy systems can be built easier in an environment of stability and transparency.

Considering the aforementioned trends and subjects that are currently at the centre of the global energy conversation regarding natural gas, the 4th IEF-IGU Ministerial Gas Forum is an opportunity to discuss, among others, the key issues and questions surrounding natural gas, and more broadly energy markets. In the end, it is questions like these that encourage representatives from government, industry, international organisations and other stakeholder segments to exchange views and to jointly seek answers. In that spirit, the IEF sincerely hopes that the Fourth IEF-IGU Ministerial Gas Forum helps to advance our shared objective of promoting energy security for all through dialogue.