

Summary Statement

LNG Producer-Consumer Conference

6 November 2014 Tokyo

The Ministry of Economy, Trade and Industry (METI)
and the Asia Pacific Energy Research Centre (APERC)

The LNG Producer-Consumer Conference was held on November 6, 2014, and attended by more than 1,000 company executives and government officials, as well as analysts, from more than 50 LNG producing and consuming countries and regions and international organizations, including Mr. Yoichi Miyazawa, Minister of Economy, Trade and Industry, Japan, and four ministers from different countries. The conference was organized by the Ministry of Economy, Trade and Industry of Japan (METI) and the Asia Pacific Energy Research Centre (APERC).

Opening Address:

- H. E. Yoichi Miyazawa, Minister of Economy, Trade and Industry, Japan

It is crucial to develop a stable, competitive and flexible LNG market in order to realize a globally stable natural gas system. Significant changes are underway that are having profound impacts on the development of the LNG market: efforts to restart reactors, and proposed restructuring of the electricity and discussions of gas markets reform in Japan; and increasing demand and supply capacity around the world. After the expected start of LNG exports to Asia from the United States in 2016, up to 20%-30% reduction of Japanese LNG prices

LNG Producer-Consumer Conference 2014

may be expected. There has been a growing common understanding in the LNG market of the importance of relaxation of destination clauses supported by the European competition policy, as well as the G7 Summit and the APEC Energy Ministerial Meeting this year. There has been diversification of LNG pricing formulae including those linked to Henry Hub prices and hybrid ones combining linkages to both crude oil and gas market prices. New technologies have attracted attention including floating LNG, Arctic-Ocean transportation and methane hydrate extraction that could create new business opportunities. These changes and evolutions are expected to promote healthy development of the global LNG market. Japan hopes to contribute to the prosperous development of the LNG market through organizing the LNG Producer-Consumer Conference - an open platform where issues in the global LNG market are discussed.

Keynote Speech:

- H. E. Mohammed Bin Saleh Al-Sada, Minister of Energy and Industry, Qatar

Over the last 50 years the LNG industry has developed steadily with both liquefaction plants and LNG carriers expanding their sizes significantly as seen in Qatar. While global LNG demand has not grown much in the last three years and strong demand for LNG is not expected in Europe and the United States, Asian LNG demand grew by 6% in 2013 driven by China and Korea. Future demand growth is also expected in Latin America and in the transportation sector. While there are challenges in continuing investment under uncertain circumstances, Qatar is committed to being a reliable LNG supplier to Japan and the rest of the world.

- The Honourable Ian Macfarlane, Minister for Industry, Australia

Australia is on track to becoming the world's largest LNG exporter by 2018-19. Since Australia's very first LNG exports in 1989, the country has progressed from being a new LNG producer to a trusted and stable contributor to global energy security outcomes. The Australian Government continues to advocate

the open and transparent development of the global LNG market where the sale and purchase of LNG is determined on a commercial basis through competitive markets. With expected new Australian LNG volumes and the market tightness forecast to ease, the Australian Government is confident that a stable, transparent and flexible LNG market, underpinned by competitive market principles, is achievable.

- The Honourable Greg Rickford, Minister of Natural Resources, Canada

Its abundant natural gas resources make Canada the fifth largest producer of natural gas in the world. Canada has the potential to become a major exporter of LNG to Japan and to the rest of the world with its vast resources, strong economic fundamentals, and an efficient regulatory system. Canada's west coast is in close proximity to Asian markets. It will strengthen the partnership with Japan and other LNG importing countries..

- H. E. Maria van der Hoeven, Executive Director, International Energy Agency

LNG producers and consumers have, instead of conflict, shared interest in developing a flexible market in Asia. Natural gas has an important role to play in the achievement of energy security in the region. By 2035, the IEA expects natural gas demand in Asia to grow by as much as the current total production of the United States. The majority of the current investment into LNG facilities worldwide of more than USD 200 billion is focused on those projects targeting Asia. Building an efficient and sustainable LNG market requires the development of trading hubs through open-access infrastructure, liberalisation of energy prices by reducing subsidies and the efficient development of LNG projects.

Session 1: LNG supply outlook & Actions by producers

- Department of Energy, United States of America

The global energy market is in a remarkable transition period driven by the shale revolution, global environmental issues, and geopolitical risks. DOE

LNG Producer-Consumer Conference 2014

invests in research development of clean energy technologies, clean coal technologies, methane hydrates, and LNG. The United States is making a remarkable transition from being an importer to an exporter of LNG. More than ten Japanese companies have already invested in LNG projects in the United States. DOE has recently streamlined its LNG export approval process. The Department will conduct the process as soon and efficiently as possible in light of public interest.

- ExxonMobil

Natural gas is a high-growth business and the fastest growing among fossil fuels. Demand for natural gas is expected to overtake that for coal by 2025. The global demand for gas is expected to grow by 2.4%/year on average until 2025. LNG is expected to play a big role as 75% of incremental gas demand comes from Asia. In addition to the 88 million tonnes per year capacity that is currently under construction, an additional 200 million tonnes per year needs to be operational by 2025. The world needs significantly more supply and it means \$20 million investment per project on average. The industry faces considerable challenges and opportunities. There is no low-cost LNG and long-term contracts continue to be important.

- Shell

Shell's involvement in delivering LNG to Japan started more than 40 years ago. As in the coming decades there will be more people, more people living in cities, and more people with improving living standards, Shell expects global energy demand to double by 2050. Focus should be on cost-effective solutions that secure supply and, at the same time, combat climate change and air pollution. The numbers of LNG importing and exporting countries are expected to grow from the current 30 and 20 to 50 and 25 respectively in the next ten years. While supply is expected to grow in parallel with demand, long-term contracts will continue to be required. Shell differentiators as the global leader in gas are: Technology, Integration and Scale, and the company is innovating at a significant rate both in LNG supply as well as demand.

- Woodside Energy

LNG Producer-Consumer Conference 2014

As the global LNG market evolves, buyers will have increasing options for supply. Although the market balance may be relaxed, buyers could find supplies tight by 2020 - 2023 if investment decisions for 50 million tonnes per year in new LNG projects are not made soon. Developers of LNG projects will still need long-term contracts before making multi-billion dollar capital investments. As the upstream players' capability to invest is deteriorating, the sustainable development of the Asian LNG market must be underpinned by a shared commitment to fundamental market principles: supply and demand; and also capital, risk and return.

- Cheniere Energy

The LNG market is projected to grow at a rate of 6% per annum to 2025, requiring the construction of at 5 LNG trains every year. Most of the projected LNG supplies outside of the United States are in areas where the development environments are not favorable with a lack of infrastructure, mature logistical systems and supporting political and fiscal regimes. The optionality that a more dynamic LNG market brings to participants is invaluable. Destination-free LNG from the United States will help inject additional liquidity in the LNG market. Cheniere expects to have 40 million tonnes per year LNG supply capacity by 2020.

- Alaska Department of Natural Resources

The Alaska LNG Project (AKLNG) is a project to liquefy natural gas produced from the North Slope on the Pacific coast to produce up to 20 million tonnes per year of LNG. The Alaska State Legislature authorized legislation that would allow the State of Alaska to convert its royalties and taxes into an equity interest in AKLNG. The decision has greatly enhanced the viability of the project. The project has numerous competitive advantages, including: financially strong and experienced partners; lower ambient temperatures; Alaska's advantageous geopolitical position; and close proximity to North Asian markets.

- Oregon LNG

The United States has a very well developed natural gas infrastructure with interstate pipelines linking producing basins in the United States and Canada to

markets. The only missing link is access to a liquefaction facility. Oregon LNG is offering Asian LNG consumers the opportunity to own the liquefaction facility. LNG consumers are expected to procure gas from the highly liquid and very competitive market and transport the gas to Oregon LNG with their own liquefaction capacity to produce LNG and bring the LNG to Asia. This approach will also allow full destination flexibility.

- Veresen

At its planned Jordan Cove LNG project Veresen plans to provide Asian customers with a transparent regulatory environment in the United States, a shorter transportation distance, established natural gas infrastructure, and access to competitive feedgas supply from Western Canada and the Rockies region. The tolling model will enable customers to procure LNG at low cost and with destination flexibility. With strong local and political support, the project expects to make a final investment decision on the six million tonnes per year plant in 2015.

Session 2: LNG demand outlook & Actions by consumers

- Ministry of Trade, Industry & Energy, Republic of Korea

The LNG market is in transition from being a sellers' market to being a buyers' market. Northeast Asia is expected to remain the largest LNG market in the world in the 2020s. In order to cope with uncertainty brought by future developments of the shale revolution and oil prices, we propose joint studies on more flexible LNG trades through the diversification of pricing and elimination of destination restrictions, diversification of supply sources including North America, East Africa and international pipeline connections, and possible Asian LNG hubs.

- The Oxford Institute for Energy Studies

While Asian LNG buyers seem to be requesting a level below USD 12/million btu, the real problem is in pricing mechanisms rather than pricing levels. JKM, the proposed Singaporean hub, the Japanese futures market, and the perceived

LNG Producer-Consumer Conference 2014

Shanghai hub are emerging to potentially replace oil-linked pricing. If buyers are seeking a sustainable market price for gas then they will have to create a credible mechanism.

- Tokyo Electric Power

Diversification of players and LNG flows indicate steady development of the market. Suppliers' challenges include shifting production locations to remote and technically challenging areas and increasing risks accompanied with financing and marketing of large-scale projects. Japanese consumers' challenges include uncertainty in future LNG demand and the urgent need to reduce procurement prices. Both producers and consumers should make every effort to solve their own challenges, sometimes through mutual cooperation. Tokyo Electric Power Company plans to establish a comprehensive alliance with Chubu Electric Power Company. Through optimization of the whole supply chain, the alliance as a solid LNG buyer will contribute proactively to the stability and development of the LNG market.

- CPC Corporation

The future growth of global LNG demand is expected to be driven by emerging Asian economies. The global LNG market is diversifying with multiple sources, multiple players, multiple participation and multiple applications. The Asian LNG market will shift towards a more liquid spot market and a formulation of Asian LNG trading hub. However, the future outlook of the LNG price remains uncertain. LNG producers and consumers will have to be more creative in dealing with these issues and work together to explore the potential of a promising future.

- GAIL Limited.

The growth of the global economy is slowing down with an estimated growth rate of 3.3% per year in the first half of 2014 and projected growth of 3.8% for 2015. Still the Asian LNG demand is expected to grow driven by India and China. Abundant new supply sources are expected to hit the market including 60 - 70 million tonnes per year by 2020 from the United States. LNG buyers have made efforts to diversify pricing mechanisms, relax destination restrictions, develop

new supply projects in Canada and East Africa, develop floating LNG, and conduct LNG swaps. GAIL is looking at such cooperation opportunities as the agreement with Chubu Electric Power. Countries in Asia including India, Pakistan, Bangladesh and Thailand have large potential LNG demand and potential opportunities to develop gas infrastructure.

- CNPC Economic & Technology Research Institute

China's natural gas demand is expected to reach 298.5 bcm in 2020 and 454.4 bcm in 2030 from 168 bcm in 2013. The domestic supply capacity is also expected to grow significantly to reach 400 bcm by 2020. At present, LNG cannot compete against coal in the power generation sector. In addition, natural gas has become less competitive compared to petroleum as a motor vehicle fuel. Hence the utilization rates of LNG terminals have been lower. In order to promote the use of LNG, enhanced price competitiveness will be essential.

Session 3: New movement towards developing flexible LNG market and change in LNG trade

- Japan Bank for International Cooperation (JBIC)

The LNG market in 2014 has been affected by deterioration of the situation in the Middle East, Ukraine's gas crisis, the pipeline gas contract between China and Russia, and Japan's increasing burden of fossil fuel imports and the resulting trade deficit. JBIC has provided support to LNG projects in Papua New Guinea, which made the first delivery of LNG this year, and those in Australia currently under construction. The bank is also providing financial support to realize LNG Projects in the United States involving Japanese companies, which should contribute to the diversification of pricing and supply sources without destination restrictions. The bank also has dialogues with potential new supply sources and LNG projects in Canada, Alaska and Mozambique. JBIC will further develop relationships with supply source countries, including the expected new frontier region, continue support for LNG value chains, and undertake financial challenges in response to the recent LNG dynamics

LNG Producer-Consumer Conference 2014

- Mr. Takayuki Ueda, Commissioner, Agency for Natural Resources and Energy, Japan

Currently LNG accounts for more than half of Japan's power generation. LNG import costs have increased significantly after the East Japan Great Earthquake. Electricity costs for the industrial sector have increased by 30% compared to before the earthquake. Reducing fuel procurement costs is a critical issue to ensure the long-term stable energy supply. By adding the mainland of the United States, Canada, East Africa, Alaska, and others to our supply source, we can increase our opportunities to find cheaper LNG. LNG demand in Japan is likely to decline again due to the restart of the nuclear plants, the promotion of energy efficiency and conservation, the introduction of renewable energy, and a decrease in the population in the long run. We would like to contribute to the development of a stable and sustainable global LNG market.

- The Institute of Energy Economics, Japan (IEEJ)

IEEJ held two meetings of the Multilateral Joint Study Group on LNG in 2014. According to the outcome, two major causes of significant gaps between regional natural gas prices in the international market are different price formations and lack of flexibility in LNG transactions. Toward development of the LNG market, all stakeholders, sellers and buyers, the public and private sectors alike, should have their respective roles. Such pricing mechanisms are recommended in Asia that reflect the demand and supply situation in an appropriate and timely manner. More specifically, price indexes derived from spot LNG transactions and hub prices should be developed (multi-type price formation). In order to facilitate more flexible LNG transactions elimination or relaxation of destination restrictions is recommended and more transparent information on prices and market conditions should be provided.

- Chubu Electric Power

Although the share of short-term and spot LNG transactions has increased recently, prices in such transactions are still mainly linked to oil prices as those under long-term contracts. Purely spot and one-off cargo transactions that are priced independently reflecting the prevailing balance of demand and supply of LNG represent less than 10% of the total market. An Asian LNG market where

LNG Producer-Consumer Conference 2014

LNG can be traded at transparent prices with sufficient liquidity should be established in ten years. Chubu Electric Power continues efforts to expand the use of medium- and short-term contracts and spot transactions, make use of the LNG futures market, increase contracted volumes without restrictions on destinations to more than half and diversify price indexes.

- Total

Natural gas demand is expected to grow by 4.4% per year on average until 2030 with LNG representing nearly 40% of this demand. In order to meet the expected demand, an additional 250 million tonnes per year of LNG capacity should be operational by 2030. As uncertainty persists on China's and Japan's energy mixes, greater flexibility in the LNG supply will be needed. However, not all LNG projects can meet this requirement. Total will continue to further offer its traditional long-term LNG supply contributing to ensure Asian countries security of supply; but Total is also taking into consideration new markets concerns and commercial expectations in using its own downstream portfolio to offer flexible supply.

- Chicago Mercantile Exchange Group

The Jordan Cove project on the West Coast of the United States is expected to be approved to export LNG by early 2015. The transit time from the project to Japan will be nine days, compared to 22 days for the projects on the Gulf Coast. West Coast LNG export projects also benefit from a hub at Malin, Oregon. Malin is the transit point for gas from Canada and the United States, and provides access to the California, Oregon, Washington and Asian markets. The Malin hub creates the opportunity for commodity trading vehicles that will permit hedging and other useful pricing activities.

- Mr. Tatsuya Terazawa, Director-General for Commerce, Distribution and Industrial Safety Policy, Japan

In order to facilitate more active LNG transactions, it is crucial to enhance the transparency of the LNG market. In April 2014 METI started publishing LNG spot prices in the largest LNG consuming country in the world to date collected from players. Japan hopes this will enhance transparency in LNG transactions.

In addition in September, Japan OTC Exchange Company (JOE) launched an LNG OTC market. Japan would like to provide market players around the world with a fair and open futures market where they can achieve equitable price formation and appropriate risk hedging. Various players in the world are invited to join it.

Session4: LNG technology developments

- Japan Oil, Gas and Metals National Corporation (JOGMEC)

JOGMEC supports four shale gas development projects involving Japanese companies in Canada and conducts joint technological studies on geological analysis and hydraulic fracturing with Canadian counterparts. JOGMEC estimates that the Japan Eastern Nankai trough holds 1.1 trillion cubic meters of methane hydrates. The first methane hydrate offshore production test was carried out in the Japan Eastern Nankai trough in March 2013, successfully extracting 20,000 m³ per day on average for six days. The next phase is to establish a viable extraction technology by 2018. JOGMEC would like to contribute to the global stable energy supply through working with organizations from various countries.

- Tokyo Gas

Tokyo Gas plans to pursue comprehensive value creation throughout the entire LNG value chain. The penetration of natural gas use in Japan has been made possible through the development of utilization technologies and appliances, including cogeneration and natural gas vehicles. As growth of those applications has stagnated due to increases in LNG prices since the middle of 2000's, LNG prices that do not hinder market expansion are even more important. Tokyo Gas as an LNG buyer makes every effort to expand the downstream gas market. The company expects sellers will play their role to achieve reasonable levels of Asian LNG prices in the context of the global LNG market. By establishing mutually cooperative relationships between buyers and sellers, we should continue our respective efforts to play our expected roles to provide solutions to enhance the sound development of the LNG market.

- Anadarko Petroleum

The years spent establishing viable shale gas technologies since the 1940s have enabled the recent rapid expansion of shale gas production in the United States, leading to significant changes in energy markets. So far in Mozambique, 70 Tcf of natural gas resources have been found. Anadarko conducts LNG project development activities including drilling wells and pipeline-laying with a plant site of 7,000 hectares. As one of its corporate social responsibilities, up to 1,000 local workers are already hired on the project. After ensuring related legal frameworks, the company is preparing for an FID.

- Shell

FLNG is to enable offshore gas production and liquefaction, as well as storage and transportation of LNG at sea, opening up new business opportunities. In 1993, Shell built the world's first commercial GTL plant in Malaysia. Shell has also built Pearl - the world's largest GTL plant in Qatar. Shell is the launching customer of LNG-for-transport infrastructure for ships and trucks at the Gate terminal in the Netherlands. Shell continues to invest heavily in innovation. Innovation partnerships between suppliers and consumers are very powerful. Governments have a very important role to play to ensure a level playing field for natural gas, to support innovation.

- JGC Corporation

JGC provides project developers with solutions based on consideration of the environment, optimized technologies and accumulated project management expertise, helping realization of investment in projects. FLNG in particular is an effective approach to provide deep-water and small-scale gas fields with wider ranges of development options and potentials. JGC is the first Japanese company to work on FLNG. The company needs to enhance cost competitiveness accompanied with high safety standards in order to proceed further in FLNG development. The technologies and expertise nourished in FLNG are expected to be the core of a wider range of offshore engineering, enabling further development and effective utilization of natural gas.

- Mitsui O.S.K. Lines

LNG Producer-Consumer Conference 2014

The LNG project on the Yamal Peninsula is expected to use the Northern Sea Route (NSR) in summer to transport LNG to Asia. The first icebreaking LNG carriers in the world are to be used. NSR is expected to reduce voyage times and transportation costs significantly and enhance the security of the energy supply. However, some bottlenecks are expected to accompany it including the need to escort icebreakers and the need to construct icebreaking LNG carriers. Thus the immediate impact of NSR on the LNG market is limited. Nevertheless, future additional advantages can be found in potential development of the huge Arctic resources. Mitsui O.S.K Lines will accumulate the expertise on its operation and contribute to the development of NSR.

- Chiyoda Corporation

Chiyoda has been involved in the construction of LNG production projects around the world. Its achievements in recent years have included a project in a very cold location in Sakhalin, mega-trains of 7.8 million tonnes per year apiece in Qatar, and starting production ahead of schedule in Papua New Guinea. The company intends to take advantage of expertise gained through the Sakhalin project in the engineering and construction of future projects in Canada, Alaska, and Russia.
