

LNG – THE FUTURE SUPPLY & DEMAND

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Abstract

An unceasing growth of gas consumption in domestic households, industry, and power plants has gradually turned Liquefied Natural Gas (LNG) into a major source of energy. Main drivers in this development are the technical and economic advantages of natural gas. It is a clean, versatile, and easily controllable fuel. On this basis, natural gas is often considered the form of energy that will be the "bridging fuel" to a sustainable energy system, sometime after 2050. Unlike other main sources of energy, such as oil and coal, natural gas is not traded on an actual world market. This paper provides an overview on demand and supplies of LNG in the past as a function of gas prices, gas technology (gas sweetening, liquefaction, shipping and re-gasification), and gas market and how they have changed recently. It also discusses the likely developments in global LNG demand for the period to the year 2030.

Keywords: Liquefied Natural Gas, International Energy Agency, Gas Authority of India Ltd, Organisation for economic cooperation and development region.

Introduction

The LNG trade is expected to increase by one third in the next five years and the level of growth that occurred in the year 2010-11 will not be repeated any time in the near future. The reason is that global liquefaction capacity is set to grow at a much slower pace after 2011; as of today, only 91 bcm (billion cubic metres) is committed to come online between 2012 and 2017. This rise over five years is less than the increase which occurred over the past two years, albeit similar to the capacity expansion that took place over 2004-08. In particular, less than 30 bcm of LNG capacity is set to come over 2011-14, while several trains are to be decommissioned over that timeframe – in the United States, in Indonesia and potentially in Algeria. The International Energy Agency (IEA) expects new Final Investment Decisions to be taken over the coming year but it is doubtful that much LNG capacity could be built in less than five years. Moreover, new LNG capacity is geographically concentrated, with 80% of the 91 bcm located in Asia-Oceania and earmarked for Asian markets. There is a risk

that this concentration may lead to delays due to potential bottlenecks in infrastructure and workforce shortages.

LNG- The Future

The largest producer of LNG, by far is Qatar, whose liquefaction capacity is roughly one quarter of global LNG liquefaction capacity as of mid-2011. Qatar saw a massive expansion of its capacity from 42 bcm to 105 bcm over the past two years. Indonesia, Malaysia, Australia and Algeria are also significant LNG exporters. Other countries have also recently entered the LNG exporting scene, Russia and Yemen in 2009 and Peru in 2010. Angola is expected to start exporting in 2012 and Papua New Guinea in 2014. Australia is set to become the second largest LNG exporter behind Qatar by 2016 – six projects are currently committed or under construction, representing 60 bcm of new capacity. The last two years witnessed a dramatic expansion in global liquefaction capacity, which increased by over 100 billion cubic metres (bcm) (+39%). In 2010 alone, LNG trade jumped by an astounding 21%, to

around 300 bcm, which amounts to 9% of the total global demand for gas.

Gas market

There was surplus, but it is eroding fast. The past two years witnessed a complete turnaround in the global gas balance and market perspectives. 2009 was more of a buyers' market as excess supply led to competition between pipeline and LNG suppliers to get what was left of rapidly dropping import requirements. LNG suppliers won the battle by undercutting pipeline suppliers with lower spot prices. However, global markets tightened in 2010 as global gas demand recovered by 7.4%. The appetite for LNG (and spot prices) grew correspondingly in all regions, except in the United States, where unconventional gas supplies minimise LNG import needs. Since the end of 2009, investors decided to proceed with seven new LNG export plants to start around 2015. In 2011, gas markets are further tightening with LNG demand increasing strongly, notably in Asia. Global consumption of gas is projected to increase by some 510 bcm (roughly equivalent to 75% of US consumption in 2010) over 2010-16, according to the IEA's medium-term forecasts issued in the Medium-Term Oil and Gas Markets 2011 report. (These forecasts are based on economic growth of 4.5% on average).

Around 60% will be met by regional domestic production increases, notably in Middle Eastern countries, while the rest will be covered by imports. Many producers, mainly in Asia and the Middle East, will struggle to meet their increasing domestic demand for gas as they try to meet existing LNG export commitments. As the unconventional gas revolution is very slow to spread outside North America, its impact in other regions will still be limited over the coming five years. LNG imports will meet around one fifth of the total incremental demand. Global LNG

markets are expected to further tighten over the coming two-three years due to strong LNG demand, notably in Asia, and modest supply coming online.

Over the next five years, the bulk of the LNG supplies are projected to go to non-OECD markets. Besides China, India and Taiwan, booming LNG demand is expected to come from South East Asia; Thailand just started importing LNG in June and will be followed in the next three years by Indonesia, Vietnam, Malaysia and Singapore. LNG imports are also set to increase, albeit to a lesser extent, in the Middle East and Latin America. Hence, LNG buyers are already trying to secure LNG supplies as illustrated by wide ranging agreements - for example between Qatar and LNG buyers worldwide. LNG from the new projects recently agreed upon is already almost entirely contracted to Asian countries.

The IEA (Oil Market Report, August 2011) analysed two scenarios for nuclear generation over 2011-12. In the base case scenario, nuclear plants come back from maintenance works after an average of six months. In the worst case scenario, all 54 reactors in Japan will be offline by May 2012.

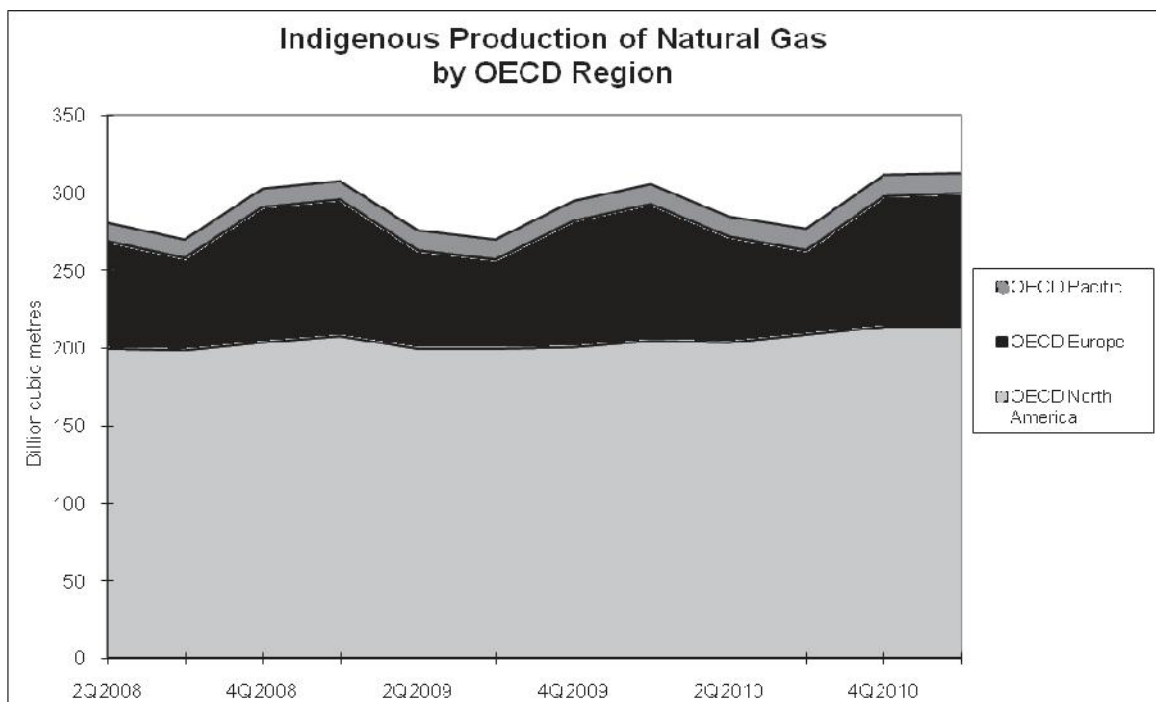
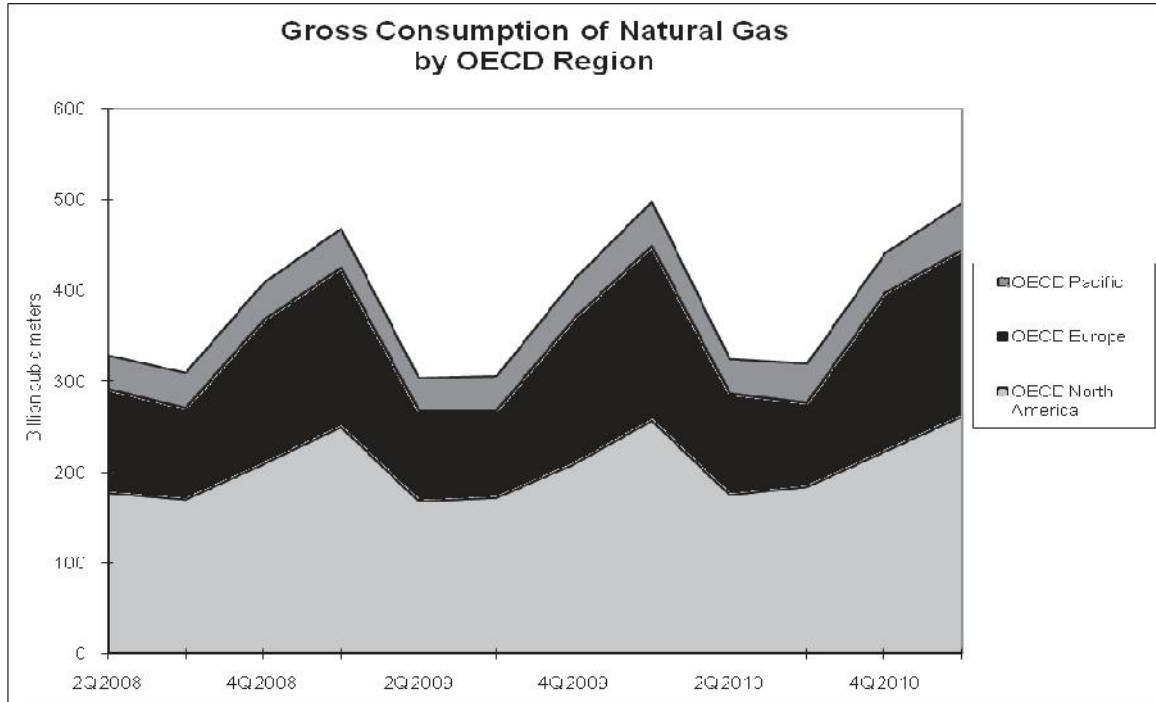
With the base case scenario, LNG demand in Japan increases by 18 bcm compared to 2010 levels. In the worst case scenario, additional LNG demand in Japan would rise to 30 bcm.

Organisation for Economic Cooperation and Development (OECD)

The mission of the Organisation for Economic Co-operation and Development (OECD) is to promote policies that will improve the economic and social well-being of people around the world. The OECD provides a forum in which governments can work together to share experiences and seek solutions to common problems. It works with governments to understand what drives economic, social and environmental change. It measures productivity and global flows of

trade and investment. It analyses and compares data to predict future trends. It sets international standards on all sorts of things, from the safety of chemicals and

nuclear power plants to the quality of cucumbers. The figures showing indigenous production, gross consumption imports and exports status are furnished below:



Figs.1 & 2

Source: IEA Statistics

An Abstract showing imports and exports in OECD and other areas is also furnished below:

IMPORTS:

- OECD Areas : Austria, Czech Republic, Finland, Greece, Hungary, Iceland, Ireland, Japan, Korea, Luxembourg, New Zealand, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey
- Other Import Areas : Argentina, Bahamas, Brazil, Colombia, Ecuador, Netherlands Antilles, Peru, Venezuela, Other Latin America, other non-listed European countries, Former Yugoslavia, Bahrain, Iran, Iraq, Kuwait, Neutral Zone, Yemen, Saudi Arabia, Syria, Other Near/Middle East, People's Republic of China, Hong Kong (China), India, Papua New Guinea, Singapore, Vietnam, Other Asia, Angola, Cameroon, Congo, Egypt, Gabon, Tunisia, Democratic Republic of Congo, Other Africa, Non-Specified.

EXPORTS :

- OECD Areas : Australia, Austria, Czech Republic, Denmark, Finland, Greece, Hungary, Iceland, Ireland, Korea, Luxembourg, Mexico, New Zealand, Norway, Poland, Portugal, Slovak Republic, Turkey
- Other Export Areas : Argentina, Brazil, Colombia, Netherlands Antilles, Trinidad and Tobago, Venezuela, Other Latin America, other non-listed European countries, Former Soviet Union, Former Yugoslavia, Iran, Iraq, Kuwait, Lebanon, Qatar, Saudi Arabia, Syria, Israel, Other Near/Middle East, People's Republic of China, Hong Kong (China), India, Indonesia, Pakistan, Singapore, Taipei, Thailand, Malaysia, Philippines, Vietnam, Other Asia, Algeria, Egypt, Libya, Nigeria, South Africa, Tunisia, Other Africa.

India's Future

Imports of liquefied natural gas (LNG) by India will soar in the next decade to fuel an expanding economy, pitting India against China and Japan for supplies as its domestic gas output struggles and overland delivery remains a dream.

India's trillion-dollar economy is already one of the world's largest importers of LNG. "The rapid increase in LNG demand from Japan will limit the ability of emerging markets such as India to source LNG," Bank of America Merrill Lynch Head Francisco Blanch said. The extra supplies that India needs are more likely to come from Qatar and Australia, experts said. Qatar already supplies India on long-term contracts.

While buyers often complain of the link with expensive oil in long-term Asian contracts for liquefied natural gas, India will have no choice but to sign up quickly if it wants to

avoid being beaten to the supply by Japan and China. Competition for supply is likely to be intense. Japanese companies have had to increase imports to fuel gas generators after shutting down nuclear power generation capacity after the earthquake and tsunami. China's imports are expected to rise about fivefold, to 46 million tonnes it imported in 2020 from about 9 million tonnes in 2010.

Indian buyers have already had to outbid Japan for spot, or immediate delivery, shipments of LNG from Qatar.

With costs rising for already pricey Australian LNG projects, holding off on securing of long-term supply deals could end up costing Indian buyers. "For many years, Indian companies have held back from signing long-term contracts, hoping to get a better price for LNG" PFC Energy's energy analyst Natalie Bravo said. "But in retrospect, this strategy is going to prove costly."

Signing long-term deals now would ensure more profitable operations for importers of LNG, who are planning to build expensive import facilities, said Amitava Sengupta, former head of Petronet, largest importer of LNG in the country. "Indian companies should definitely go for midterm, 10 to 15 year LNG contracts," he said. By 2020, with galloping economic growth of about 8 per cent increasingly attractive against coal and oil, which produce heavier carbon emissions, India could need twice as much natural gas as it consumes now. The gulf between domestic demand and supply is widening. The high hopes, for a hefty contribution to meet demand earlier this year, have decreased when Reliance Industries acknowledged that production was slipping at its D6 field.

Lackluster domestic exploration results give little reason to expect a turnaround at home. Geopolitical hurdles to pipeline supplies through fractious neighbours like Iran, Pakistan and Afghanistan have made LNG a disrupted source of supplies. To cope with rising imports, India plans to spend billions to increase the capacity of import terminals for LNG to 26 million tonnes per year from 13.7 million. Existing terminals are operated by Petronet and Royal Dutch Shell.

As observed by B. C. Tripathi, Chairman, Gas Authority of India Ltd.(GAIL), India's pipeline network would need an overhaul and expansion to deliver the gas to the market, a project that would require an investment of as much as ₹350 billion.

Conclusion

According to the International Energy Agency, natural gas could be entering a "golden age" and represent a much larger portion of the global energy mix, but the fuel is still a fossil fuel and doesn't represent a panacea for climate change.

The IEA, which represents the Governments of consuming countries, said natural gas

could rise by more than 50% from 2010 levels and account for more than a quarter of global energy demand by 2035. The estimates follow a recent surge of shale gas production in the U.S., which has significantly altered the energy picture in recent years in the U.S.

But the IEA cautioned that while an increased use of natural gas could boost energy security, it shouldn't overwhelm other energy forms that could be better in addressing climate change. IEA Executive Director Nobuo Tanaka expressed concern that Governments' over-reaction against nuclear energy following the recent Japan crisis.

"While natural gas is the 'cleanest' fossil fuel, it is still a fossil fuel," Tanaka said. He has further observed, "its increased use could muscle out low-carbon fuels and nuclear fuel - particularly in the wake of the incident at Fukushima and the likelihood of a reduced role for nuclear in some countries. An expansion of gas use alone is no panacea for climate change."

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