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Liquefied Natural Gas Demand in Asia

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Unless otherwise specified, the sources of figures and tables in this report are from the results of the study.

Foreword

Natural gas has numerous advantages. Its resources are enormous and can now be developed at a competitive cost, thanks to technological breakthroughs such as the shale revolution. Its resource locations are more diversified compared to oil and it therefore has the advantage of securing energy supply. It can play a significant role in addressing climate change, replacing coal in the power sector. It is a clean and very convenient energy to use in our daily lives. Expanding the use of natural gas can significantly improve the 3Es (efficient, environmentally friendly, and energy security).

The production capacity of liquified natural gas (LNG) is expected to see a 'revolutionary' expansion in the coming 3 years according to the International Energy Agency, and hence LNG will play a key role in increasing natural gas use in Asia. Taking advantage of the advent of significant supply capacity expansion, Asia has a great opportunity to enhance its natural gas use through importing LNG in the future. This study explores how Asia can increase natural gas and LNG use, and what kind of policy is required to realise this potential.

This study aims:

- (1) To develop LNG demand outlook, assess the potential in Asian countries, and analyse the adequacy of future supply capacities to the region;
- (2) To understand the current obstacles in introducing and increasing LNG use in Asia; and
- (3) To consider and propose policy measures to address the obstacles and enhance LNG use in Asia.

The authors hope that this study will provide new insights into LNG market development in the East Asia Summit region.

Yoshikazu Kobayashi
Leader of the Project

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List of Abbreviations

| | |
|-------|--|
| ASEAN | Association of Southeast Asian Nations |
| FSRU | Floating Storage Regasification Unit |
| LNG | liquefied petroleum gas |
| MDB | multilateral development banks |
| MMBTU | one million British thermal unit |
| US | United States |

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Executive Summary

The global liquefied natural gas (LNG) market has been undergoing sustained and fundamental transformation since 2010. A combination of forces led by the revolution in shale gas production in the United States (US), rising global LNG use, diverging natural gas and crude oil prices, and demand shifts from traditional Northeast Asian countries (Japan, Republic of Korea, and Taiwan) to China, Southeast Asia, and South Asia present new challenges and opportunities for producing and consuming regions. The LNG market is already experiencing rising competition from the US and Australia in a market traditionally reliant on suppliers from Asia and Middle East. While new competitive forces bring challenges to producers, the development of a broad-based liquid and flexible LNG market can deliver substantial economic, environmental, and energy security benefits throughout the region. The challenge for policymakers in securing the widespread benefits of rising supplies of LNG is to transform potential LNG demand in Asia into real demand.

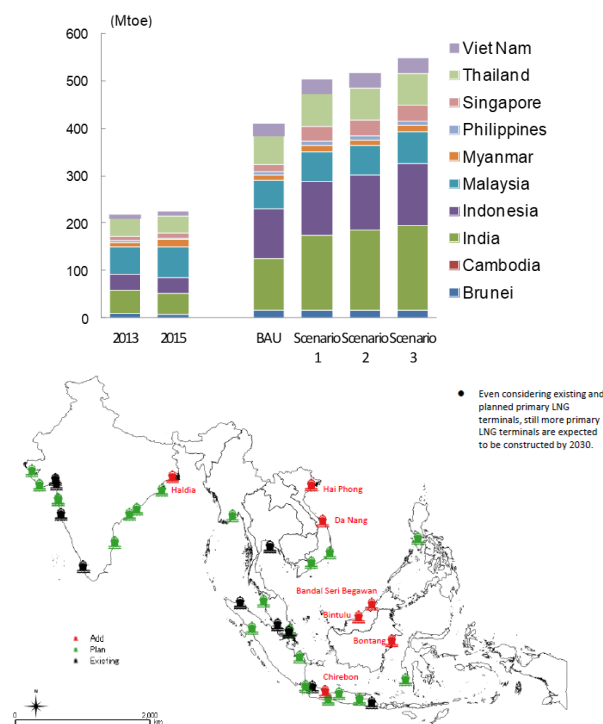
The key findings of the study are as follows:

- The US natural gas resource base is big and getting bigger. Advances in extraction technologies show continued improvements, indicating that US natural gas output could rise by substantial additional volumes at costs below US\$4 per one million British thermal unit.
- The US regulatory framework for natural gas production, distribution, and construction of processing facilities, including LNG export plants, has been largely efficient, but persistent and important challenges for its review process remain and these challenges pose risks to the rapid expansion of LNG export facilities.
- The natural gas market in Asia has significant potential and could grow 2.5 times between now and 2030.

Meeting this demand growth will require about US\$80 billion in LNG infrastructure investment in the Association of Southeast Asian Nations (ASEAN) and India combined¹ (Figure1-1).

- While historic Asian LNG demand centres Japan, Republic of Korea, and Taiwan are likely to experience modest or declining demand growth, emerging Asian LNG importers such as China, India, and other new emerging Asian countries will see rising demand for LNG. The base case assumption of the region’s LNG demand will reach 350 million metric tons in 2030.

Figure 1-1. Natural Gas Demand Potential and Required LNG Infrastructures in ASEAN and India



ASEAN = Association of Southeast Asian Nations, BAU = business as usual, LNG = liquefied natural gas, Mtoe = million tonnes of oil equivalent.

Source: Economic Research Institute for ASEAN and East Asia.

¹ Outcomes of the ERIA study on ‘Formulating Policy Options for Promoting Natural Gas Utilization in the East Asia Summit Region’, which was reported to the 11th East Asia Summit Energy Ministers Meeting on 28 September 2017. ‘LNG infrastructure’ includes LNG terminals, pipelines, satellite facilities, and ISO containers, but does not include upstream development, liquefaction facilities or gas-fired power plants. Additional US\$80 to US\$130 billion will be required for new-build gas-fired power plant construction.

Summary of Major Policy Recommendations

This report recommends that relevant stakeholders undertake the following initiatives to support a growing market for LNG in Asia:

Developing more liquid and flexible LNG markets:

- Removal of LNG destination restrictions in LNG contracts amongst all market participants to stimulate spot markets and price discovery; and
- Holding close dialogues between producers and consumers to determine the long-run requirements and policy instruments to promote competition and LNG growth.

Providing financial support:

- Engaging export credit agencies, including the Japan Bank for International Cooperation, Nippon Export and Investment Insurance, US Export–Import Bank, and Overseas Private Investment Cooperation; development agencies; and multilateral development banks to increase support for LNG projects to address long-term credit risks.

Capacity building:

- Providing a capacity building programme that covers technical standards, safety guidelines, and environmental regulations for government and industries in emerging LNG-importing countries in Asia.

Assisting policy developments in Asia:

- Helping structure energy mix targets and policy planning so that Asian countries could take full advantage of natural gas.

Introduction

The petroleum renaissance in the United States (US) has been brought about by a substantial expansion of natural gas production driven by technological advances that give access to previously unrecoverable resources. Because of this, the US has been the world's largest producer of natural gas since 2009. Natural gas production in continental US increased from less than 50 billion cubic feet a day (bcf/d) in 2005 to an estimated 73 bcf/d in 2017. A sound regulatory programme that permits continued exploration and development of petroleum resources, widespread private ownership of property rights, combined with adequate expansion of US natural gas infrastructure, supports expectations that US natural gas output is likely to reach 84 bcf/d by 2020.

The expansion of the US natural gas resource base offers considerable potential to further develop both liquefied natural gas (LNG) and pipeline exports and contribute to higher economic growth in the national economy. Traditional Asian LNG consuming countries such as Japan, the Republic of Korea (henceforth, Korea), and Taiwan, other countries in Southeast Asia (Indonesia, Malaysia, Singapore, Philippines, amongst others) and South Asia (India, Bangladesh, Pakistan) as well as China offer new markets or expansions to existing markets for natural gas. Natural gas is a fuel source that can contribute to improved air quality and lower emissions of carbon dioxide and reduce long-term climate risks. China, which has been a modest importer of LNG to date, also represents a potential new market for substantially higher volumes.

Considerable expansion of LNG demand is possible over the long term in Asia. On 28 September 2017, at the Association of Southeast Asian Nations Plus 3 (ASEAN + 3) and East Asia Summit (EAS) Energy Ministers Meeting, energy ministers welcomed the ongoing study of the Economic Research Institute for ASEAN and East Asia (ERIA), which indicated that natural gas demand in the EAS region could grow 2.5 times between now and 2030, and will require about \$80 billion in LNG supply chain investments to meet this demand. However, the development of long-term demand in Asia will require supportive government policies and solutions to address important cost challenges and regulatory constraints. A central objective in this collaborative effort is to identify the critical obstacles that constrain natural gas use in Asia, and how these obstacles can