Chapter 5

Discussion and Key Findings

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CHAPTER 5
Discussion and Key Findings

In this study, we first analysed the current situation and forecasts for the natural gas supply–demand balance in the EAS region. Based on this analysis, we then considered the measures needed for the sustainable development of the natural gas market in this region in the future.

General Perception

First, in this report, we gained a reaffirmation of the strong demand for natural gas in the EAS region. From now through 2035, demand for natural gas is expected to grow at the fastest rate among the various fossil fuels, led by demand from China and India in particular.

On the other hand, with regard to the supply of natural gas, production volume is expected to increase mostly in China and Australia. However, the increase in supply falls below that of demand. Overall, import volumes for natural gas will increase gradually across the region. Based on the results of the analysis, the demand and supply gap is likely to increase by around five times from the current 105 BCM per year, to approximately 499 BCM per year in 2035.

If we were to observe the supply sources for natural gas outside the EAS region, there is clearly potential for many additional supply sources. In particular, there is significant potential for new sources of natural gas exports from Canada, Central Asia, East Africa, Russia, and the United States. If we were to include these potential additional supply sources, even if we were to take away the demand for other regions, we believe that it will be possible to secure sufficient natural gas supplies to fulfil import demands in the EAS region.

Uncertainty in the Demand Side

However, there are uncertainties in the demand side, and we need to be fully aware of these.

On the demand side, the forecasts for future economic growth in China and India are one of the significant factors behind the uncertainty. China is exploring the possibility of making the transition from export-led economic growth to growth led by domestic demand. The speed of their economic growth is expected to slow down compared to that of the past decade. Furthermore, the rate of economic growth for India is also observed to have slowed down in recent years. As economic conditions significantly impact natural gas demand, it is important to pay close attention to the economic situation of the two big economies where natural gas demand is likely to increase significantly in the future.

With regard to LNG demand, one factor causing uncertainty is whether or not Japan will recommence the operation of its nuclear power plants. Japan is the top LNG importer in the world, and more than half of the LNG imported is used to generate power. For that reason, the timing and scale for restarting the nuclear power plants will significantly impact LNG demand.

Furthermore, the price system for domestic gas in developing countries could also be viewed as an uncertain factor on the demand side. In several countries, natural gas prices are regulated such that they remain below international market prices. Not only does this result in the negative spread of import and domestic prices but it may also generate excessive demand. In addition, low prices can reduce the motivation for enhancing energy efficiency, thereby contributing to wastage. Conversely, if domestic gas prices are an accurate reflection of costs in the future, that is to say, if prices go up, then it would be possible to suppress the rate of acceleration in the demand for natural gas.

Uncertainty in the Supply Side

How about on the supply side?

For example, it is conceivable that rich endowment of unconventional natural gas resources may exist in China, India, and Indonesia. In particular, China is said to have a higher shale gas potential than the United States. Hypothetically, if this could be connected to production in reality, it could possibly bring about major changes to the supply environment in the EAS region.

However, as of this point, other than the fact that exploration and trial production are being carried out in parts of China, little progress has been made toward commercial-scale production of unconventional gas. For this reason, the extent to which this could contribute to future supply is unclear, and we will have to wait for future assessments.

Another factor giving rise to uncertainty is the realization of investments. Undeveloped natural gas resources remain in the region, including the aforementioned unconventional sources. Whilst these sources should be utilized as far as possible, it is also necessary to invest capital into the production of resources that are currently lying under the ground. Furthermore, there is also a need to develop pipelines for transporting the natural gas that has been produced, facilities for liquefying the gas, as well as LNG ships. Large amounts of capital are needed to construct this natural gas supply chain. However, depending on the extent of the risks involved, investments are sometimes not realized.

The timing of investments can also be a factor contributing to uncertainty. One element in constructing a natural gas supply chain is the fact that the lead time from investment decision to the materialization spans many years. Hence, depending on the situation, there may be the risk of being unable to secure sufficient supply capacity during a certain period.

Policy Implications

Based on the fundamental points described above, this study raises the following policy implications.

Demand side

a. Diversifying power supply mix

If the dependency on natural gas imports were to grow in the EAS region, it would be necessary to prepare for the risks associated with import. For instance, one conceivable risk would be the possibility of being unable to secure sufficient import volumes as a result of an accident arising in the production facility in the exporting country. Prices may also likely go up as a result of tighter supply–demand balance in the international market. To prepare for such risks, it would be effective to diversify the sources of natural gas supplies to develop stockpiles within as far as it is economically viable, and to improve liquidity in the international market through highly flexible contracts. Furthermore, securing alternative energy sources other than natural gas is also an important measure.

The share of the power generation sector in natural gas demand is large. Power generation is also a sector where it is easier to secure substitute energy resources. Hence, it would be ideal for countries that can balance different types of energy in power generation to disperse the risks. Choices include coal-fired thermal power, hydroelectric power and other renewable energies, and nuclear power generation where available. In particular, coal is a promising option for diversification in the EAS region. This is because of the relatively rich coal resources in the region and because it is an economically superior option. However, as it places a heavier burden on the environment compared with natural gas, it is important to ensure that measures are taken to maximize efficiency and protect the environment when using coal. Depending on the region, renewable energy such as biomass and geothermal energy is also a viable option, and electricity import from non-EAS regions could be another choice.

Having options other than natural gas can also contribute to strengthening a country's bargaining power in negotiations to procure natural gas. Hypothetically, if a country has sufficient coal-fired thermal power capacity to replace gas-fired thermal power, it would be able to use the card of "not buying gas" in procurement negotiations. This is an extreme example, and it is difficult to replace gas-fired thermal power completely in reality. However, the availability of a substitute energy source can definitely impact natural gas procurement negotiations.

b. Efficient use of natural gas

When using natural gas, it is necessary to maximize the efficiency of utilization as far as possible. Considering the rise in the import dependence of natural gas in the EAS region, this is a natural course of action to take. There are various ways of improving the efficiency of natural gas use. These include, for example, the use of CCGT (combined cycle gas turbine) of higher temperatures, cogeneration that also uses heat, and strengthening of building insulation. There are also numerous examples of policies aimed at promoting the implementation of such measures. As members of the region possess a wide range of technologies and knowledge, the effective use of such resources can help propel the efficient and effective implementation of measures.

c. Rationalizing domestic price regulations

Within EAS member states are cases where natural gas prices for consumers are regulated to keep them below international market prices, or where cost changes cannot be reflected in prices in a timely manner. In such cases, regardless of tight supplies or significant hikes in prices, for example, there are concerns that changes in the market environment will not be communicated to consumers and the necessary responses will not be taken. These responses include reducing consumption or switching to the use of other fuels. On the supply side, there is also the possibility that low selling prices may reduce the incentive to invest for production increase. In other words, prices have to serve as appropriate signals to both the demand and supply sides. To that end, there is a need for systemic reform. Rationalizing domestic price regulations to reflect international market prices will become

increasingly important, given that import dependency is likely to rise in the future.

From this perspective, it would be meaningful to share information on the current state of the domestic price system in respective EAS countries as well as on the direction of future reviews of the systems. Information sharing can provide useful references for systemic reform in the respective countries, and is expected to generate the effect of driving forward the transition towards improvements in the situation.

However, the review of price systems also means a hike in retail prices; in short, it is a policy that is susceptible to opposition from the general public. If prices are kept low out of consideration for low-income peoples, then a system review should be carried out in phases corresponding to improvements in income level. On the other hand, keeping retail prices low can also become a form of support for high-income peoples, even if this is not the intention of the system. Hence, it would be rational to employ a different approach, such as incremental tariff system, or target/direct subsidy system.

Supply side

a. Enhancing domestic gas exploration and production

First, countries within the region need to maximize the use of domestic natural gas resources with economic viability. In particular, resource potential of unconventional gas has not been fully evaluated, and countries should gain an accurate grasp of the potential they possess.

If a country has the resources, the next step would be to develop such resources. If it is possible for the country to provide the human resources, technology, equipment, and capital needed to develop the resources, there would be no major problems. The only issues remaining would be decision making. How about cases where the country is unable to bring together the necessary resources by themselves? Few natural gas resources that are relatively easy to develop remain. If the remaining resources available are relatively difficult to develop, there are no other options than to take active steps to attract international companies with the necessary capacity. This can be achieved by providing the companies with attractive conditions. We could

say that this calls for a decision between allowing resources to lie dormant due to a lack of development capabilities, or to make effective use of the resources, no matter how minimal these may be.

b. Flexible supply arrangement

Flexibility is an important element when it comes to securing supplies. Flexibility can be considered in two ways: intra-regional flexibility and flexibility in importing from outside the region.

First, intra-regional flexibility refers to the ability to arrange for supplies from countries with excess resources when a certain country is confronted by insufficient natural gas supplies for any reason. This involves achieving supply–demand balance not only within a country but also across an entire region. Although a country has limited ability to balance supply and demand, it can strengthen this capability by cooperating with its neighboring countries. In the ASEAN region, this effort has already been concluded as the ASEAN Petroleum Security Agreement initiative. In addition, the ASEAN Council on Petroleum (ASCOPE) is launching an initiative aimed at enhancing supply stability for the entire region by utilizing regional storage capabilities.

Attempts to expand geographical balancing area from a single country to the whole region can be perceived as a measure aimed at maintaining the same level of supply stability at a lower cost, or securing a higher level of supply stability at the same cost. Efforts to enhance the supply adjustment capability, that is supply stability of an entire region, are expected to progress steadily with a focus on existing initiatives.

In EAS countries where import dependency is rising, ensuring this flexibility in their natural gas/LNG import from non-EAS regions will also become increasingly important in the future. In other words, there will be stronger calls for flexibility in the volume of natural gas/LNG delivered, as well as in the destinations that resources are delivered to. These aspects of flexibility are vital elements even in realizing flexibility for natural gas/LNG within the region, which are the aims of the ASEAN Petroleum Security Agreement and ASCOPE.

Whilst such initiatives may incur opposition from some suppliers, improvements in flexibility are also expected to contribute to creating more opportunities for suppliers to make profits. Thus, achieving a compromise between the interests of both parties is likely possible.

On the other hand, it is vital to acknowledge the existence of technological problems with regard to enhancing flexible trade. Specifically, these issues include the quality of the natural gas, harmonization of heat content standards in particular, and improvements in the compatibility between LNG ships and ports.

It also goes without saying that transportation and distribution infrastructure, such as pipelines and LNG ships, need to be improved. From this point, capital resources needed for infrastructure development may prove to be a problem, and it is necessary to engage in further discussions and consultations towards the realization of investments.

c. Sharing future perspective

One significant factor that can deter supply-side investments is the uncertainty in demand forecasts. For example, if future demand is expected to decline, it would be easy to imagine investors hesitating to inject capital into new natural gas production activities or into the development of supply infrastructure. Hence, it is important for the consuming country and the supplying country to share future prospects, and to create a secure environment for investors to undertake supply-side investment activities.

Many supply-side investments are large scale, taking several—or even more than 10—years to realize. Thus, it is important to increase supply capability to achieve long-term success, and not to change the environment over the short term. From this perspective, we could also say that it would be desirable for both the producing and consuming parties to share long-term perspectives to contribute to the stabilization of the market.

Next Step

In the study conducted for this fiscal year, we carried out priority analyses on the forecasts of the balance in natural gas supply–demand in the EAS region, as well as on the uncertainties in these forecasts. We then recommended a broad policy framework based on the premise of these future changes.

The results of the analyses showed that import dependency for natural gas is expected to rise in the EAS region in the future, and that various measures to respond to this change need to be put in place. With regard to the countermeasures, in addition to conducting regulatory systemic reviews, developing supply-side infrastructure to expand import volumes and enhancing intra-regional flexibility are also important elements. The next step in this study would be to carry out a more detailed analysis of these countermeasures, and to figure out policy implications for the sustainable development of the natural gas market in the region.