Chapter 8

Conclusions

To realise the development of Myanmar's natural gas market as discussed in chapters 1–7, the Government of Myanmar must undertake a number of tasks. This chapter summarises the required policy actions in conclusion to this study.

1. Imperatives of Government Involvement

1.1 Benefits that Cannot be Realised through a Market Mechanism

Government involvement is essential to develop a natural gas market. This is because many of the benefits of a natural gas market cannot be fully realised through a market mechanism, and it is difficult to develop natural gas demand simply by letting the market function work.

Several benefits of natural gas cannot be fully realised in a market environment. The first such benefit is the nature of natural gas as a source of clean and low-carbon energy. As natural gas produces only 60% of the carbon emissions produced by coal, it can play a pivotal role in reducing greenhouse gas emissions in many countries in the future. However, the value of clean and low-carbon energy cannot be fully reflected in the current energy market. Carbon pricing or another type of adjustment is needed to ensure that the value of clean energy is properly priced in the market. This suggests that the market mechanism alone is not enough to develop natural gas demand. As the market mechanism is limited, the government should intervene in the market and ensure that market participants realise the real value of natural gas.

The second benefit is energy security. The shale revolution in the United States (US) significantly expanded the size of these resources, and there are no longer concerns that limited resources will be unable to meet the growing global demand for natural gas. Traditional natural gas resources are concentrated in the Middle East and Russia. The emergence of shale gas resources in the US not only increased the size of the world's natural gas resources but also diversified the supply sources of natural gas. This abundance and diversity of resources is one of the primary benefits of natural gas. In the US, a liquefaction

capacity of more than 100 million tonnes per annum is planned, and its supply capacity of liquefied natural gas (LNG) will be able to absorb the rapidly increasing global demand.

The third benefit of natural gas is convenience. Natural gas appliances do not require cumbersome fuelling operations and are very easy to turn on and off. Furthermore, since the supply is connected from the source to the final consumption appliances via pipelines, inventory management is also unnecessary, unlike with liquefied petroleum gas or oil products. However, it is difficult to recognise such user 'convenience' properly in the market.

Although these benefits are real, they are not easily recognised through an ordinary market mechanism. Government involvement is therefore justified to ensure that the value of natural gas is properly appreciated. The government has played an important role in developing the natural gas market in many countries. In Europe, state-owned companies have developed pipeline infrastructure under the regulated tariff system. The current extensive use of natural gas in Europe is possible because government-backed companies built pipeline infrastructure under a regulated monopoly system. Although many gas and power companies in Europe are privatised, this liberalisation occurred after the nationwide pipeline network was developed. Without government involvement, private companies would be unable to provide the infrastructure necessary for the wide use of natural gas. In the US, contrary to widely shared perceptions, gas and power businesses in many states are publicly owned. In Japan, although most city gas companies are privately owned, the industry has been rigidly regulated since the 2010s, and the regulated tariff system allows city gas companies to develop extensive pipeline networks by themselves. The history of the global natural gas market demonstrates that government involvement, either direct or indirect, is necessary to build a successful natural gas market.

1.2. Need for Demand Creation

In a growing energy market like Myanmar, demand for natural gas is something that needs to be created. This is because natural gas demand cannot be realised without infrastructure, and such infrastructure is usually underdeveloped in a growing energy market. Once the infrastructure is built, it tends to be utilised fully to recover the large upfront investment expenditures, and natural gas demand is generated, to some extent, artificially. Since natural gas is expensive and difficult to use, demand for natural gas usually does not emerge autonomously. Instead, it must be created either directly or indirectly by several conditions such as policy targets or regulations on the use of natural gas.

Infrastructure development is mandatory to expand natural gas demand in a growing energy market. In established natural gas markets like Europe, the US, or Japan, the government or government-regulated entities have played critical roles in developing the necessary infrastructure. Similarly, the Government of Myanmar is expected to initiate and promote infrastructure development.

Policy and regulatory arrangements will greatly contribute to demand creation. The most notable recent example of this is China, where an unexpected increase in LNG demand since 2016 has been largely driven by a government policy to reduce coal consumption. Because the current Xi administration places a high importance on improving air quality, it has set a numerical target to reduce particulate matter in each province. This caused a rapid fuel switch from coal to natural gas in the winters of 2016–2017 and 2017–2018, despite the increased international price of LNG. Although this policy was not intended to create natural gas demand per se, demand growth in China suggests that policy can make a difference. This example indicates that setting numerical targets for carbon emissions, particulate matter emissions, or a specific energy mix can help create demand. Clear policy direction for the utilisation of natural gas and firm commitment thereto by the Government of Myanmar will mobilise various resources both at home and abroad, and will speed up the country's gasification.

2.Policy Actions

2.1 Encourage and Accelerate Domestic Upstream Development

One of Myanmar's highest priorities in terms of policy actions is to expand the natural gas market by continuing to encourage and accelerate the development of domestic natural gas. Despite a globalised natural gas market and a more liquid global LNG market, it is clear that domestic production is Myanmar's most reliable supply source. Therefore, the government should continue to explore both onshore and offshore fields, and minimise the depletion of existing fields.

Offshore operations are currently scheduled to begin at the M-3 block in 2023 and at the A-6 block in 2025. Given the fields' expected size (150 million cubic feet per day [mmcfd] from M-3 and 60 mmcfd from A-6), the Myanma Oil and Gas Enterprise (MOGE) should prioritise development works at these two blocks. MOGE is also planning to boost onshore production from the current 54 mmcfd to more than 400 mmcfd by 2035. Onstreaming onshore production will greatly help to meet the country's growing demand.

Despite the development of a series of new fields, the planned production growth will still fall short of the expected demand growth. Thus, the government needs to encourage and accelerate the exploration and development of additional natural gas resources. In addition to swift decision-making by the government and MOGE, it may be necessary to revise the contractual conditions for the production sharing agreement to activate upstream development in Myanmar further. The agenda of such efforts may include revising the domestic natural gas price mechanism.

2.2. Enhancing the Resilience of the Pipeline Network

Another urgently required government action is the enhancement of the resilience of its natural gas pipeline network. Most of Myanmar's pipelines are in a bare condition without any anti-corrosion coating such as polyethylene. In the course of its field trip, the study team found that some parts of the country's pipeline network are poorly protected and vulnerable to external shocks. As dependence on natural gas increases in the country's energy mix, the reliability of pipeline transportation must be enhanced. Thus, reinforcing the resilience of the pipeline network is becoming a pressing issue for the government. Without appropriate arrangements, pipeline problems such as leakages will hinder the expansion of natural gas use in Myanmar.

As several actions are required to enhance the resilience of the pipeline network, the government should initiate a comprehensive review of the network to identify vulnerabilities to corrosion or external damage. The government should then prioritise the actions required to address these vulnerabilities based on their criticality to the country's natural gas supply. The stable operation of the pipeline network and ensuring an uninterrupted flow of natural gas is the most fundamental condition for expanding the use of natural gas in Myanmar.

2.3. Reform of Energy Prices

The next policy action is energy price reform, which will be a relatively long-term effort. Natural gas and electricity prices are regulated in Myanmar and set below the international standard. This pricing forms a part of Myanmar's social policy, and will not be easy to reform in the short term. Energy prices are closely related to the daily life of Myanmar's citizens, and drastic reform would cause confusion and disturbances in Myanmar's economy and society.

Although Myanmar's infrastructure should be developed with government initiative and support, investors should recover sound economic returns even if the entity is owned by the state. If foreign companies are invited to invest in the country's infrastructure, the price of electricity or city gas sold will be the most critical factor in their decision-making. Higher energy prices will also provide energy users with incentives to use energy more efficiently to optimise infrastructure development.

These energy pricing issues have caught the attention of energy policy circles in Myanmar. Myanmar's Energy Policy clearly stipulates that the country must address these energy price issues. The outright removal of energy subsidies will significantly impact Myanmar's citizens and may cause economic problems. Because energy prices broadly affect daily life, revising these prices is often regarded as a political issue. Reforming energy prices is never an easy task, and the government will have to approach this subject cautiously while working consistently to reduce the burden of subsidies.

2.4 Managing Quality Differences in Natural Gas

Another practical issue in natural gas use not discussed in detail in this study is a quality issue, that is, the heat value of natural gas. It is inevitable that Myanmar will start to import LNG sometime in the future; however, the heat values of LNG and of domestic gas differ significantly. The heat value of natural gas from the Yadana field, the primary source of natural gas in the Yangon region (27 megajoules per cubic meter), is low compared to the typical value of internationally traded LNG (around 40 megajoules per cubic meter).

Using LNG for a new power generation plant will not cause any significant issues if all of the imported LNG is used at the plant. However, using surplus LNG to supplement the city gas supply may cause problems as this could cause heat values to swing significantly. This could lead to critical issues for some industries that are sensitive to the level of heat values (such as the ceramics industry).

To manage differences in heat values, separate pipelines could be built for high-heat imported gas and low-heat domestic gas, the various types of gas could be blended to minimise differences in heat values, or a heat-value adjustment facility could be used. Well-planned policy and coordination amongst the government, gas suppliers, and gas users will be necessary to address this issue.

2.5. Growing Human Capital for Importing Liquefied Natural Gas

Myanmar has had much experience with natural gas and has a vast amount of human resources and expertise in handling and utilising this energy source. However, LNG differs from natural gas and requires different kinds of knowledge and technologies. The government should collaborate with other countries that have extensive experience using LNG, with the aim of training Myanmar's natural gas experts. This training should cover capacity development such as LNG receiving and regasification technologies, intelligence to analyse the international LNG market, contractual arrangement and commercial practices of the LNG trade, and financing LNG receiving and utilisation infrastructure.

Relevant agencies in Japan, the US, or the Republic of Korea will help Myanmar develop a regulatory system for receiving and utilising natural gas. Environmental regulation is a key area in this regard. A clear and consistent environmental regulatory system would clarify the role and task of project investors and facilitate investment through lowered regulatory risk. Similarly, implementing training programs on safety issues would help Myanmar develop a well-organised system of safety regulation to monitor operational safety and avoid unexpected accidents.