Chapter 9

Concluding Remarks

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9.1 Summary

This chapter discusses how much LNG supply infrastructures are needed in ASEAN and India by 2030. LNG consumption points and supply transport modes were identified and assigned, and LNG terminals were listed. A total of US$ 81.369 billion was assumed as the necessary investment for LNG supply chain infrastructure development by 2030 in ASEAN and India.

This study also reviewed the regulatory framework for the LNG supply chain based on the Japanese regulatory framework. In Japan, two laws and the JGA guidelines on standards were used as regulatory frameworks. The JGA standards are useful for ASEAN and India to develop their own standards to operate LNG supply chain infrastructures.

9.2 Further research tasks

This study is still in its preliminary phase and it only estimated the rough investment amount for LNG supply chain infrastructure development, in particular, onshore facilities, because of the limited study period and budget. Consequently, there are other research tasks that can be conducted. These include:

First, to improve the accuracy of the investment amount, more detailed cost studies are required. The detailed conditions of existing infrastructures like roads and railways were not included in this study. These studies are necessary for improving the accuracy of investment amount projections.

Second, this study could not reflect the latest natural gas pipeline information in ASEAN and India. In India and Indonesia, there are some LNG pipeline development projects but published LNG pipeline information from the ASEAN Council of Petroleum was not updated fully. Natural gas pipeline is the best transport mode if it is there is enough natural gas consumption and it can be used. So, the results of transport mode for LNG consumption points may be changed based on this study. The cooperation of the ministries in ASEAN and India are expected.

Third, domestic regulations and allowance on road structures were not taken into consideration. Before the implementation of LNG supply infrastructure development, a technical feasibility study, including checking of regulations, was necessary.

Fourth, some LNG terminal ports are not registered in the marine transport distance table. Once reflected, the location of LNG terminals in the national plan, the maritime distance, should be calculated again by requesting aquaplot service.

Fifth, the location of industrial and household consumption of natural gas is regarded as occurring in the centre of the province. If more detailed information on population with higher spatial resolution is supplied, the final consumption points should be broken down and transport modes should be recalculated.

Sixth, none of the countries in ASEAN and India provides detailed plans to implement the LNG supply chain and further discussions are needed to develop a detailed roadmap of LNG supply chain infrastructure implementation.

Seventh, this study only considers the onshore facility of the LNG supply chain and does not include investments for small LNG tankers to transport LNG within ASEAN or the Indian coast. This is because this study proposes cross-country LNG infrastructure development and LNG tankers will transport LNG among several countries as milk-run transport. Accordingly, the ownership of LNG tankers and the business model of LNG transport are not in the scope of this study.

To conduct further studies on the above-mentioned points, the study team needs to cooperate more with countries in ASEAN and India. The study team hopes that countries interested in this study would collaborate with ERIA in the near future.