Chapter 1

Introduction

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1-1. Objectives and Outline

The objective of this study is to review and explore measures to promote the development of oil stockpiling in the member states of the Association of Southeast Asian Nations (ASEAN). According to the 'Southeast Asia Energy Outlook', which was co-authored by the Economic Research Institute of ASEAN and East Asia and the International Energy Agency (IEA), energy demand in the ASEAN has been growing at a rate of 2.5 since 1990 and is expected to continue to grow for the foreseeable future.

In 2002, Takeo Hiranuma, the then Minister of Economy, Trade, and Industry of Japan, proposed a regular meeting of the energy ministers of the ASEAN+3 countries (China, Japan, and the Republic of Korea [henceforth, South Korea]), referring to this growing energy demand in the region. His proposal led to the establishment of the regular ASEAN+3 Energy Ministers Meetings to ensure the energy security of the ASEAN+3 countries as their energy demand continues to grow. In addition, the Oil Stockpiling Working Group was also founded as a subordinate institution to the EMM in 2008 to discuss ways of enhancing energy security. The working group has met annually since then.

Given the global nature of the oil market and oil-supply security, it will greatly contribute to the ASEAN's oil-supply security to include more countries, particularly the United States (US). Therefore, the geographical scope of this study consists of the East Asia Summit Meeting countries; namely, the ASEAN+8 (Japan, China, South Korea, India, Australia, New Zealand, the US, and the Russian Federation [henceforth, Russia]).

1-2. Literature Survey

The importance of energy security has been increasing in Asia. The higher Asia's dependence on energy imports gets, the more vulnerable to energy-supply disruptions the region becomes. Oil-supply security is particularly critical for the region's economic development and social stability. Cutler (2013) observed that Asia's energy security is usually defined in terms of oil-supply security, given the region's growing demand for oil, its flattening oil production, and its dependence on the Middle East.

Oil-supply security can be attained through long-term and short-term policy measures (Asia Pacific Energy Research Centre [APERC], 2002; Shin and Savage, 2011). Long-term measures include diversification of oil import sources, improvements in oil-use efficiency, enhancement of fuel flexibility, investment in alternative energy sources and technologies, removal of market obstacles, and cooperation between oil producers and consumers. Short-term measures are information sharing, mandatory demand restraint on oil use, fuel switching, standby oil production, and drawdowns of emergency oil stockpiles. On the other hand, in the 2014 study of the IEA which reviewed the ability of member countries to cope with short-term oil supply disruptions as a main focus, emergency oil response measures were short-term ones because the IEA's emergency policy focuses on alleviating short-term oil-supply disruptions. Hence, the IEA's emergency oil response measures were grouped into those aimed at increasing oil supply (e.g. oil stock draw and production surge) and measures aimed at reducing oil demand (e.g. demand restraint and fuel switching).

Amongst these various measures, oil drawdown was found to be the most effective in mitigating the negative impacts of oil supply disruptions (APERC, 2002; IEA, 2014). APERC (2002) addressed that oil stock draw had some advantages over other response measures, raising the following four reasons. First, stockholding is more openly available to many oil-consuming countries than fuel switching or standby production. Second, oil stocks are more visible and transparent and would affect market perceptions more effectively compared to demand restraint. Third, oil stocks could be free from adverse economic impacts, which demand restraint could cause through misallocation of resources. Fourth, IEA experience shows that its members' emergency reserve commitments are exclusively met by holding stocks.

In practice, however, holding emergency oil stocks is not yet a common measure in Asia except in IEA member countries which are required to hold oil stocks equivalent to no less than 90 days of net imports. Some studies have conducted cost-and-benefit analyses of holding oil stockpiles to verify the effectiveness of this measure. Leiby and Bowman (2000), for example, targeted all Asia-Pacific Economic Cooperation (APEC) economies except the US and simulated the expected benefits and efficient levels of

APEC strategic oil stocks, with and without additional APEC reserve.[1] The DIS-Risk model was applied to compare oil market outcomes and APEC economic welfare over the period 2000--2030 under the two distinct reserve programs. In their analysis, costs included the capital expenditures to build the reserve, the oil-purchasing costs, and the operation and maintenance costs while benefits were the avoided disruption costs due to the existence of the reserves (i.e. the avoided gross domestic product [GDP] losses to the economy and the avoided net import costs of oil). Their study found that expanding APEC reserves by at least 200 million bbl was justified on the basis of its expected net benefits to APEC economies. Also, their base case presented that the efficient incremental reserve size was about 600 million bbl in the APEC region except the US, yielding an expected net benefit of about US$2.7 billion. Furthermore, their result held true over a range of conditions and variation in key parameters under sensitivity analysis, indicating expanding reserves would be beneficial.

Another study conducted by Stelter and Nishida (2013) discussed the costs and benefits associated with holding emergency oil stocks. The costs used in their study-- set-up costs for the storage facilities, operating and maintenance costs, refreshment costs, and land costs--varied based on the size and type of storage facilities (e.g. above-ground tanks and underground caverns) as well as the composition of stocks (crude/product).[2] Economic benefits were mainly calculated from offsetting oil supply losses and thereby reducing potentially significant oil price increases with the use of a large series of simulations over a 30-year time horizon. Stelter and Nishida (2013) did not quantify benefits at the country level because these benefits depended largely on a country's specific economic situation such as the energy intensity of its GDP and the oil intensity in total primary energy supply. Their analysis revealed that holding emergency oil stocks provided significant economic benefits amounting to US$41 per bbl annually. They also identified that the acquisition costs of oil accounted for the largest share in overall costs related to emergency oil stockpiles.

The measure of holding oil stock may not be easy to implement for some countries in terms of financial and technical issues although the importance of

[1] The United States was excluded because (1) the United States government conducted its own, independent reserve analysis and (2) given the relative size of the economy of the United States, including the United States would reduce the focus on the rest of the APEC.
[2] The term 'refreshment' means the regular renewal of petroleum product stocks in order to maintain quality specifications.

establishing strategic oil reserves to buffer against sudden disruptions in oil supply has been recognised. However, as the two studies cited earlier showed, putting emergency oil stockpiles in place would bring greater benefits than costs. Holding emergency oil stocks should be regarded as an insurance against the damage caused by any oil-supply disruptions, possibly avoiding or mitigating the effects of such disruptions (APERC, 2002; Stelter and Nishida, 2013). There are different ways of financing the acquisition and maintenance of emergency stocks as demonstrated in the study of Stelter and Nishida (2013). In fact, considerable differences are observed in the way IEA member countries finance their oil stockpiling. IEA (2014) noted that ticketing, a stockholding arrangement under which the seller agrees to hold (or reserve) a certain amount of oil on behalf of the buyer in return for an agreed-upon fee, was a flexible and cost-effective way for companies or agencies to meet obligations.

Holding oil stockpiles provides benefits not only to the stockpiling countries themselves but also to other countries with no stake in the stockpile (Shin and Savage, 2011). In their simulation, Stelter and Nishida (2013) showed that the use of IEA oil stocks was equivalent to approximately US$3.5 trillion of avoided costs over a 30-year period to IEA and non-IEA net importing countries. Such ripple effects to neighbouring countries or regions could be explained by the international public goods aspect of oil stockpiling. APERC (2002) specified that oil emergency response measures were 'an international public good in the sense that an oil supply disruption anywhere in the world would affect oil markets everywhere, and actions taken by any oil-consuming as well as [oil]-producing economy to mitigate the adverse effects of the supply disruption, including oil stock draw, would affect all oil markets' (p. 19).

The characteristics of international public goods necessitate regional cooperation in oil stockpiling. Specifically, collaborative initiatives in oil stockpiling need to be taken into consideration in order to enhance energy security in Asia since many Asian countries share a common interest in mitigating the risks associated with their dependence on the Middle East for oil. Cutler (2013) pointed out that "building a regional oil stockpile seems to be the most feasible next step Asian governments can take to enhance their energy security' (p.40).

Nevertheless, energy security issues in Asia are complex because the countries in this region are vastly different in terms of size, level of economic development, and scope

of national interest. In particular, when oil is politicised, the oil-importing countries in Asia may become more competitive with one other. This is exacerbated by the fact that no single overarching pan-Asian organisation is actively engaged in energy-security planning where all the key players can negotiate such cooperation (Cutler, 2013). Shin and Savage (2011) suggested establishing an organisation or framework for an Asian version of the IEA, sort of an 'Asian Energy Agency', when each country in the region has built up a certain level of emergency stockpile. This hypothetical AEA could start with Japan, South Korea, China, and Russia, and then extend to other Asian countries. Meanwhile, Cutler (2013) presented the idea that the East Asia Summit was the forum best positioned to further ongoing efforts to protect pan-Asian security after he outlined the history of regional cooperation in Asia on energy security and then compared the emergency planning arrangements for oil disruption drawn up by various multilateral forums.

Surrounded by risks associated with oil-supply disruption, Asian countries need to prepare emergency response systems as they become more dependent on imported oil. Relevant studies have shown that oil stockdraws would be the most effective way to mitigate economic damages caused by oil supply disruption and would benefit not only oil-stockpiling countries but also other countries without oil stockpiles. However, a regional cooperation mechanism for oil stockpiling has not yet been established to cope with emergency situations. This study, therefore, attempts to identify a way to strengthen the formation of a cooperative framework for oil stockpiling in Asia.

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