Chapter 3

Challenges for ASEAN Countries' Oil Stockpiling Development

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Chapter 3

Challenges for ASEAN Countries' Oil-Stockpiling Development

Based on the previous chapter's reviews of each ASEAN country's oil supply-demand balance and stockpiling policies, this chapter aims to identify what kind of challenges ASEAN countries will face in their future stockpiling development efforts. There are several challenges common to all ASEAN countries while some countries have their own set of challenges. The major challenges are shown in Table 3-0-1.

Table 3-0-1. Challenges for Stockpiling Policies in Selected ASEAN Countries

	Common challenges				Country-specific challenges		
	Accurate and timely statistics	Regional cooperation (APSA)	Securing finance	Expanding stockpiling capability and volume	Detailed oil stockpiling development planning	Emergency exercises	Interim measures
Cambodia	✔	✔	✔	✔	✔	✔	✔
Indonesia	✔	✔	✔	✔		✔	
Lao PDR	✔	✔	✔	✔	✔	✔	✔
Myanmar	✔	✔	✔	✔		✔	✔
Philippines	✔	✔	✔	✔	✔	✔	✔
Thailand	✔	✔	✔	✔	✔		
Viet Nam	✔	✔	✔	✔		✔	✔
Net exporters							
Brunei	N/A						
Malaysia	N/A						
Large storage capacity and inventory							
Singapore	N/A						

Source: Based on the reviews in Chapter 1 and interviews with each country's government officials conducted by the ASEAN Centre for Energy (ACE) and the Institute of Energy Economics, Japan (IEEJ) in December 2014.

Because Malaysia and Brunei are net oil exporters as of 2012, and Singapore has plenty of storage capacity and physical inventory of oil products in its territory, these three countries are excluded from the table.

The following four items are considered as common challenges for the seven ASEAN countries, excluding Malaysia, Brunei, and Singapore:

- Developing accurate and timely statistics to understand the current oil market balance and to analyse future demand size to identify the appropriate level of stockpiling inventory;
- Promoting regional cooperation, particularly the operationalisation of the APSA;
- Securing financing from the government budget and from domestic and foreign private sources; and
- Expanding existing oil-storage capacity to build up stockpiling.

Country-specific challenges that may not be applicable to all seven countries include the following:

- Detailed planning of oil stockpiling development, including establishing an overseeing organisation and setting a specific inventory target with a clear deadline;
- Emergency exercises to identify potential problems in emergency response; and
- Interim measures to bridge gaps until the domestic oil-stockpiling development is completed.

3-1. Developing Accurate and Timely Statistical Data Collection

The first common challenge for ASEAN countries is to develop an accurate and timely statistical data-collection system. In most ASEAN countries, statistical data on energy supply and demand has not been well developed because until recently, oil demand was low and oil-supply security was not a major policy issue. As oil demand is growing rapidly, however, it has become an urgent need to establish a system that can collect accurate oil-consumption data in a timely manner. Understanding the correct volume and location of oil inventory is always critical in emergency response. Also, recording and collecting historical oil-consumption data is a very important premise in providing a long-term outlook for oil demand and import dependence.

Since oil is consumed in various sectors and in various economic activities in the ASEAN, collecting data on oil consumption requires cooperation from various sectors of the government and private organisations. The government should start building an extensive network amongst various sectors and entities from which it can receive regular statistical data reporting.

It is also important to manage the data after it is collected. Once the data is collected, it should be edited and maintained so as to be easily referenced and utilised. In this regard, a permanent organisation to maintain the data should be set up and a sufficient number of full-time analysts and staff may need to be hired to analyse the data.

Accurate and timely data is critically important in emergency response. In case of oil- supply disruption, the government or the oil company has to decide where or to which locations to provide the limited oil supply. If accurate statistics are not available, the oil might be supplied to the wrong place. If statistics are not available in a timely

manner, the decision will take longer or will be made without reliable reference.

Accurate statistics are important even after the stockpiling development plan is provided because they serve as a fundamental reference for revising the outlook on oil supply and demand. It is needless to say that an accurate outlook is a fundamental reference for setting an appropriate stockpiling development target. In Viet Nam, for instance, although the country should already have a well-developed oil stockpiling road map, its plan always has to be re-examined and modified in accordance with changes in the international oil market and the domestic oil supply-demand situation. Correct and timely oil-consumption data is very important in this review process.

3-2. Promoting Regional Cooperation in ASEAN

There is always a limit to a country's capability to respond to an unexpected and sudden emergency, and regional cooperation can fill this gap. One of the most effective templates to promote regional cooperation in ASEAN is undoubtedly to utilise the APSA. The agreement was originally established in 1986 and then revised in 2013 to include a coordinated petroleum supply arrangement. The details of APSA are summarised at the end of this chapter.

3-2-1. Issues toward activating and operationalising APSA

While the revised APSA has been enacted and the detailed procedures for Coordinated Emergency Response Measures (henceforth, CERM) have been provided, CERM has never yet been activated and it is likely that it will not be conducted smoothly. This is because there are several issues to be addressed in the current APSA and CERM procedures.

(1) Insufficient storage capacity and physical inventory within member countries

In most ASEAN countries, the growth of domestic oil demand has been rapid in the last decade, and the development of the oil-supply infrastructure (including oil-stockpiling facilities) has not yet caught up with the speed of demand growth. In this sense, the ASEAN is vulnerable to an unexpected disruption in the oil supply. APSA assumes supply coordination in which a country with a surplus oil inventory would provide its oil to another country with a supply shortage due to an emergency. Most

ASEAN countries, however, have increasing import dependence and seldom have such a surplus. This problem would become more acute if an emergency caused disruption on a regional basis (such as a disruption of the oil supply in the Middle East from which many ASEAN countries import). Because ASEAN countries have not built up sufficient storage capacity and inventory, it might still be difficult to achieve meaningful coordination of the oil supply.

(2) Less binding agreement provisions

Another issue is that the provision of APSA is not binding enough to achieve meaningful cooperation. A typical provision in this regard is the provision that member countries take cooperative actions 'on [a] commercial and voluntary basis.' This is a big difference from the IEA agreement that obligates member countries to hold a minimum-level stockpiling system.

Even though the ASEAN region has a sufficient capacity of oil-stockpiling bases and volume of oil stock, the existing provision has less binding power to enforce member countries to cooperate by sharing their oil with other countries.

(3) Lack of a permanent secretariat office

APSA does not have a permanent secretariat office and this lack of critical organisation would limit the function and effectiveness of its provisions. As seen in the last part of this chapter, in APSA's CERM, ASCOPE is designated to play the role of coordinator in an emergency. ASCOPE, however, is a small organisation that also does not have a permanent office. Its office is regularly relocated to the country where its secretary general resides. Until October 2014, the secretariat office of ASCOPE was located in the Philippines. It was relocated to Bangkok in May 2015 upon the inauguration of current Secretary General Nopporn Chuchinda from Thailand. The secretariat office of ASCOPE, therefore, tends to have limited permanent staff and does not have enough manpower to function as a coordinator in an emergency.

In activating CERM, ASCOPE is supposed to analyse and evaluate the needs and timing of oil sharing but in reality, it is not easy to make appropriate decisions without setting up a permanent secretariat office and employing a sufficient number of permanent staff specialising in oil market analysis. While budgetary constraints obviously

exist in ASCOPE, a clear coordinator would be necessary in order to achieve effective international oil sharing similar to the IEA's CERM system.

Another problem caused by not having a permanent secretariat office is that there is no organisation overseeing the operationalisation of APSA from a long-term perspective. It will take a long time to make APSA a more workable framework. It is necessary to have an organisation or staff members permanently engaged in such an effort. The APSA secretariat should be the organisation that undertakes this task. Setting up a permanent secretariat is also important for the purpose of operationalisation.

(4) Lack of regular exercise mechanism

APSA does not have a mechanism to conduct regular exercises amongst member countries. Conducting exercises is very important in order to be well prepared for an unexpected supply problem. A number of unexpected events occur every time an emergency happens. To ensure whether the existing CERM procedures work smoothly, emergency exercises need to be conducted regularly. There are extensive issues to be confirmed in such exercises, such as whether communication amongst coordinating agencies of each country is conducted properly, whether the eligible government personnel makes timely and proper decisions, how to secure logistics to the affected areas, how to prioritise the direction of supply, etc. Such regular exercises would be initiated by ASCOPE as a coordinator. ASCOPE's organisation and capability also need to be expanded from this perspective.

(5) Overly strict activation threshold

The threshold for APSA to activate CERM is 10 percent disruption for 30 days, but these conditions may be too strict. In reality, there is a very low possibility of such a large oil-supply disruption. Even the IEA, which used to have a similar threshold, has been relaxing the conditions to release its stockpiling. When the IEA was founded, the threshold to release stockpiling was a 7 percent supply reduction. Though such a large-scale disruption has never occurred in reality, even a disruption smaller than 7 percent can cause a significant economic impact similar to what happened in the second oil crisis in 1979. The IEA, therefore, introduced a more flexible Coordinated Emergency Response

Measure[18] wherein if the IEA governors found that a supply disruption would have a significant economic impact on the world economy, IEA can release stockpiling, allowing IEA member countries to release their stockpiling volume. Reflecting this trend of relaxing the threshold, APSA may consider revising it to be more realistic.

3-2-2. Potential solutions to achieve a more effective APSA

Providing solutions to the previously discussed issues will be a big challenge because of the lack of experience with multilateral cooperation in oil-supply security amongst ASEAN countries, insufficient financial and human resources, and the difficulty of securing unanimous consent amongst ASEAN countries in order to improve the existing practice. The following, however, are considered as potential solutions to address the above-mentioned issues.

(1) Permanent and effective secretariat

The most meaningful and feasible solution to operationalise APSA is to set up an active secretariat for APSA. As mentioned earlier, such a secretariat would be a driving force to consistently improve APSA from a long-term perspective. The new APSA secretariat has to be permanent because of the long-term nature of the APSA operationalisation process. The secretariat, therefore, will have a secretary general with a reasonable length of tenure and staff with professional expertise in the oil market or in emergency response.

In this regard, the ASEAN Centre for Energy may have such capacities because the centre has already worked as the secretariat for the ASEAN+3 Oil Stockpiling Roadmap (OSRM) activities and has insight into the oil-supply security efforts of each ASEAN country. Further strengthening ACE's capabilities, therefore, may be the most realistic option to create a capable secretariat for APSA.

(2) Collaboration with other frameworks and organisations

Another solution measure is to strengthen collaboration with international organisations and utilise their resources. Some international organisations are interested in the ASEAN's activities and have actually worked closely with ASEAN countries in oil-

[18] This is a different system from APSA's CERM.

supply security. The ASEAN+3 framework, for instance, has supported oil-stockpiling developments in ASEAN countries by assisting in drafting a road map and monitoring its implementation. APERC conducted Oil and Gas Security Exercises in Bangkok and Jakarta in 2013. APERC is developing an exercise training manual, which is expected to be published in 2015. The organisation plans to continue to assist with such exercises in other ASEAN countries. The IEA has increasingly been interested in Asia's energy issues as part of its outreach activities. The organisation is willing to provide and share its expertise with ASEAN countries by conducting training courses, and it actually regularly sends its experts to various oil-supply security workshops held in the ASEAN. The Economic Research Institute of ASEAN and East Asia, of course, has also worked in this field by providing consultancy on APSA operationalisation.

All of these initiatives and actions aim to make the ASEAN's oil supply security more resilient. The ASEAN can utilise these opportunities to strengthen its oil-supply security. It is also necessary to share information amongst international organisations in order to avoid duplication amongst these oil-supply security initiatives. It is critically important to have coordination by the Japanese government, particularly the Ministry of Economy, Trade, and Industry, which provides financial and professional resources to many of these initiatives.

(3) Joint oil stockpiling

Developing a joint stockpiling system amongst the ASEAN countries is an effective measure as a regional stockpiling cooperation. This is because oil-supply disruptions from outside the ASEAN tend to cause a regional effect on many ASEAN countries (i.e. oil-supply disruption tends to be regional), and ASEAN countries should have a reasonable reason to make joint arrangements to minimise impact. It would take a very long time for each country to develop oil-stockpiling bases and, in some ASEAN countries, the oil-consumption market may still be too small to set up a separate oil-stockpiling base. Developing joint oil-stockpiling bases, therefore, would be a beneficial solution for many ASEAN countries.

Singapore is the natural location for such a joint stockpiling base because of its ample existing storage capacity and export infrastructure. Singapore is the centre of oil market intelligence and the most ideal place to collect oil market data and information of

high quality and accuracy. However, since some ASEAN countries are relatively far from Singapore, another oil-stockpiling base may be built in Thailand or the Philippines where multiple refineries exist and storage capacity for stockpiling can be expanded with relative ease.

The type of organisation for the joint stockpiling initiative could be the type where each ASEAN country holds their own equity and can claim their share of stockpiling in an emergency. The organisation will be assigned by ASEAN countries to oversee the operations and maintenance of the joint stockpiling bases.

(4) Amendments to APSA

A more drastic solution to operationalise APSA would be to amend some of the provisions of APSA itself. Some of its provisions are not sufficiently clear or binding to make it a workable framework. CERM procedures are provided in APSA's annex but the organisations mentioned in the procedures were not clearly designated. For instance, APSA does not clearly identify a coordinated agency that communicates with the APSA secretariat and coordinates within each country's government. This creates another problem: the lack of an established communication network amongst ASEAN countries to activate APSA CERM.

As has been previously mentioned, APSA prescribes that cooperation by each country will be conducted 'on a commercial and voluntary basis,' which lacks the compulsory power to force each country to collaborate in the event of an emergency. This loose provision limits the incentive of ASEAN countries to participate proactively in APSA activities.

Amending the existing APSA is not an easy task. Some countries require a ratification process to do so. The amendment process takes a long time as well as patient efforts by the government officials of each ASEAN country. Yet in the long term, if APSA aims to be an effective multilateral framework like the IEA, amendment efforts cannot be avoided. Discussions toward the amendment process need to be initiated immediately.

3-3. Securing Finance

The third common challenge is financing. Stockpiling development requires a very large amount of capital while its economic benefit is difficult to identify. Securing financing for stockpiling development is, therefore, always a difficult task. In the case of oil-stockpiling development in IEA countries, the countries share a threat of serious oil-supply disruption. After experiencing the first oil crisis in 1973, it was relatively easy to mobilise domestic resources to develop a stockpiling system. In the case of ASEAN countries, however, it is difficult to create such a strong incentive.

Because stockpiling development is a policy of energy security, it would be ideal for each country's government to secure funds for its development. In order to secure a budget, it will be necessary to provide concrete reasoning for why the country has to work on stockpiling development. Any visual or quantitative material should be developed to raise the priority of stockpiling development in the budget allocation of each country.

If government sources cannot be obtained, then private funding will be sought. The government may regulate the oil industry to hold a certain level of inventory by requiring investment in a stockpiling facility and building up an inventory. However, the government might still be requested to provide an economic incentive to the industry in order to achieve such developments.

If sufficient capital cannot be obtained from domestic sources, foreign sources will become a realistic option. Introducing foreign investment may be achieved through several means.

The most straightforward means is to have foreign equity investments in an oil-stockpiling organisation. This is to invite foreign investment to a newly founded organisation dedicated to maintaining and operating stockpiling.

Another means of encouraging foreign investment is to invite foreign companies to invest in oil-supply-chain infrastructure projects on the condition that they will have extra storage for oil stockpiling. Because the ASEAN is one of the prospective future oil markets, it is a very attractive place for foreign oil companies. Including the interest of foreign companies in stockpiling development is an option to consider. In the case of Indonesia, for instance, the NOC, Pertamina, is currently discussing expansion projects for

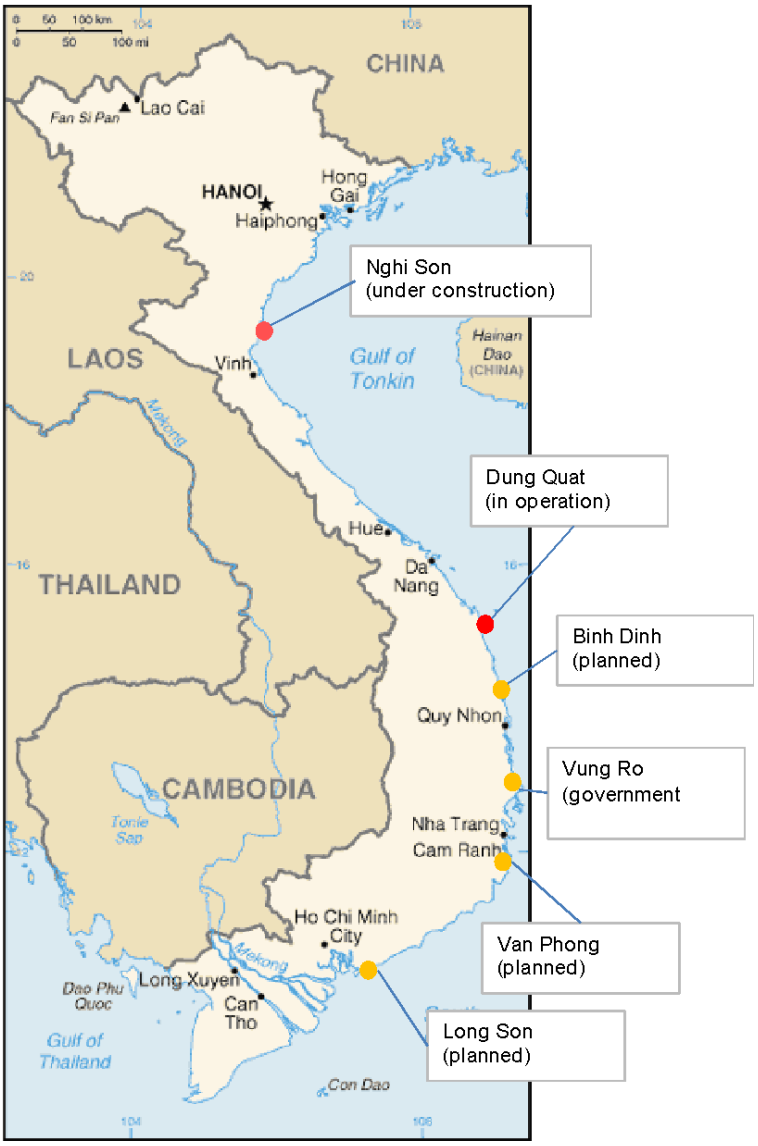
its five refineries by forming a joint venture with foreign companies such as the Saudi Arabian Oil Company (Saudi Aramco), China Petroleum & Chemical Corporation (Sinopec), and JX Nippon Oil & Energy (JX). The Indonesian government may urge the joint venture to build additional storage capacity for stockpiling. Under ordinary market conditions, the joint venture can utilise the storage for commercial purposes as long as it maintains a certain level of inventory but in an emergency, it will be utilised as stockpiling.

Figure 3-3-1. Locations for Planned Refinery Expansion in Indonesia

Source: The Institute of Energy Economics, Japan (IEEJ).

Of course, the foreign oil companies that are supposed to form a joint venture may be less willing to invest in such additional facilities because such assets will cause operating expenses while not generating profits per se. Indonesia will need to provide economic incentives to foreign investors to utilise their investments in developing oil stockpiling developments. Such incentive arrangements may include preferential treatment (e.g. taxation benefits). Because Saudi Aramco and Sinopec are also national oil companies, specific cooperative agreements on a government-to-government basis may bring additional incentive for investing in stockpiling facilities.

Figure 3-3-2. Locations for Planned Refineries in Viet Nam



Source: The Institute of Energy Economics, Japan (IEEJ).

In the case of Viet Nam, the country has several refinery construction projects (Figure 3-3-2). Most of the planned refinery construction projects are led by Vietnamese national oil companies, such as PetroVietnam and Petrolimex, together with foreign partners. If the government could provide sufficient incentive to those foreign investors to consider building extra storage capacities for stockpiling, it would ease the budgetary constraints of Vietnamese national oil companies while enabling access to these foreign companies' expertise on the operation and maintenance of oil-storage facilities.

Although the Vietnamese government currently aims to build stockpiling capacity without the involvement of foreign governments or companies, utilising foreign capital and expertise will help and facilitate the realisation of the country's oil-stockpiling road

map.

In the case of Myanmar, many foreign companies are also interested in investing in Myanmar's downstream sector. The Myanmar government is also willing to accept foreign investments in the refining and marketing sectors of the country. In fact, the Myanmar Petroleum Enterprise (MPE), the state-owned refining company, plans to introduce foreign investments in renovating its Thanlyn refinery near Yangon. Myanmar Petroleum Product Enterprise (MPPE), the state-owned marketing company, plans to partially privatise its gasoline and diesel sales business with foreign capital. This opening of its downstream sector can be utilised as leverage for foreign investment into oil stockpiling.

Cambodia is also planning to build a new refinery with foreign capital. It is reported that a new refinery is being built in Prea Sihanouk by Chinese investors and is expected to be completed in 2020. With the completion of this new refinery with a capacity of 84,000 bbl/day, Cambodia will be self-sufficient in oil-product supply (it is still in a net import balance on a total oil supply basis). Promoting refinery construction is a prioritised policy issue for the country.

Finally, as another potential scheme to introduce foreign investments, inviting investments from oil-producing countries may be a mutually beneficial option for the ASEAN countries and the oil-producing countries. As import demand for crude oil is rising in ASEAN countries and competition amongst oil-producing countries has become more intense, securing a physical foothold to market their crude oil will stoke the interest of oil-producing countries. Of course, holding inventory does incur cost but having such inventory near the market will enable the producer to sell its crude oil flexibly depending on market conditions. In fact, Japan already introduced such an oil producers' joint stockpiling system in 2009 in Kiire (Kagoshima) with the Abu Dhabi National Oil Company and again in 2010 in Okinawa with Saudi Aramco. Under this framework, oil producers can utilise tanks in Japan for commercial operations while the inventory in those tanks would be supplied to Japan with priority in case of an emergency.

3-4. Expanding Stockpiling Capability and Inventory

The fourth common issue is to expand the physical storage capacity in each ASEAN country. In this case, refinery construction is the most effective means of increasing the domestic storage capacity and inventory of oil. Because refineries have storage tanks for their commercial operations, having a stockpiling base next to those commercial storage facilities offers the benefit of saving on administrative expenses for operation and maintenance as these tasks are performed jointly with the commercial storage operations. In fact, having storage tanks for stockpiling within or near a refinery is the most effective and efficient means of expanding stockpiling capacity. Geographical proximity between refineries and storage facilities minimises the time lag between the release of crude oil stockpiling and the actual supply of oil products to consumers. It also lowers the risk of disruption to the means by which crude oil is transported to the refinery. Building a stockpiling base near the refinery, therefore, is considered the most cost-effective means of strengthening oil-stockpiling capacities.

3-5. Planning Oil-Stockpiling Development

3-5-1. Importance of a stockpiling plan

One country-specific challenge is developing a comprehensive plan for oil-stockpiling development or at least setting a specific target for stockpiling build-up.

Providing a road map includes a number of processes. It will be necessary to develop the best possible oil supply-demand outlook at an earlier stage of planning because setting a specific numerical target for oil stockpiling should be based on a reliable outlook. In fact, the oil-stockpiling target is usually set as specific days of net oil import but in a country whose import continues to grow such as Indonesia, the days-of-import target is not indicative of the absolute amount of imports. Thus, it is hard to identify the size of stockpiling facilities. Providing a reliable oil supply-demand is crucially important in planning oil-stockpiling development.

In the case of Myanmar where oil demand has been rapidly increasing and policy planning has been catching up with market development, a total oil policy system is currently being developed. Because the country is self-sufficient in the supply of natural

gas, oil is the primary concern for energy security, and stockpiling development has a high importance in its energy policy agenda. Another important factor for total oil-policy system development is the collection of reliable and solid information required to develop stockpiling planning, such as oil demand and import outlook, a refinement expansion plan, and supply from international oil pipelines. Those two policy planning activities should be conducted simultaneously.

Cambodia's oil demand was low before the 2010s so it did not have a systematic oil- policy framework from upstream to downstream. Neither did it have an oil-supply security policy. Given its growing oil consumption, Cambodia needs to have specific policy goals and to identify tasks needed to achieve the goals. In this regard, the Cambodian government has made a memorandum of understanding with the Japan Oil, Gas, and Metals National Corporation to draft an oil-stockpiling road map. The road map will be a fundamental policy document that will guide the government in the pursuit of its stockpiling efforts.

3-5-2. Crude oil or oil product

Another issue in the development of an oil-stockpiling plan is determining the kind of oil to be stored. Oil can be stockpiled in the form of crude oil or refined oil product. In developing an oil-stockpiling plan, the specific type of oil needs to be determined in consideration of the merits and demerits of both types of stockpiling.

Storing crude oil is the easiest way to build stockpiling because there would be no need to store separate tanks for each grade (as different grades of crude oil can be stored together). In oil-product stockpiling, each oil product storage facility needs to be separated, sometimes in different types of tanks. Stockpiling crude oil will also, to some extent, enable flexibility in the process of refining specific products (as during the refining process, refineries can change the yield of the oil product to a certain extent). If there is a severe shortage of diesel oil, for instance, refiners can produce more diesel oil than gasoline and kerosene from a single bbl of crude oil. Quality degradation (e.g. change in colour) occurs in oil-product stockpiling, and it is necessary to periodically shuffle inventory. In the case of crude-oil stockpiling, however, such quality degradation is very limited; crude oil can be stored over decades without causing additional expenses for

inventory shuffling.

On the other hand, the benefit of oil-product stockpiling is operational promptness. Because, with limited exceptions,[19] there are no consumers of crude oil, releasing stockpiled oil products can save time in the process of refining crude oil into oil products. This is particularly the case in an emergency involving a disruption in the local supply (e.g. a typhoon, an earthquake, or other similar events) which can affect both the local supply and the distribution network. In such cases, there is very limited time to secure the lost oil supply, and it would be very effective and helpful to release the oil product stockpile. Likewise, storing crude oil makes sense if the country has sufficient refining capacity. Otherwise, the stockpiled oil will necessarily be oil products.

The location of the oil-stockpiling base may also vary depending on the kind of stockpiled oil. If crude oil is stockpiled, the location of the base will be close to the refinery. If refined products are stockpiled, the base will be close to a large city where demand is high. The kind of oil to be stored should be considered well in developing a stockpiling plan.

3-5-3. Identifying the responsible party

It is also necessary to identify the party that will be responsible for developing and storing the oil stockpile. Amongst the IEA countries, some countries (e.g. US) hold only government stockpiling (SPR) while some European countries hold stockpiling through an association formed by oil companies. Some IEA countries (e.g. Japan, South Korea) have both government and private stockpiling systems (Table 3-5-1). In the case of ASEAN countries, since the NOC of each country often has a dominant position in the refining and marketing sectors, how to involve these NOCs will be an important policy issue.

[19] Notable exceptions are direct burning of crude oil in the power sector in Japan or in Gulf countries. According to Joint Oil Data Initiative, Japan consumed 22,000 bbl/d and Saudi Arabia consumed 48,000 bbl/d for power generation in 2013.

Table 3-5-1. Types of Stockpiling Systems in Selected IEA Countries

Country	Stockpiling operator	Stockpiling days	Stockpiling release procedure
United States	Government	94 (crude oil and product)	Released by competitive bidding. Price is determined by bidding.
Germany	Association* funded by private industry	117 (crude oil and product)	Association members have a right to receive stockpiling oil based on their share in the Association's operation.
France	Government Private industry	102 (crude oil and product)	Private industry stockpiling is released in the early stages of an emergency.
Netherlands	Association* Private industry	143 (crude oil and product)	Stockpiling volume above IEA obligation is released by bidding.
United Kingdom	Private industry	49 (crude oil and product)	No government stock. No public stockpiling agency.
Italy	Private industry	99 (crude oil and product)	Private industry releases stockpiling on a voluntary basis based on the government's recommendation.
Japan	Government Private industry	136	The government relaxes the obligated days of private stockpiling. Government stock is released by government order.
Republic of Korea	Government Private industry	78	The government relaxes the obligated days of private stockpiling. Government stock is released by government order.

*The Association is a public organisation designated to hold, operate, and maintain oil stockpiling.
Stockpiling days shows the figure as of 30 September 2014 based on the International Energy Agency's *Oil Market Report* (March 2015).
Source: IEEJ based on the Ministry of Economy, Trade, and Industry's study on the oil-stockpiling system in 2008.

In the case of Viet Nam, the question of who builds up the stockpiling base has become an issue. The country's first oil-stockpiling base will be built near the Dung Quat refinery. A consortium of South Korean companies has been awarded the bid to construct the 600,000-kilolitre (kl) stockpiling base by 2018. The groundwork for it, however, has not started yet because it is thought that for security reasons, the Prime Minister's Office of Viet Nam prefers greater involvement of Vietnamese companies in the oil-stockpiling development. If the Vietnamese government pursues such localisation of stockpiling development activities, more importance will be placed on the capacity building of Vietnamese engineering companies, construction companies, and oil companies. Because it might take longer to complete the stockpiling base using local players and expertise alone, it is necessary that Viet Nam further hone its expertise on building and operating a stockpiling base. Training of human resources will be of high importance in this area.

3-6. Conducting Emergency Exercises

Regardless of the stage of development in oil stockpiling, it is very important to conduct emergency exercises as these can identify a number of problems, issues, and weaknesses in a country's oil-supply system.

Conducting regular exercises also contributes to better emergency response measures by creating an opportunity for the people in charge of emergency response to meet and get to know one another. In an emergency, the speed and accuracy with which relevant organisations share relevant information is a key factor in achieving an effective emergency response. APERC conducted several exercises in Thailand and Indonesia in 2013. Utilising the expertise of the centre may be worth considering for all ASEAN countries.

Thailand has made notable efforts in this regard. Every year, it conducts emergency exercises assuming a specific crisis scenario. Exercises using role playing are conducted by a wide range of participants from the government. Such efforts serve to strengthen the country's emergency response capacity.

3-7. Arranging Interim Measures

Countries that require a long period to develop a stockpiling system may consider a shorter-term arrangement that transitions to a more solid one, such as an oil-stockpiling base. In countries like Myanmar, Lao PDR, or Cambodia, the growth in oil demand is rapid but demand is still very low. A large oil-stockpiling facility may be built in the long run but it may be too early to build such a large-scale infrastructure at this stage. Those countries, therefore, will be interested in developing a short-term oil- supply security arrangement by utilising another country's supply infrastructure.

One option is to have a deal to swap crude oil and oil products with a neighbouring country. In such an arrangement, when a refinery of Country A is affected and cannot refine crude oil, Country A can swap its crude oil with Country B for Country B's oil product. Country B, the provider of the oil product, will be a country with ample refining capacity, such as Thailand.

Another such measure is the so-called ticketing system. If Country A cannot build up its stockpiling in the short term, it can purchase the right to use a certain volume of the oil inventory held by Country B by paying a ticket fee to Country B. This ticket stockpiling system is explained in greater detail in Chapter 3.

Still another short-term arrangement is a bilateral emergency oil-supply security agreement. An ASEAN country with a product shortage may make an agreement with another country with ample stockpiling, such as Japan, to enable it to secure its oil supply in an emergency. Such stockpiling volume may be government oil stockpiling but if a private company finds it economically attractive to release its stockpiling to a specific country, that company may be willing to provide its product stock to be released. The government of the provider's country may also readily relax the existing stockpiling regulations by request of the affected country so that the private company of the provider's country can readily export its product. It will further enhance the effectiveness of this arrangement if the two governments and oil companies in both countries can conduct an emergency exercise jointly under this arrangement.

Of course these short-term measures have to be temporary until stockpiling facilities are completed. Constructing a physical location to store a large amount of stockpiling volume should be the final goal of oil-stockpiling development.

Annex ASEAN Petroleum Security Agreement (APSA)

What is APSA?

APSA, which stands for ASEAN Petroleum Security Agreement, is an international agreement amongst all ASEAN member countries enacted on 1 March 2009. APSA originates from the Agreement on ASEAN Energy Cooperation enacted amongst ASEAN member countries in June 1986. The agreement prescribed that ASEAN countries strengthen energy cooperation to enhance their solidarity. The original APSA was established with the agreement to facilitate the emergency response system for crude oil and oil products when the oil supply is too large or too small. In 1999, the ASEAN Ministers on Energy Meeting agreed that the original APSA would be modified to include both short-term and mid- to long-term emergency response measures as well as to provide detailed procedures to share crude oil and product supply amongst member countries in an emergency. The revised APSA was not enacted for a decade because Indonesia did not sign the agreement until 2009, at which point it was officially enacted.

Objectives and Provisions of APSA

The objectives of APSA are to provide both short-term and long-term emergency response measures, enhance the oil-supply security of ASEAN member countries, and minimise vulnerability in an emergency.

As short-term measures, APSA prescribes that member countries should reduce their oil demand during ordinary conditions, avoid rapid demand growth, and collect appropriate information and data before asking for regional oil sharing. In addition to these efforts during ordinary conditions, member countries will also undertake CERM if an emergency occurs. Unlike IEA's CERM, however, this coordination would be conducted on a commercial and voluntary basis by each member country.

As long-term measures, APSA mentions future developments of the ASEAN power grid and the Trans-ASEAN natural gas pipeline as a regional energy infrastructure. APSA also prescribes that member countries pursue regional energy policy plans based on the ASEAN's recommendations and that they cooperate in areas such as coal, new oil

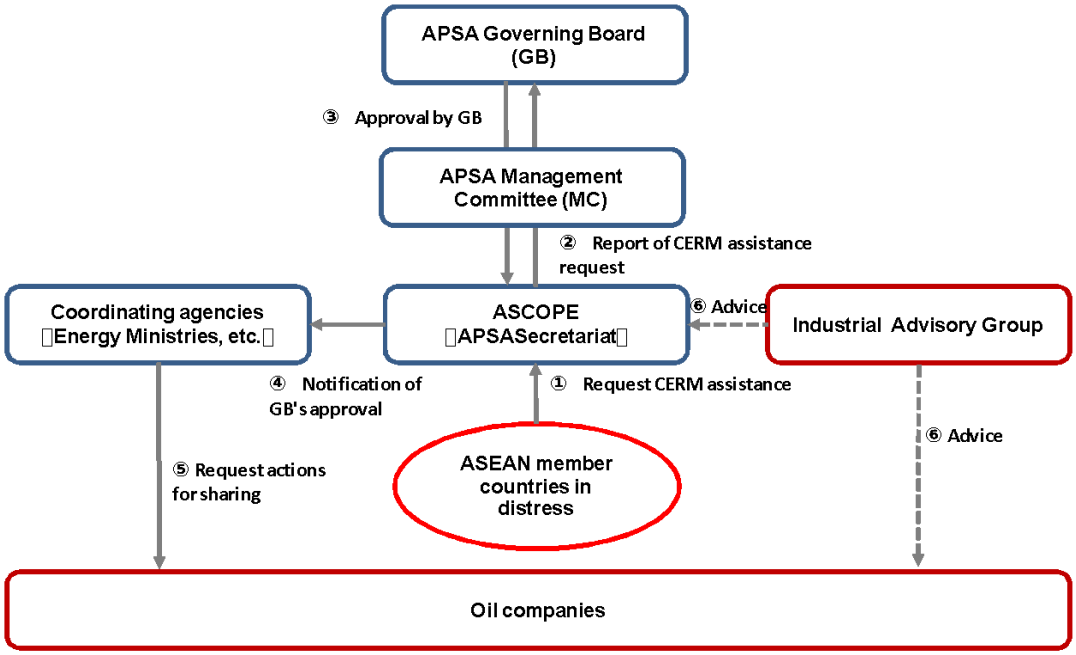
development, diversification of energy sources, introduction of renewable energy, energy efficiency, improvement of energy efficiency, and so on. What is notable in APSA's long-term measures is that it considers the liberalisation of the oil and natural gas markets and commercial and voluntary stockpiling as important measures to ensure regional energy security.

CERM Procedures

APSA provides procedures for CERM or a coordinated oil-sharing system amongst member countries, and this forms the core of APSA.

CERM is initiated by a country in distress. CERM's activation threshold is 10 percent supply disruption from normal domestic consumption continuing for 30 days. If such a disruption happens, the country in distress would try to manage its disruption through its best possible efforts, such as utilising other energy sources or reducing oil consumption. If such measures are insufficient, the country could request CERM assistance. The request would be made to the ASEAN Council on Petroleum (henceforth, ASCOPE) as the secretariat of APSA. ASCOPE would then evaluate the necessity of reporting the request to the APSA governing board. ASCOPE would prepare to report whether or not CERM should be activated by evaluating information obtained from various sources, including the departments of the member country's government or oil companies.

Figure 3-8-1. Coordinated Emergency Response Measures (CERM) Procedures



Sources: ASEAN Petroleum Security Agreement (APSA); Institute of Energy Economics, Japan (IEEJ).

ASCOPE would convene the APSA Management Committee (MC) to review the report prepared by ASCOPE. If the MC finds that the request should be sent to the APSA Governing Board (which is composed of minister-level representatives) for their approval, the request would be examined by the GB. If the GB approves the request, ASCOPE would notify the coordinating agencies of member countries. The coordinating agency is usually the ministry that oversees energy policy. The coordinating agencies would then evaluate how they can cooperate with the request for assistance and would then ask oil companies for specific actions for assistance. As already mentioned, these cooperative actions would be taken on a commercial and voluntary basis.

After the coordinated actions are taken, ASCOPE would continue to watch market developments. If ASCOPE finds that there is no longer a serious supply disruption, ASCOPE would prepare a report to deactivate CERM. The MC would evaluate that report and if the MC finds that it should be discussed at the GB level, it would send the report to the GB. If the GB approves the deactivation, CERM would actually be deactivated.