Chapter 2

Oil Supply Resilience in Selected Countries in the ASEAN

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Chapter 2

Oil Supply Resilience in Selected ASEAN Countries

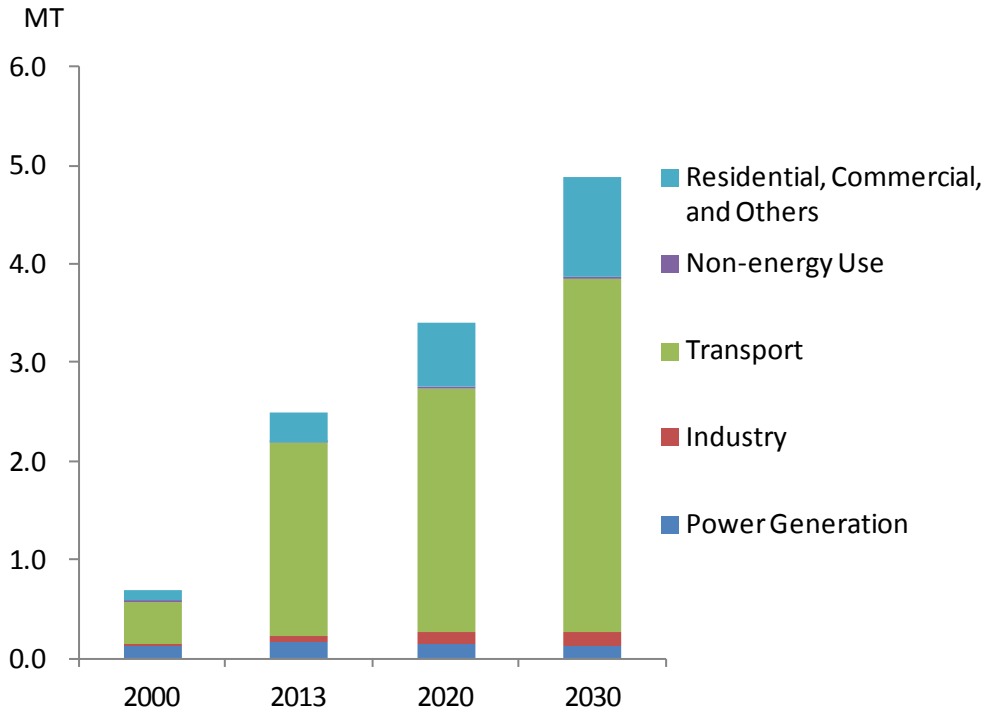
1. Cambodia

1.1. Oil in Cambodia

(1) Demand

Oil demand in Cambodia is modest but is growing fast. In 2000, the demand was less than 1 MT, but it more than tripled by 2013. The transport sector has been and will be the driver of the demand growth. In 2030, ERIA predicts that the demand will reach 4.9 MT, where 71% is expected to come from the transport sector.

Figure 2-1: Oil Demand by Sectors in Cambodia (2000–2030)



MT = metric ton.
Source: Economic Research Institute for ASEAN and East Asia (2016).

(2) Supply

Cambodia does not produce crude oil and does not have a refinery, hence, its oil demand is met by importing mainly from neighbouring countries. Exploration and production (E&P) activities are

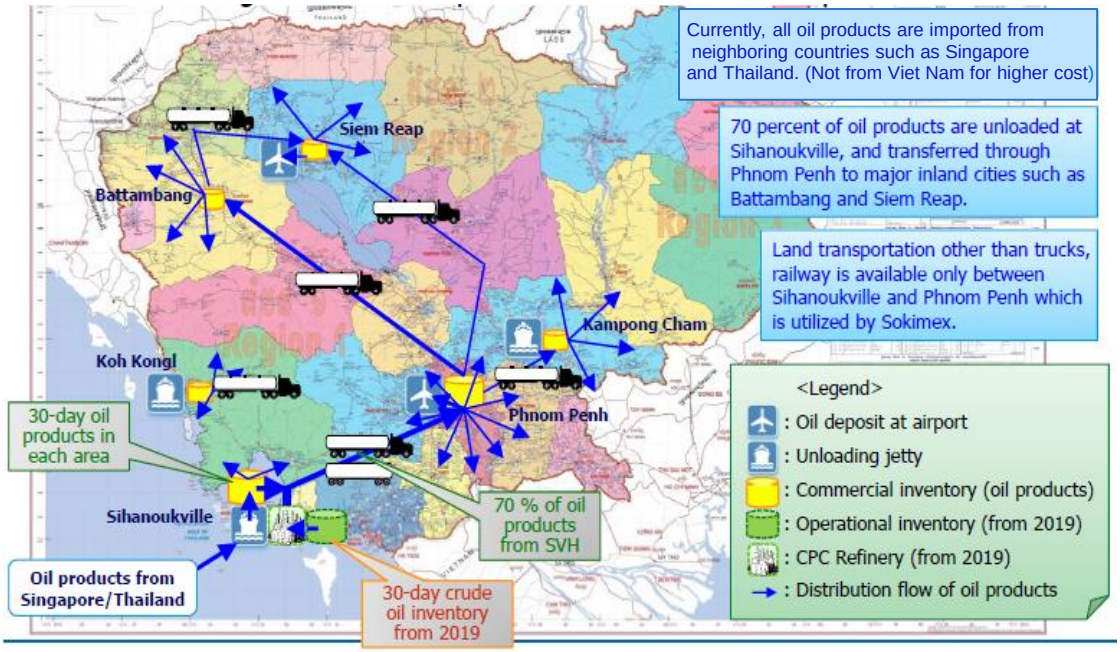
underway, especially offshore Cambodia, although it is not clear when and how much crude oil will be produced. The Cambodian Petrochemical Company and the China National Petroleum Corporation are planning to build the first refinery in Cambodia (Kang, 2016).[3] With a capacity of 2 MT for phase 1, the refinery will decrease the import dependency of Cambodia on oil products after its planned commercialization in 2018.

(3) Industry structure and regulatory bodies

Oil supply in Cambodia has been undertaken by private companies. Foreign companies like Chevron, Total, and PTT, as well as Cambodian suppliers like SOKIMEX and Tela have strong presence in the market. Although the government has considered establishing a national oil company, there is no such company in Cambodia so far.

According to the Ministry of Mine and Energy, 70% of the oil product import passes through Sihanoukville, the major port in Cambodia, and then transported to major cities like Phnom Penh mainly by lorry. Railways or barges are available in limited areas or routes.

Figure 2-2: Oil Supply Map in Cambodia



Source: Ministry of Mine and Energy (2017).

[3] 'Oil Refinery Will Lower Gas Prices, Government Says', *Cambodia Daily*, 6 May 2016. By Kang Sothear https://www.cambodiadaily.com/business/oil-refinery-will-lower-gas-prices-government-says-112238/

Energy policy in Cambodia is formulated and executed by the Ministry of Mine and Energy. Within the ministry, the General Department of Petroleum is in charge of the oil industry. Other ministries, such as the Ministry of Economy and Finance, are involved in energy price regulation and other affairs related to energy.

1.2. Oil supply resilience in Cambodia

(1) Identifying risks in oil supply disruption

Like many other countries in Southeast Asia, the climate in Cambodia is mostly tropical, with plentiful rainfall. Although the government recognizes foreign risks such as supply disruptions in the Middle East or in neighbouring countries that export oil products to Cambodia, flood is the major natural disaster in Cambodia, especially in the lower Tonlé Sap basin and the lower Mekong River provinces. The significant probability of flood combined with relatively underdeveloped state of the road system in the country result in the risk of oil supply disruption, especially the supply transported by lorry. This was evident when typhoon Ketsana hit the country in 2009. Hence, the government considers another mega typhoon as the worst scenario in terms of natural disaster in the country. In this scenario, typhoon and flood are assumed to damage not only roads but also the Sihanoukville port and railways, which will prevent oil transportation in Cambodia. It is expected to take 1 month before oil transportation can be resumed.

(2) Countermeasures to oil supply disruption

Currently, the government is working on improving road conditions and is developing other transport modes like railways and barges to diversify the mode of oil transportation. The disaster forecasting system and the emergency scheme for distributing fuel by various transport modes are intended to reinforce the oil supply resilience in the country.

Cambodia has not developed national oil stockpiling yet, nevertheless, the government requires private companies to have 30-day inventories of oil products at oil terminals. The government considers stockpiling – not only at oil terminals but also at refineries and national stockpiling sites – as the first priority in enhancing oil supply resilience in the country. The government also intends to build a pipeline from Sihanoukville to Phnom Penh, and from Phnom Penh to Siem Reap and other provinces to diversify the country's oil transport mode.

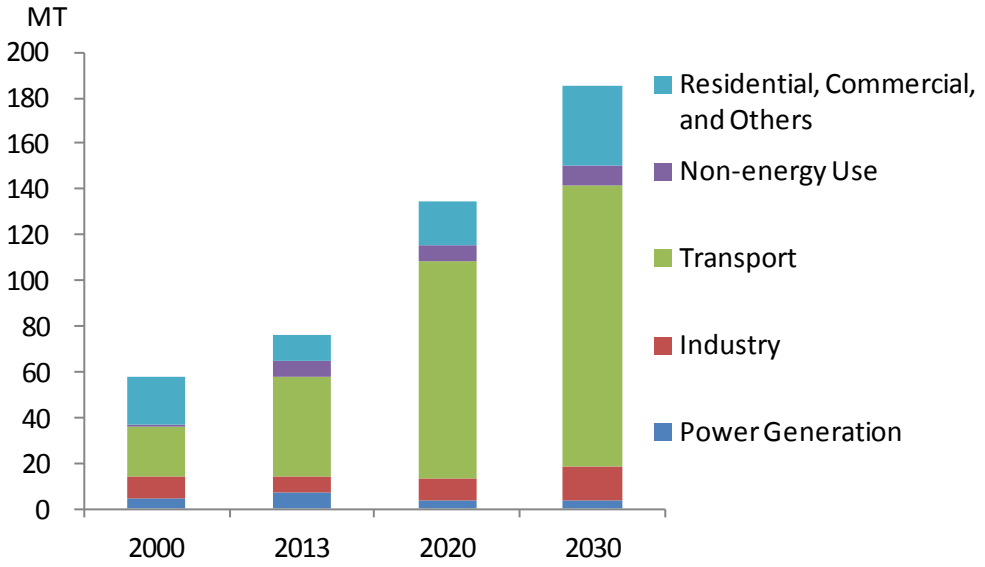
2. Indonesia

2.1. Oil in Indonesia

(1) Demand

With an oil consumption of 77 MT in 2013, Indonesia is the largest oil-consuming country in the ASEAN. Its oil demand, which increased by 2.2% per year since 2000, is expected to reach 185 MT in 2030. Transport is and will be the major consuming sector, sharing 56% of the total oil demand in 2013 and is expected to account for 66% of the total demand in 2030.

Figure 2-3: Oil Demand by Sectors in Indonesia (2000–2030)



MT = metric ton.

Source: Economic Research Institute for ASEAN and East Asia (2016).

(2) Supply

Indonesia is the largest oil producer in the ASEAN region, although production has been on a downward trend since the 2000s. Production in 2013 was 42 MT, of which 16 MT were exported. Indonesia is also a major oil importer in the region to meet its growing demand. It imported 23 MT of crude oil and 32 MT of oil products, mainly gasoline and diesel in 2013.

According to IEA, Indonesia's crude oil production is expected to decrease to 0.5 mb/day (25 MT/year) in 2025, and production will be maintained at that level toward 2040. With rising import dependency, oil supply security is increasingly a concern in Indonesia's energy policy. Expanding the refinery capacity is underway to curtail product imports in the future. According to Pertamina, the state-owned oil company, there are six refineries in Indonesia with a total capacity of 1 mb/day (52 MT/year), well short of the product demand. Pertamina is implementing the Refinery Development Master Plan that involves debottlenecking of the existing five refineries to expand their capacity to 2 mb/day (100 MT/year) in 2025. For one of the refinery upgrade

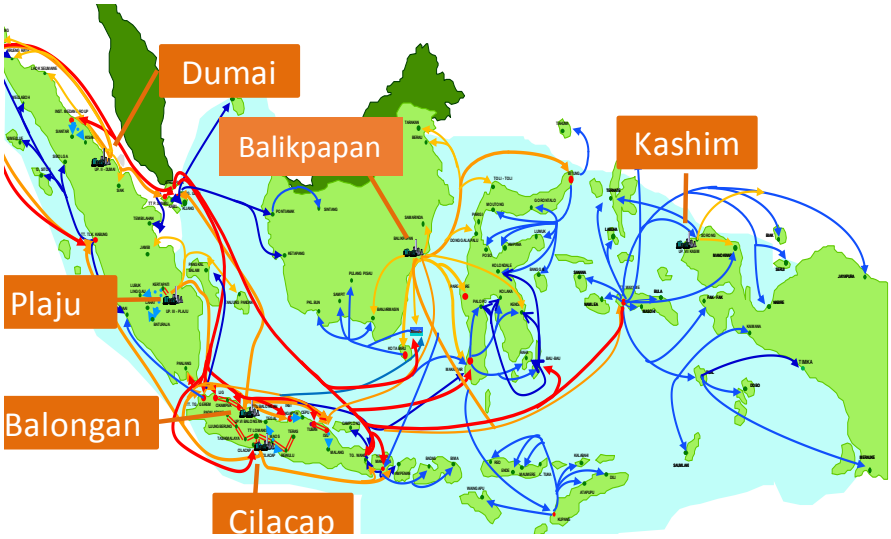
projects at Cilacap, Pertamina and Saudi Aramco signed a joint venture development agreement in December 2016. Under this agreement, Saudi Aramco will invest US$6 billion to upgrade the refinery in Java to enable it to refine 0.4 mb/day of Saudi crude oil in 2021 onward.

(3) Industry structure and regulatory bodies

Pertamina is the dominant oil supply company in Indonesia, supplying up to 95% of retail fuels and 75% of industry fuels. However, the Oil and Gas Law passed on 22 November 2011 stripped Pertamina of its monopoly status, allowing other oil companies to get their fair share of supply.

Since Indonesia is an archipelago and comprises many islands, sea transport is very important in the distribution of oil products in the country. Refinery locations are strategically determined and are not concentrated on any one major island to minimize the risk of supply disruptions.

Figure 2-4: Oil Supply Routes and Refineries in Indonesia



Sources: Ministry of Mineral Resources and Energy (2017), with additions from The Institute of Energy Economics, Japan.

While the National Energy Council (Dewan Energi Nasional) formulates energy policy principles, the Ministry of Energy and Mineral Resources (MEMR) is responsible for implementing specific energy policies in Indonesia. As far as oil is concerned, the Directorate General of Oil and Gas is in charge.

2.2. Oil supply resilience in Indonesia

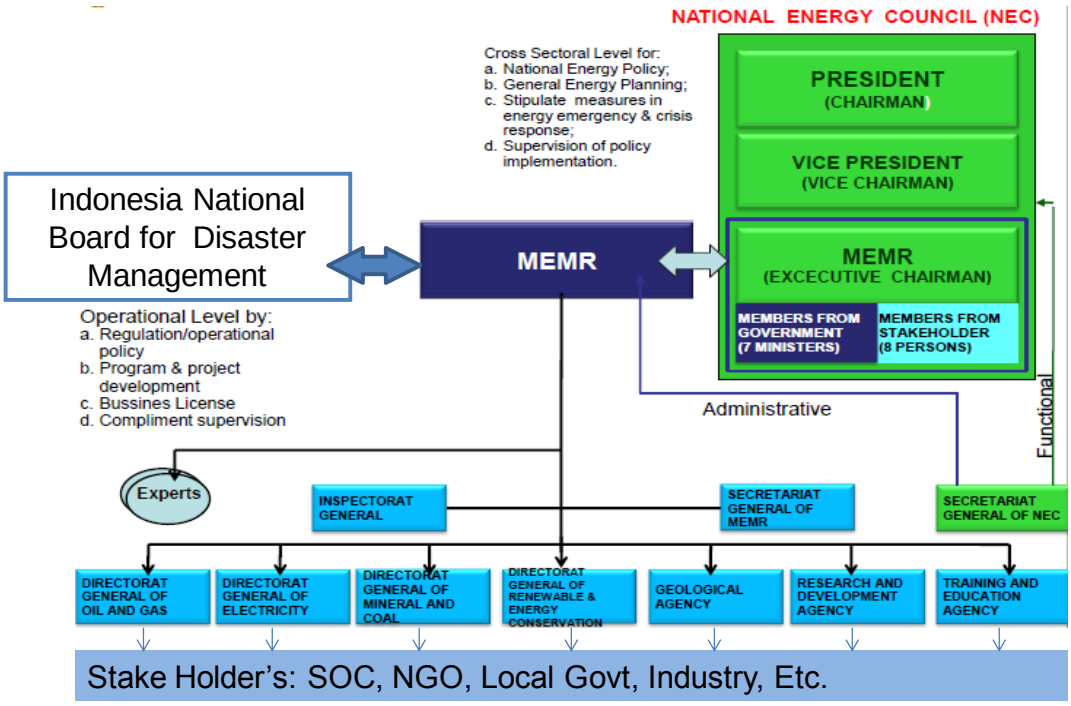
(1) Identifying risks in oil supply disruption

The MEMR identifies excessive demand hikes, natural disasters (tsunamis, earthquakes, and volcanic eruptions), market and industry emergencies, and political stability (instability) as major threats to oil supply in Indonesia. Although Pertamina also identifies earthquake and tsunami as major supply risks, it considers that Cilacap is the only vulnerable refinery for tsunami because of its location (facing the Indian Ocean where major tsunamis usually occur). The tsunami that hit Aceh in 2004 destroyed several oil tanks at an oil terminal, 9 gas stations, and 17 lorries, which resulted in damages worth US$30 million. To date, the most recent case of industry emergency occurred in 2011 and involved a fire at an oil tank of Cilacap refinery, but it had no significant impact on oil distribution since alternative supplies were available.

(2) Countermeasures to oil supply disruption

The MEMR is well aware of Indonesia's vulnerability in oil supply. The country is the largest oil consumer in the ASEAN region, and import dependency is rising. Many of its islands pose a challenge in terms of oil distribution especially during emergency situations. The country has developed an emergency response system at company, regional, and national levels. Existing laws provide for oil supply security, disaster mitigation, and emergency response plan. Therefore, Indonesia has fairly well institutionalized the oil resilience framework, However, so far, no detailed guidance for its implementation has been put in place. How workable this framework functions remains a question.

Figure 2-5: Emergency Responses System in Indonesia



MEMR = Ministry of Energy and Mineral Resources, NGO = nongovernment organization, SOC = State Oil Company

Source: Ministry of Energy and Mineral Resources (2017).

Most companies have emergency response plans to major accidents and oil spill. BCPs are in place, albeit at minimal level, as a part of Emergency Preparedness or of Safety Management System.

It is worth noting that refinery locations were strategically determined so as not to be affected by tsunami and other supply security risks. The MEMR employs domestic oil production increase, fuel diversification, demand management, and stockpiling as a broad policy to ensure oil supply security. On specific oil supply resilience, the MEMR recognizes several principles, such as promoting specific regulation and guidance, conducting resilience analysis of the entire fuel supply chain, preparing BCPs, exploring cooperation possibilities, regular reviews, and joint drills. However, one could argue that the policy details are not yet significantly developed.

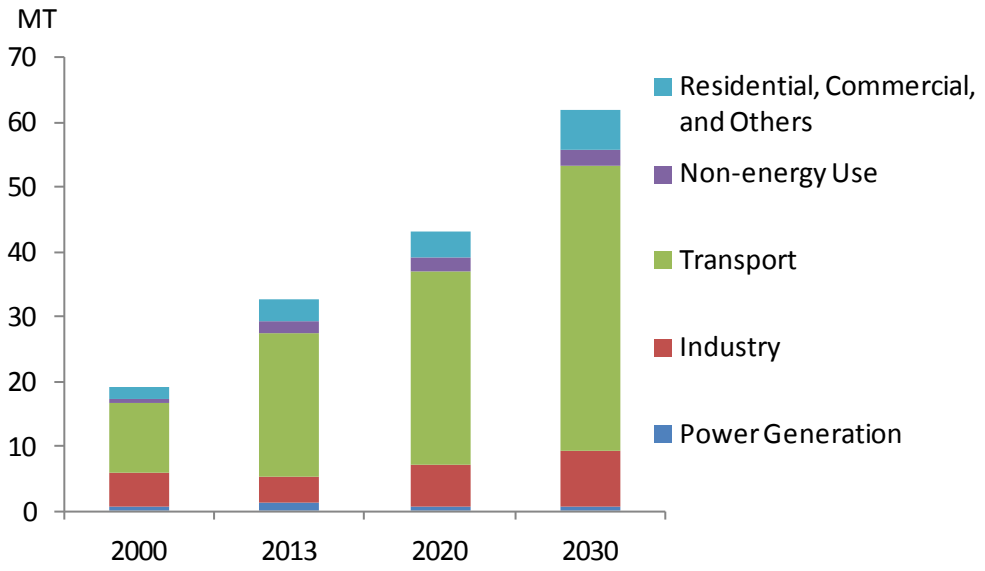
3. Malaysia

3.1. Oil in Malaysia

(1) Demand

Malaysia consumed 33 MT of oil in 2013. The demand has increased by 4%/year since 2000. As in the case of Cambodia and Indonesia, the transport sector of Malaysia has the largest share in oil demand (67% in 2013); followed by the industry sector (13%); and by the residential, commercial, and other sectors (10%). Future demand is also expected to grow by 4%/year, reaching 62 MT in 2030. Demand by sector in 2030 is likely to remain similar as that in 2013.

Figure 2-6: Oil Demand by Sectors in Malaysia (2000–2030)



MT = metric ton.
Source: Economic Research Institute for ASEAN and East Asia (2016).

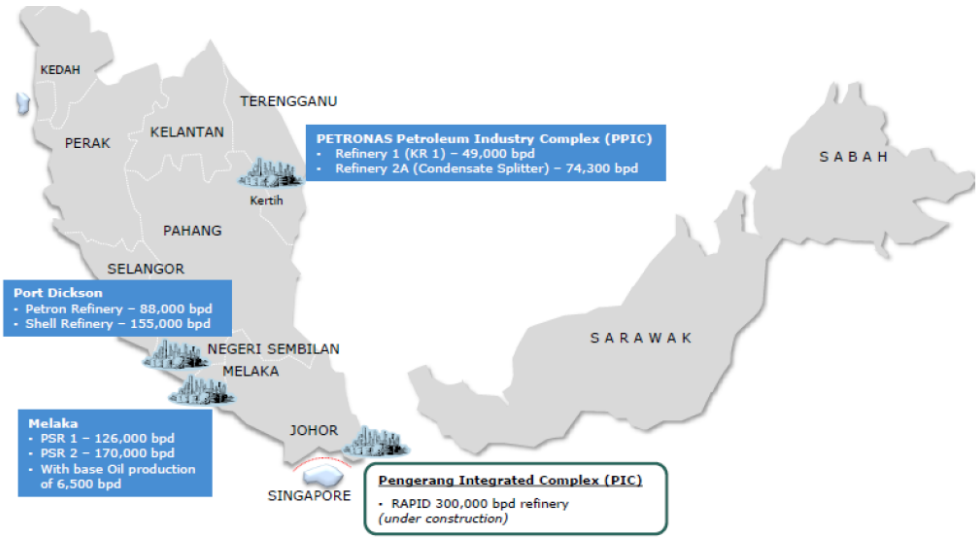
(2) Supply

Producing 30 MT of oil in 2013, Malaysia is the second largest oil producer in the ASEAN, next to Indonesia. Its practice of exporting and importing both crude oil and oil products has resulted in economic and product imbalances. In 2013, Malaysia exported 11 MT of crude oil but imported 9 MT of it. At the same time, it exported 12 MT of oil products, but imported 19 MT of said products.

Malaysia's crude oil production has been hovering at 30–35 MT/year for the past decade. Despite efforts by the government to stimulate E&P in the country, it is not likely that oil production will increase significantly, thus turning Malaysia into a net oil importer in the future.

There are three refineries in Malaysia at present, with a combined capacity of 0.65 mb/day (32 MT/year). To meet growing demand and to increase the export of oil products, the state–owned oil company, PETRONAS, is working to develop a refinery/petrochemical complex called RAPID in Johor. Like Cilacap in Indonesia, Saudi Aramco signed an agreement with PETRONAS to take part in this project, which will refine 0.3 mb/day of crude oil and produce 3.5 MT/year of petrochemical products.

Figure 2-7: Refinery Locations in Malaysia



Source: Economic Planning Unit (2017).

(3) Industry structure and regulatory bodies

Although the domestic oil market is open to competition, PETRONAS remains the dominant company in Malaysia's oil supply chain. The major international oil companies active in Malaysia include Shell, Chevron, oil trader Vitiol, the Philippine's Petron, and the Anglo-Australian multinational BHP.

Malaysia's energy policy is formulated and implemented by the Energy Section of the Economic Planning Unit (EPU) under the Prime Minister's Department. The Ministry of Natural Resources and Environment is in charge of upstream development. The Ministry of Energy, Green

Technology and Water is involved in electricity, water, and environmental issues. The Energy Commission is the main regulator of electricity and gas supply industries.

3.2. Oil supply resilience in Malaysia

(1) Identifying risks in oil supply disruption

The present Malaysian disaster management protocol at national level only covers flood, landslide, typhoon, earthquake, and industrial disaster (mechanical troubles, accidents, etc.). However, the EPU points out that these disasters have not significantly posed a threat to oil supply security in Malaysia. In addition, adequate crude oil production and bigger refinery capacity enable Malaysia to become a net exporter, which puts the country in a relatively favourable situation in terms of oil supply security. Nevertheless, the EPU is aware that supply disruption risks may come from natural and industrial disasters.

(2) Countermeasures to oil supply disruption

According to the EPU, general emergency response mechanisms and BCPs are in place at government agencies, PETRONAS, and at the electricity utility companies including the Tenaga Nasional Berhad (TNB). The Energy Commission has drafted a National Emergency Response Plan for the power sector, and is planning to draft such plans in 2017 for other sectors, including oil supply. Major companies, including PETRONAS, conduct periodic risk assessment and emergency drills. However, a national platform for a nationwide Disaster Risk Reduction Plan is not yet available. EPU understands that risk mapping and risk impact assessment are not consolidated at national level, which could cause inter-ministry coordination problem in case of emergency. The EPU recognizes the need to also conduct a national-level risk assessment on the energy sector, as the whole of Malaysia has relatively advanced in terms of awareness and implementation of oil supply resilience.

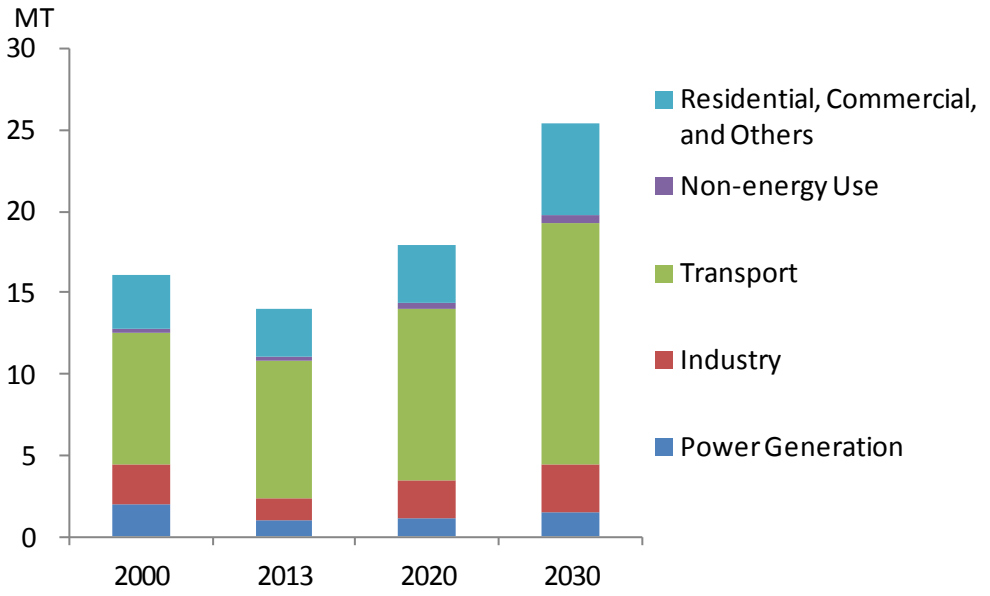
4. Philippines

4.1. Oil in the Philippines

(1) Demand

Oil demand in the Philippines slowed down for the past decade mainly due to higher oil price. The demand in 2013 was 14 MT, decreasing by 2 MT/year since 2000. The transport sector is the main oil consumer, with a demand share of 60% in 2013. ERIA expects the demand to grow by 4%/year to reach 25 MT in 2030. Share by demand among the sectors will remain largely unchanged.

Figure 2-8: Oil Demand by Sectors in the Philippines (2000–2030)



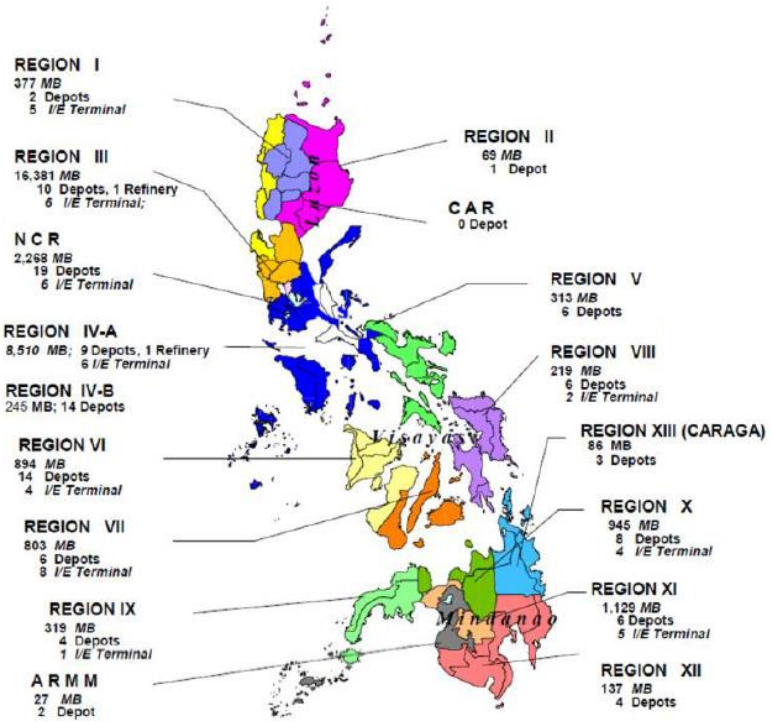
MT = metric ton.
Source: Economic Research Institute for ASEAN and East Asia (2016).

(2) Supply

The Philippines is heavily dependent on import to satisfy its oil demand. Domestic production in 2013 was 0.7 MT, only 5% of the demand. Crude oil and oil products import in 2013 were 7–8 MT each. With limited resource base, crude oil production in the Philippines is not likely to increase significantly.

There are two refineries in the Philippines with a total capacity of 0.29 mb/day (14 MT). Although Petron has a plan to build a refinery with a capacity of 0.25 mb/day, the actual commercialization timing is not yet clear. Thus, with increasing demand and stagnating domestic supply, the import dependency is likely to rise in the future.

Figure 2-9: Oil Infrastructure in the Philippines



Source: Department of Energy (2012).

(3) Industry structure and regulatory bodies

In the Philippine oil market, the Philippine National Oil Company (PNOC) is the main player. Nevertheless, since the market liberalization in the late 1990s, new players have entered the market. By 2014–2015, there were 249 active players in the market. Major players include Shell, PETRONAS, PTT, and Petron.

The Department of Energy (DOE) is the energy policymaking body in the Philippines. It also regulates the energy industry, as needed. On the other hand, the Energy Regulatory Commission monitors and sets the electricity rates, and the National Renewable Energy Board is the body created to research, develop, and promote the use of renewable energy.

4.2. Oil supply resilience in Philippines

(1) Identifying risks in oil supply disruption

Apart from external supply risks such as major reduction in the Organization of the Petroleum Exporting Countries (OPEC) crude output, the DOE identifies natural disasters, accidents, and terror attacks as major risks to oil supply in the Philippines. In particular, typhoons that hit the country around 20 times a year are considered the major natural disasters that cause infrastructure damage, flooding, and disruption of oil supply. For instance, when typhoon Yolanda or Haiyan struck in Leyte and nearby provinces in 2013, most of the oil infrastructure were

damaged and gasoline stations were shut down due to floods. It took several days before floods subsided and trucks became available to transport oil products to damaged areas.

(2) Countermeasures to oil supply disruption

The DOE has an existing Oil Contingency Plan that mainly addresses external threats, such as geopolitical conflict in the Middle East. In this plan, the government defines the priority of oil supply in the country. No such plan is available for internal threats. Nevertheless, at present, according to DOE, the National Disaster Risk Reduction Management Council headed by the Office of Civil Defense is in charge of addressing domestic threats caused by natural or man-made calamities. It is already communicating with other government agencies to identify their assignments in addressing the needs of the people in times of calamity. Each government agency is assigned responsibilities based on its mandate.

Although a similar kind of supply prioritization as defined by the Oil Contingency Plan could be deployed for internal threats that would be on condition of undamaged infrastructure. The DOE has required oil companies to maintain an inventory equivalent to 30 days of crude oil and petroleum products for refiners; 15-day equivalent of petroleum products for importers, and 7-day equivalent for LPG importers under the Circular on Minimum Inventory Requirement. It has also issued a Circular on Mutual Products Supply Agreement to ensure the continuous supply of oil. The DOE is aware of the need to streamline communication and coordination between government agencies and industries, and also of the need to assess the vulnerability of the entire oil supply chain. However, overall management of internal threats to oil supply is left to companies. Each oil company has its own BCP, but coordinated emergency exercises are not regularly conducted. The lack of nationwide coordination implies the need for government to take the lead in enhancing awareness and preparedness for oil supply resilience in the Philippines.

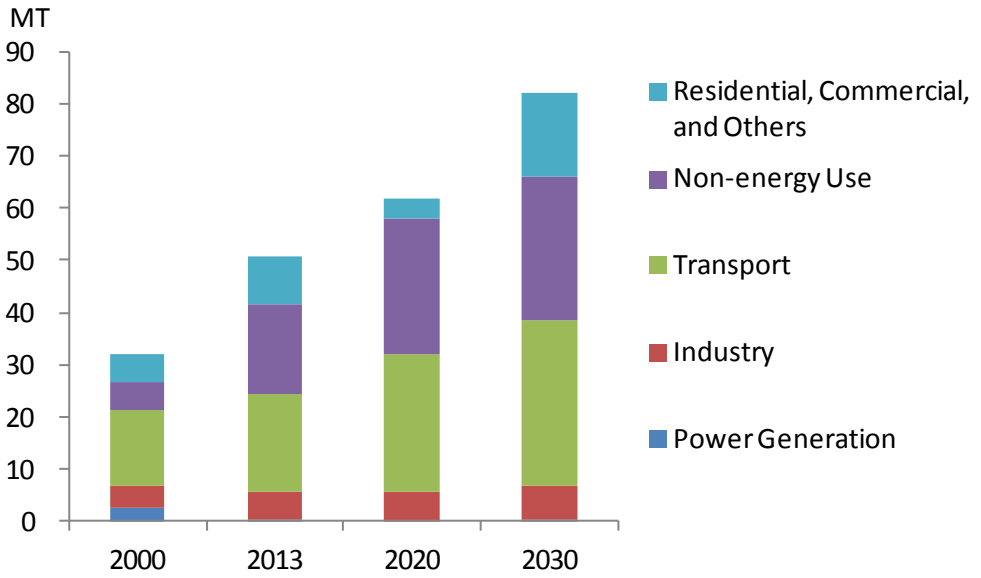
5. Thailand

5.1. Oil in Thailand

(1) Demand

Thailand is another major oil-consuming country in the ASEAN. Oil demand in the country in 2013 was 51 MT, the second largest after Indonesia. Like other countries in the region, the share of the transport sector was the largest (37% of total demand) in 2013. However, Thailand differs in terms of significant oil consumption for non-energy use (i.e. petrochemical feedstock) that accounted for 34% of the total demand in the same year. The increase in demand will accelerate in the future, reaching 82 MT in 2030. Transport and non-energy use will remain the main demand sectors.

Figure2-10: Oil Demand by Sectors in Thailand (2000–2030)



MT = metric ton.

Source: Economic Research Institute for ASEAN and East Asia (2016).

(2) Supply

Producing 19 MT in 2013, Thailand is a substantial crude oil producer in the region. Production has increased gradually mainly due to aggressive E&P activities. However, domestic production accounts for only 33% of the total demand in 2013. The majority of demand is met by imports, mainly crude oil but also some products. Like in the Philippines, with declining reserves, crude oil production in Thailand is not likely to grow in the future.

Thailand has seven refineries with a combined capacity of 1 mb/day (54 MT/year), all located on the coast of Gulf of Thailand. Only after Singapore, Thailand is the second largest exporter of oil products in the region, exporting 13 MT in 2013 mainly to neighbouring countries.

(3) Industry structure and regulatory bodies

The state-owned PTT is the dominant oil company in Thailand, with its integrated operation from upstream to downstream. Through its subsidiaries, PTT controls five refineries. Although there is no concrete plan to build a new refinery, Bangchak, a PTT subsidiary, is considering an upgrading of its own refinery.[4] There is an oil pipeline network between refineries and demand areas (i.e. greater Bangkok), however, inland transportation is dependent on lorries.

The Ministry of Energy formulates and implements energy policy in Thailand. The Ministry of Natural Resources and Environment, on the other hand, is responsible for the sustainability of natural resources and environment in the country.

[4] 'Thailand's Bangchak reviewing refinery upgrade plan', *Hydrocarbon Processing*, 8 November 2016. http://www.hydrocarbonprocessing.com/news/2016/11/thailands-bangchak-reviewing-refinery-upgrade-plan

Figure 2-11: Oil Infrastructure in Thailand

Source: PTT (2016).

5.2. Oil supply resilience in Thailand

(1) Identifying risks in oil supply disruption

Like Cambodia and the Philippines, PTT is aware of oil supply insecurity arising from events such as political unrest and piracy in oil-exporting countries, particularly in the Middle East, and in the transportation routes. As far as internal security threat is concerned, PTT identifies tsunamis; storms; accidents; or sabotage at gas separation plants, refineries, pipelines, and other infrastructure as threats to oil supply in Thailand. PTT estimates that tsunamis and storms in the east coast of the gulf of Thailand would damage jetties and depots, which would reduce the oil products supply equivalent to 18% of total demand. Likewise, a disaster and/or sabotage at six gas separation plants would decrease the supply by 290 kilotons of LPG per month, which is 48% of the demand. Refinery locations are concentrated on the east coast, which constitutes a potential vulnerability of the oil supply resilience to tsunami and storm in the Gulf.

(2) Countermeasures to oil supply disruption

Major countermeasures considered by PTT include stockpiling, transportation switch, product swap among suppliers, and enhanced jetty. Along with Singapore, Thailand is the most advanced

in terms of oil stockpiling developments. The country currently holds 25 days of crude oil and oil products stockpiling, and intends to build up the stockpiling to 90 days. While oil product pipelines are available in the south of the country, PTT plans to extend the pipelines to inland cities. PTT also considers vessels as an alternative transport mode. PTT plans pipeline extensions to inland cities like Lampang and Khon Kaen, which are expected to contribute to diversifying the oil transport in the country. According to PTT, jetties are already tolerant of earthquakes of 7.2 in the Richter scale and to high tides of 5.2 meters. PTT has also developed business continuity management based on TIS22301. PTT explains that social unrest (such as the anti-government demonstrations during 2013–2014) necessitated companies to draw up BCPs. PTT also considers moving the taxation point to pipeline depot as an encouragement for companies to build inventory close to the demand site.

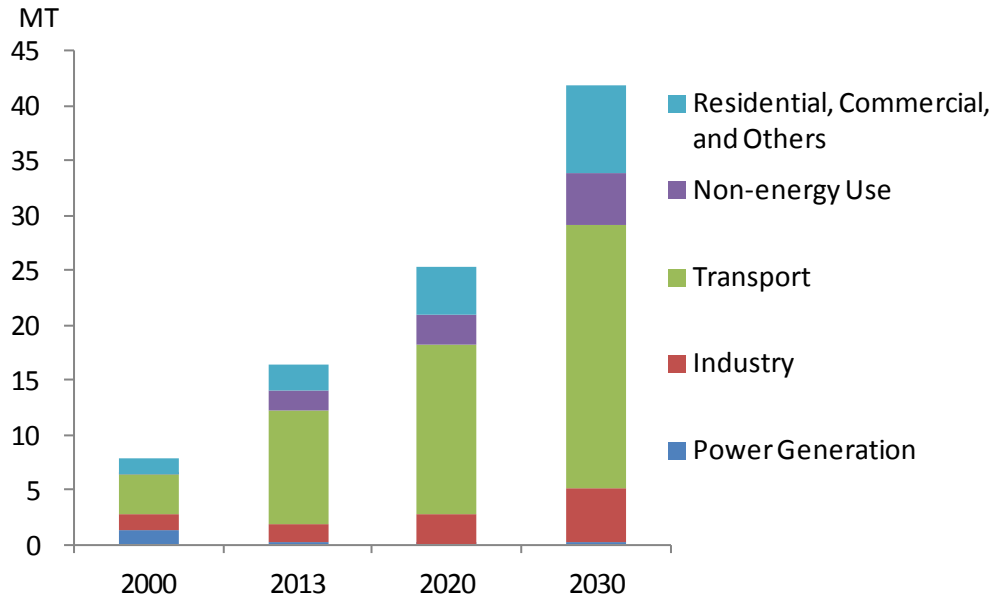
6. Viet Nam

6.1. Oil in Viet Nam

(1) Demand

Oil demand is growing strongly in Viet Nam. Its demand growth since 2000 is as high as 6% per year, which is one of the fastest in ASEAN member countries. In 2013, the demand was 16 MT, 64% of which was for the transport sector. ERIA foresees the demand to grow at 6%/year to reach 42 MT in 2030. Although the industry, residential, and commercial sectors will consume more oil, it is still the transport sector that is expected to be the biggest user of oil in Viet Nam.

Figure 2-12: Oil Demand by Sectors in Viet Nam (2000–2030)



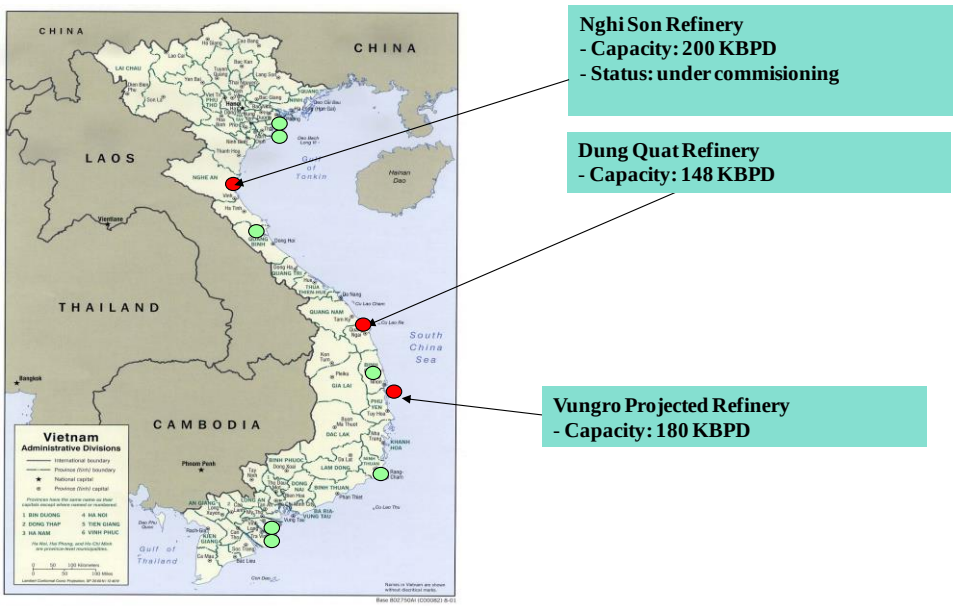
MT = metric ton
Source: Economic Research Institute for ASEAN and East Asia (2016).

(2) Supply

Viet Nam produced 18 MT of crude oil in 2013, the fourth largest in the ASEAN region after Indonesia, Malaysia, and Thailand. Almost half of the production was exported. Domestic production is expected to decline to 2 MT in 2030, according to the Asia Pacific Energy Research Centre. Therefore, rising dependency of Viet Nam on oil import is inevitable.

Viet Nam has one refinery – the Dung Quat – with a capacity of 0.15 mb/day capacity. The refinery is owned by PetroVietnam. The company plans to expand Dung Quat's capacity to 0.19 mb/day. Several new refinery projects are in various stages of progress. The Nghi Son project (0.2 mb/day) is already in the commissioning stage. The Vungro project (0.3 mb/day), the third refinery in the country, is targeted to start up in 2019. Other projects such as the Long Son, Hoi Nhon, and Van Phong are still in their planning stages. Nevertheless, with expanded Dung Quat, Nghi Son, and Vungro refineries, Viet Nam will have a refining capacity of 0.69 mb/day (34 MT/year) by 2030, which will decrease Viet Nam's oil imports.

Figure 2-13: Oil Demand by Sectors in Viet Nam (2000–2030)



Source: Ministry of Industry and Trade, PetroVietnam (2017).

(3) Industry structure and regulatory bodies

The oil industry in Viet Nam is controlled mainly by the state-owned PetroVietnam, which is an integrated oil company from upstream to downstream. Nevertheless, Viet Nam's upstream potential and strong oil demand growth attract foreign investments, such as BP, Gazprom, and PETRONAS in upstream; and Kuwait Petroleum Company, Idemitsu, and PTT in downstream.

The Ministry of Industry and Trade (MOIT) is the major regulatory body in Viet Nam. The MOIT is in charge of formulating and implementing energy policies as well as authorizing energy projects. The Ministry of Planning and Investment controls the budget allocation for each ministry and

approves foreign investments, thus, influencing the energy infrastructure developments in the country.

6.2. Oil supply resilience in Viet Nam

(1) Identifying risks in oil supply disruption

Although the MOIT is aware of supply insecurity factors abroad, it identifies earthquakes, hurricanes, floods, fires, mechanical problems, accidents, terror attacks, and poor communication as major threats to oil supply in Viet Nam. However, it is not clear as to what extent these insecurity threats could result in damage to infrastructure, oil supply, and to Viet Nam's economy in general.

(2) Countermeasures to oil supply disruption

Viet Nam is developing oil infrastructure to meet the growing demand. New refineries, in particular, will lessen dependency on import of oil products, increase the operational flexibility of oil companies, and therefore, enhance oil supply security in the country. The government is also keen on expanding the stockpile of oil to 9.3 MT or 90 days of the net import in 2025.

Table 2-1: Oil Stockpiling Plan in Viet Nam

Type of stock		Unit	2020	2025
Commercial stock		Mil. Tons	2.6	3.6
		Days of consumption	30	30
Processing stock	Crude oil	Mil. Tons	1.5	1.5
		Days of consumption	12.2	9.2
	Products	Mil. Tons	0.7	0.7
		Days of consumption	8.1	6.2
National stock	Crude oil	Mil. Tons	0.7	2.2
		Days of Consumption	5.8	12.4
	Products	Mil. Tons	0.4	1.3
		Days of consumption	5.0	10.4
Total oil stockpiling		Mil. Tons	5.9	9.3
		Days of consumption	61	68
		Days of net import	90	90

Sources: Ministry of Industry and Trade and PetroVietnam (2017).

To achieve oil supply resilience, the government has put in place a general institutional framework, such as communication channels, to deal with emergency situations. However, detailed coordination arrangements among government agencies, BCPs, and emergency exercises have not been developed to a significant extent.