ERIA Research Project Report 2017, No. 01

2017 Progress Survey Report of Infrastructure Projects in CADP 2.0

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ERIA Research Project FY2017 No.01

Published in July 2018

Preface

The Economic Research Institute for ASEAN and East Asia (ERIA) submitted the Comprehensive Asia Development Plan 2.0 (CADP 2.0) to the East Asia Summit in 2015.

In CADP 2.0, we update the infrastructure projects from the first CADP which was submitted to the 2010 East Asia Summit - Economic Ministers Meeting, reformulate the conceptual framework for connectivity and innovation, and discuss the quality of infrastructure projects.

CADP 2.0 lists 761 East Asian infrastructure projects in a wide range of sectors – such as roads and bridges, railroads, ports, electric power, etc. – on which we conducted a survey in 2016–2017. The progress status may not be noticeable due to the short period the survey was conducted. However, the results reflect to some extent the political and economic situation in each country and the influence of its policies.

Several important infrastructure projects were completed in 2017, and more projects will be completed in the coming years. We will continue to monitor the progress of these infrastructure projects and summarise trends and prospects obtained from the survey.

Finally, we acknowledge the support provided by Fukunari Kimura. We also express our gratitude to Yasushi Ueki of the Institute of Developing Economies, Japan External Trade Organization; and the former EAIC Team members for their contributions to CADP 2.0.

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Chapter 1

Overview

The economic development of the Association of Southeast Asian Nations (ASEAN) and East Asia requires three stages: participation in production networks, formation of industrial clusters, and realisation of urban comfort. The Comprehensive Asia Development Plan 2.0 (CADP 2.0) states the importance of the quality of infrastructure according to the stage of economic development. We presented 761 concrete projects as hard and soft infrastructure improvements to realise the plan. CADP 2.0 was submitted to the East Asia Summit in 2015, along with the Master Plan on ASEAN Connectivity 2025 (MPAC 2025) to continue efforts to improve the East–West Corridor and Southern Economic Corridor and strengthen regional connectivity.[1]

In this report, we review the progress[2] of the 761 projects[3] in 11 sectors (Road/Bridge, Railway, Port/Maritime, Airport, Other Transportation, Industrial Estate/Special Economic Zone, Energy/Power, Water Supply/Sanitation, Telecommunication, Urban Development, and Others) in 12 countries (ASEAN, China, and India) in financial year (FY) 2017.[4]

First, we summarise the progress of the CADP 2.0 projects in FY 2017 and show the progress from 2015 for all 761 projects in total and by tier.[5] We examined the progress

[1] Vientiane Declaration on Promoting Infrastructure Development Cooperation in East Asia (Vientiane, 8 September 2016):
Continue efforts to make regional connectivity vibrant and effective through the early completion of projects listed in the MPAC 2025 and the Comprehensive Asia Development Plan 2.0 to improve East-West Economic Corridor and Southern Economic Corridor.

[2] The progress is evaluated in four stages: (i) conceptual stage, (ii) feasibility study stage, (iii) construction stage, and (iv) operational stage.

[3] When we mention infrastructure projects listed in CADP 2.0, we put project No. in parentheses. See Appendix 1 'Selected infrastructure projects'.

[4] The survey period is from April 2017 to March 2018.

[5] The CADP 2.0 classifies stages of development in terms of the degree of participation in production networks as follows

- Tier 1: Countries or regions that are already in production networks and where industrial agglomerations start to form.
- Tier 2: Countries or regions that are not yet fully integrated into quick and high-frequency production networks.
- Tier 3: Countries or regions that are unlikely to come into quick and high-frequency production networks in the short run, but would like to provide a new framework for industrial development with the development of logistic infrastructure as a trigger.

based on the situation of policy initiatives in each country. In addition, we detail the contents and views on the project with a focus on each tier.

For Tier 1, we summarise the progress of infrastructure development in the northern Hai Phong district and central Da Nang district of Viet Nam. Also, as a means of improving transportation infrastructure in the metropolitan area, we focus on railway projects in Jakarta (Indonesia) and Manila (Philippines), and describe efforts towards improving urban transport infrastructure suffering from traffic congestion.

For Tier 2, we introduce the status of the high-speed railway linking Kunming in China and the capital Vientiane in the Lao People's Democratic Republic (Lao PDR). The full-scale construction of the railway aims to improve connectivity and industrial development measures in the Lao PDR, as well as the efforts of special economic zones (SEZs) in Pakse, which became operational in FY 2017. In addition, focusing on Poipet, which is the base of the Thailand-Plus-One strategy in Cambodia, we describe the efforts of industrial clustering for innovation by improving both the hard and soft infrastructure.

For Tier 3, we describe the geothermal power plant in Sarulla in north Sumatra and the Trans-Papua road plan as a remote island development policy in Indonesia.

Finally, as a significant future project, we report on the planned infrastructure development plan of Thailand's Eastern Economic Corridor (EEC) project and the present situation of large-scale infrastructure development in the Dawei district of Myanmar.

Infrastructure development takes many years from the conceptual stage through the construction stage to the operational stage. Of the plans listed in FY 2015, some projects have been completed, but there have also been changes and discontinuation due to policy changes that are taking place. We report on the current state of infrastructure development that will contribute to ASEAN connectivity improvement and innovation development in FY 2017.

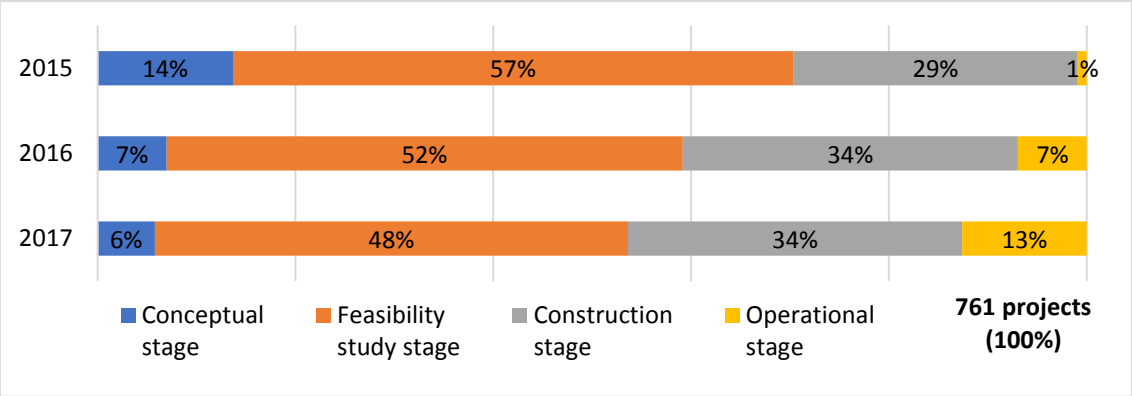
The outline and progress of the 761 projects can be viewed on the CADP 2.0 Digital Map launched on the website of the Economic Research Institute for ASEAN and East Asia (ERIA) in March 2018 (http://map.eria.org/).

Chapter 2

Progress in FY 2017

2.1. Progress of all projects

Figure 1: Project Status (2015-2017)



Source: East Asia Industrial Corridor (EAIC) Team.

Regarding the progress of all projects, the percentage of projects in the operational stage is 13% (increase of 6 percentage points compared with FY2016) and in the construction stage 34% (no change). This shows that infrastructure development is progressing steadily (47% of projects either in the operational or construction stage).

On the other hand, the percentage of projects in the conceptual stage is 6% (1-point decrease) and in the feasibility study stage 48% (4-point decrease). This means that almost half of the projects have not yet started construction. This is due to policy changes following a regime change, problems of land acquisition, and failure of financing. Moreover, there are some projects that have already been cancelled.

In terms of classification by sector, the percentage of projects in the operational stage in the Road/Bridge sector is 11% (4-point increase) and in the construction stage 37% (1-point increase). In particular, there are many Tier 2 projects in Cambodia and Myanmar that have already been completed. For example, Long Binh (Long An)–Chrey Thom Bridge (No. 736), a cross-border project between Cambodia and Viet Nam, was completed in April 2017. This bridge is located at the closest border with Viet Nam, about 70 kilometres (km) from Phnom Penh. It is expected that the traffic between Phnom Penh and Can Tho in Viet Nam, which is an important position in the Mekong

Delta, will be improved. Cambodian Prime Minister Hun Sen stated that the bridge will contribute to the achievement of the US$5 billion trade target between Cambodia and Viet Nam.

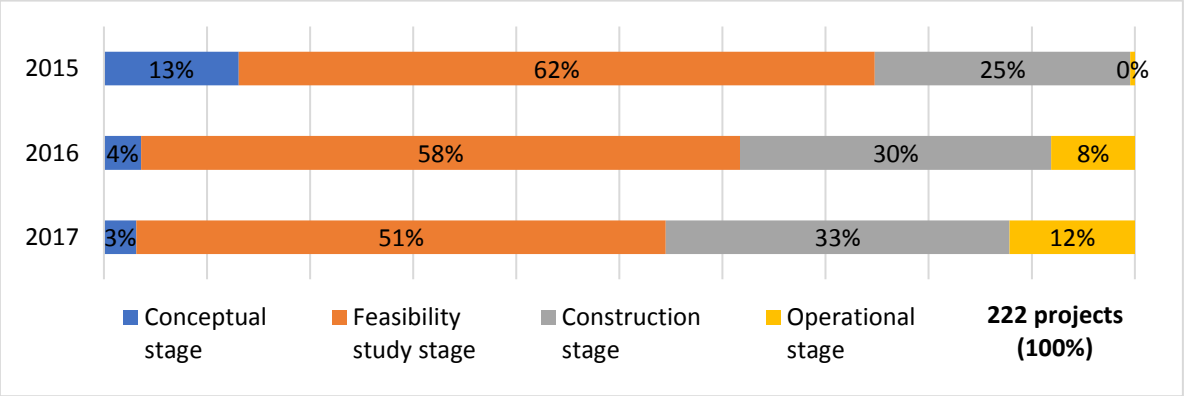
In the Railway sector, the percentage of projects in the operational stage is 6% (2-point increase) and in the construction stage 26% (3-point increase). It is difficult for railway projects to easily progress from the feasibility study stage to construction because of the land acquisition and financing problems. Further, due to the longer construction periods, the projects do not advance to the operational stage quickly. However, in FY 2017, there were several reports about successful financing and start of construction in connection with the urban railway in Tier 1. Regarding the high-speed railway project, construction has started on some parts of the railway between Bangkok, Vientiane, and Kunming, which is part of China's 'One Belt One Road Initiative'. There have also been reports of delay in constructing the high-speed railway between Jakarta and Bandung in Indonesia (No. 97) and the start of the tender for the high-speed rail link between Kuala Lumpur and Singapore (No. 750).

In the Industrial Estate/SEZ sector, the percentage of projects in the operational stage is 13% (6-point increase) and in the construction stage 29% (4-point decrease). Three projects have moved into the operational stage: Industrial Estate Development in Pakse SME SEZ, Champasak Province (No. 221); Da Nang Hi-Tech Park (No. 648); and Sojitz–Motherson Industrial Park (No. 724). In the Energy/Power sector, the percentage of projects in the operational stage is 18% (7-point increase) and in the construction stage 35% (2-point decrease). In Cambodia, where power problems are common, 5 projects have been completed, including the Coal Power Plant in Sihanoukville (Phase 2: 135 MW) (No. 55) and Transmission Line (230 KV) Phnom Penh–Bavet (No. 61).

2.2. Progress by Tier

2.2.1 Tier 1

Figure 2: Project Status in Tier 1



Source: EAIC Team.

The percentage of projects in the operational stage is 12% (4-point increase) and in the construction stage 33% (3-point increase). Though more than half of projects are in the feasibility study stage (51%, 7-point increase), the percentage of projects in the conceptual stage is only 3% (1-point decrease). We can thus see that feasibility studies have been started steadily. Regarding urban areas in Tier 1, alongside economic growth and increase in the population of the countries, infrastructure demand is increasing, especially in the Transportation sector. Construction of infrastructure has accelerated, but land acquisition problems in urban areas are still a bottleneck to progress, especially in the Railway sector. On the other hand, new infrastructure projects are now also planned because of sudden changes in the social situation.

Viet Nam's progress in FY 2017 stands out the most. In the northern area (Hanoi, Hai Phong), Hanoi Ring Road: No. 1 (East–West axis) (No. 558) and Highway: Tan Vu–Lach Huyen (No. 578) were completed. In the southern area (Ho Chi Minh City), Tan Hiep Water Plant Phase II (No. 693) was completed. In the central area, in time for the holding of the Asia–Pacific Economic Cooperation (APEC) Summit in Da Nang, the projects for Expansion of Da Nang International Airport (No. 642) and Da Nang Hi-Tech Park (No. 648) were completed and the project for improvement of Da Nang Port (No. 634) was started. Viet Nam's Socio-Economic Development Strategy, adopted in 2011, regards 'infrastructure development in traffic and urban' sectors as one of the most important breakthroughs and focuses on infrastructure development in major cities like Hanoi and Ho Chi Minh City towards becoming the chair in ASEAN in 2020.

In Indonesia, Tanjung Priok Access Toll Road (No. 85) was completed. This is a 12.1 km road with three lanes each way connecting an existing expressway to the north in East Jakarta with Jakarta Outer Ring Road (JORR). It took about 9 years from the start of

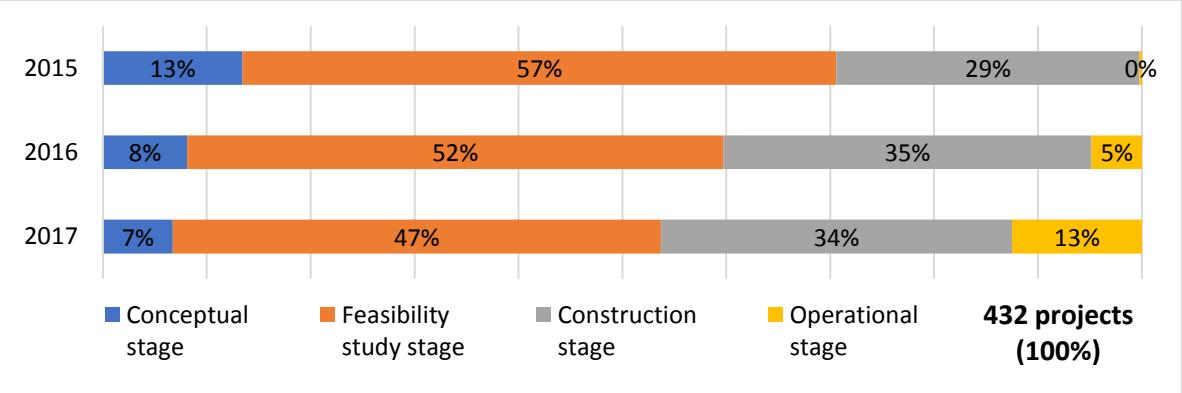
construction until completion because of a problem in land acquisition and reconstruction of piers caused by a careless plan.

In Tanjung Priok Port (No. 118), the largest port in Jakarta, the expansion of the terminal is ongoing. The construction will almost double the port capacity up to about 11.5 million TEU (twenty-foot equivalent unit). Once the dredging is finished, a large container ship will be able to dock. It is expected that storage periods of cargo will be shorter and logistics cost will be cut drastically.

Tanjung Priok Access Toll Road is expected to shorten the travel time from Tanjung Priok Port to an industrial estate located in East Jakarta. At present, construction of the second JORR (Cibitung–Cilincing) is planned, which is expected to ease traffic congestion and improve access to the port.

2.2.2 Tier 2

Figure 3: Project Status in Tier 2



Source: EAIC Team.

In Tier 2, the percentage of projects in the operational stage is 13% (8-point increase) and in the construction stage 34% (1-point decrease). So far, Tier 2 progress in Cambodia and Myanmar has been outstanding. The number of projects in the operational stage is 13 in Cambodia and 11 in Myanmar. In Cambodia, road renovation projects in Phnom Penh and around Phnom Penh and projects in the Energy/Power sector have made progress. In the Road/Bridge sector, projects involving National Road 1, 5, and 6 in the Southern Economic Corridor have made progress. The Cambodia Industrial Development Policy 2015–2025, drawn up in 2015, lists improvement of logistics in the Southern Economic Corridor as the priority.

Regarding National Road 1 connecting Phnom Penh with Bavet (Border with Viet Nam), National 1 (Phase 4: 4 km from Phnom Penh) (No. 7) was completed with assistance from Japan. Further, construction started for the National Road No. 5 Improvement

Project (Battambang–Sri Sophorn Section) (North: 81.2 km) (No. 12) after the loan contract for up to US$100 million from Japan was signed. As regards National Road 6, National Road No. 6A (PK44 to PK290) (No. 15) was completed with assistance from China.

In Myanmar, the government has announced 12 basic policies that should be tackled in the coming 5 years, in the second term of the National Comprehensive Development Plan (NCDP), which is a 20-year plan from 2010 to 2030. These policies include development in traffic and port infrastructure.

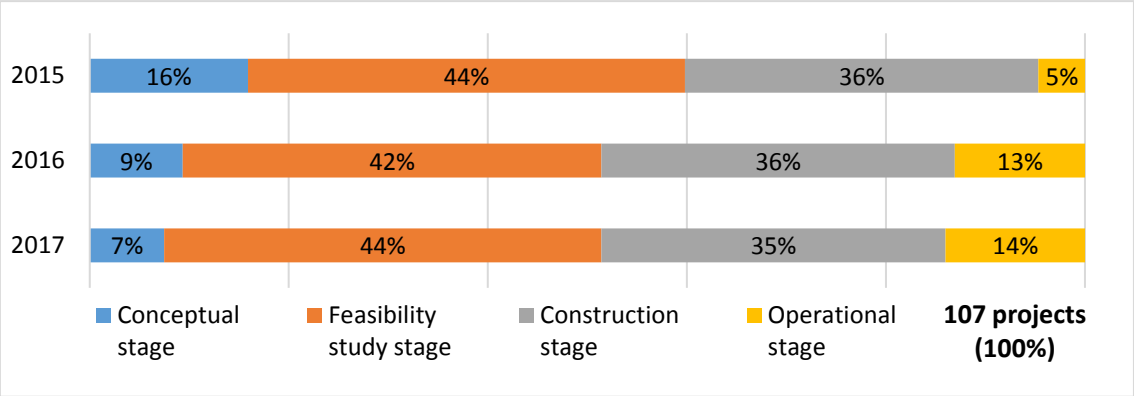
In 2017, Yangon Flyover Construction Project (No. 285) was completed. Seven flyovers are already operational in Yangon. In addition, Yangon Region Transport Authority (YRTA) introduced Yangon Bus Service (No. 310), which went operational with 2,000 buses imported from China. This service is operated by a public–private partnership (PPP).

Eight companies operate buses until 10 p.m. with the fare costing K300 (US$0.30). Existing routes were renovated and the number of the routes was decreased drastically to improve the service. It is expected to solve problems of traffic congestion in Yangon.

Moreover, construction of the Thailand–Myanmar Second Friendship Bridge (No. 286) connecting Myawaddy in Myanmar with Mae Sot in Thailand over Moei River was completed. The immigration office, customs, and a connecting road to the bridge are being constructed and they will be completed in October 2019. This bridge is designed for 40-tonne containers to be able to pass through. On the Myanmar–Thailand First Friendship Bridge, trucks exceeding the weight limit have to transfer their cargo to small or mid-sized trucks. This will no longer be necessary once the Thailand–Myanmar Second Friendship Bridge is completed. In March 2017, Myanmar and Thailand signed a basic agreement regarding entry across the border for up to 100 trucks respectively. The Thailand–Myanmar Second Friendship Bridge is expected to improve the logistics between Myanmar and Thailand in the East–West Economic Corridor.

2.2.3 Tier 3

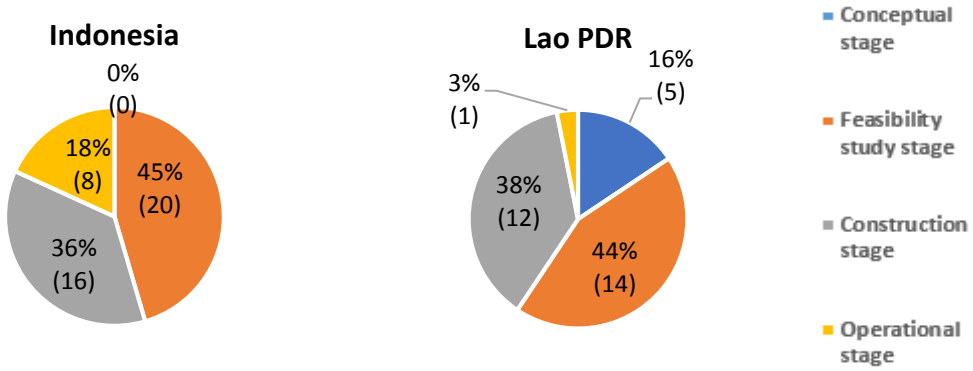
Figure 4: Project Status in Tier 3



Source: EAIC Team.

In Tier 3, the percentage of projects in the operational stage is 14% (1-point increase) and in the construction stage 35% (1-point decrease). Compared to other tiers, the percentage in the operational stage is the highest. Amongst the 107 projects in Tier 3, 44 are in Indonesia and 32 in the Lao PDR, the two countries accounting for about 70% of the projects in Tier 3.

Figure 5: Project Status in Indonesia (Left) and Lao PDR (Right) in Tier 3 (2017)



Source: EAIC Team.

In Indonesia, the percentage of projects in the operational stage is 18% and in the construction stage 36%. That is more than half of the projects (54%) are in one of the two stages. As of FY 2017, the number of projects in the operational stage is eight: one in the Port/Maritime sector, four in the Airport sector, and three in the Energy/Power sector. President Joko Widodo (Jokowi) has focused on infrastructure development besides Java Island to narrow the development gap between urban and local areas, and

this effort has been bearing fruit. The President also set the Maritime Doctrine, focusing on maritime infrastructure development. In the expansion plans of 24 important ports in the Tol Laut Strategy in the National Medium Term Development Plan 2015–2019 (RPJMN 2015–2019), nine projects are included in Tier 3, one project has been completed, and construction of six projects has started.

The Indonesian government also expects to advance geothermal energy. As of the first quarter of 2018, the country's capacity to generate geothermal power was 1,920 megawatts (MW), the second largest in the world. The number of projects in the Energy/Power sector in Tier 3 is six: three in the operational stage, two in the construction stage, and one in the feasibility study stage. Power generation of 330 MW in Sarulla geothermal power plant (No. 152) started in May 2017.

On the other hand, the percentage of projects in the Lao PDR in the operational stage is 3% and in the construction stage 38%. Compared with Indonesia, progress is slower. The Lao PDR has suffered from a constant 'twin deficit' (budget deficit and current-account deficit). The number of projects in the public sector in the Lao PDR in Tier 3 is 22, but the government cannot allocate the budget for public investment. For that reason, infrastructure development in the Lao PDR has stagnated.

However, in contrast with geothermal power generation in Indonesia, the Lao PDR has a high potential of water power generation and electric power is one of the country's main exports. Of the 25 projects in the Energy/Power sector in the Lao PDR (including cross-border projects), 14 are for water power plants, of which 10 are under construction aiming to be operational in 2020.

The Lao PDR, sometimes called the 'Battery in Indochina', has a water power generation capacity of 20,000 MW. Water power plants are being constructed steadily in a basin of the Mekong River and along the neighbouring rivers, not only for domestic use but also for selling power to surrounding countries.

Chapter 3

Highlighted Projects and Their Progress by Tier

3.1 Tier 1

3.1.1 Infrastructure development in Viet Nam

(1) Infrastructure development in Hai Phong district, northern Viet Nam

As a gateway to the northern part of Viet Nam, the northern port city Hai Phong is a strategic point in the economic development of Viet Nam. At the same time, the harbour system of Hai Phong Port and Dinh Vu Port is being developed, with expansion of the warehouse system and improvement of the transportation network under way.

In addition, Lach Huyen International Gateway Port (No. 633), which is the first deep sea port in Viet Nam, is now under construction aiming for port opening in 2018. It is expected to function increasingly as a base for North America, such as for textile, leather, and fishery products. Although the impact of the withdrawal of the United States from the Trans-Pacific Strategic Economic Partnership Agreement (TPP) is great, there are high expectations for shipments to the European Union (EU), with which Viet Nam concluded a free trade agreement (FTA).

Lach Huyen International Gateway Port is currently constructing two docks and terminals with a total length of 750 metres (m). The terminal has a waterway that is 160 m wide, 14 m deep, and 3,200 m long, with a loaded weight in the 100,000 tonne class. It is designed to be able to anchor a large cargo ship. Once completed, it will not only promote the economic development of Viet Nam and strengthen the country's international competitiveness, but also become the gateway to cargo to and from neighbouring countries such as the Lao PDR, Thailand, Myanmar, and China. Even China's 'One Belt One Road Initiative' regards Lach Huyen Port as important. In this construction project, Japan is cooperating with official development assistance (ODA), and this is the first PPP between Viet Nam and Japan with Japanese companies participating in the construction and maintenance of facilities.

In Viet Nam, cargo volume increases along with economic development. Cargo volume in the northern region is expected to increase from 110 million to 130 million tonnes in 2020. However, the combined cargo handling capacity of Lach Huyen Port, Hai Phong Port, and Cai Lan Port, which is the main port in the north, is 75 million tonnes. There is thus insufficient handling capacity. Meanwhile, Hai Phong Port as the main gate of northern Viet Nam is located at the mouth of the Cam River and has the problem of large amounts of sediment from the upstream burying the route.

Continued operation becomes difficult also due to the multiple bridges planned for the Hai Phong new city concept. There are plans to move 11 berths of Hai Phong Port to Lach Huyen Port. According to the Hai Phong Port Development Plan Master Plan (2030), the following plans have been made, but ports are not a priority sector infrastructure of the Vietnamese government and future development will be important:

Table 1: Master Plan of Development of Lach Huyen Seaports (2030)

No.	Development Plan	Unit	Quantity
1	Berths for containers	Number of berths/m	16 berths/5,000 m
2	Berths for general sundry goods	Number of berths/m	7 berths/1,750 m
3	Maximum hull type at port of call	Total tonnes	100,000 DWT
4	Forecast handled cargo volume	million tonnes/year	95
5	Harbour area	ha	508.3

DWT = deadweight tonnage, ha = hectare, m = metre.
Source: Ministy of Transport (Viet Nam), 2009.

In terms of road projects, the Lach Huyen Port access road (No. 578) was opened in September 2017. This 15.6 km long road leads to the new international port, including the longest maritime bridge in Viet Nam at 5.4 km. As to the 105.5 km Hanoi–Hai Phong Highway project (No. 573), it was completed last year, connecting Hanoi City with Hai Phong City. The construction started in 2008, and it took 7.5 years to be operational. It consists of six lanes and two emergency lanes, where the maximum speed is 120 km/h and the minimum speed is 60 km/h. Previously, the route took about 2.5 hours using National Highway No. 5, which has now been significantly shortened to 1 hour.

Hai Phong is an extremely attractive city with land, sea, and air paths, including roads and harbours, as well as the expanded Cat Bi International Airport (No. 641), which was completed in 2016. Moreover, a large number of industrial parks are built around Hai Phong Port with investment mainly from Korean companies such as Samsung, LG, and their suppliers. Infrastructure development around Hai Phong City Port serves as a base for strengthening the connectivity between Viet Nam and the world and is the key to promoting economic development and strengthening international competitiveness in northern Viet Nam. With these infrastructure improvements, the charm of Hai Phong City in the northern port city is expected to rise in the future.

Graphic 1:
Lach Huyen Port access road

Graphic 2:
Lach Huyen International Gateway Port

Source: EAIC Team.

(2) Infrastructure improvement in Da Nang

Da Nang in the central part of Viet Nam is the third largest city in Viet Nam, after Ho Chi Minh and Hanoi. It has a population of approximately 1.2 million (of which about 740,000 are working people) and covers an area of about 1,285 square kilometres (km^2). Da Nang is not only a centre of industry, service, and logistics in the central part of Viet Nam but also as a resort and tourist base as well as for a large number of international conferences and exhibitions. Besides the conventional manufacturing industry, development of information technology (IT) and the service industry has been impressive, and real estate investment such as hotels is noticeable. In time for the APEC Summit Meeting in November 2017, a new terminal at Da Nang International Airport (No. 642) was completed in May 2017. The airport is located 2 km north of the city centre. The existing terminal was renovated and the runway and apron were expanded. The annual capacity will increase from the present 6 million to 13 million passengers (9 million domestic and 4 million international) in 2020. Da Nang has attractive beach resorts and three UNESCO World Heritage sites in the suburbs, with 5.5 million tourists visiting in 2016. Accommodation facilities and well-known hotel and resort chains have moved into the city. The goal is to develop as a tourist city with 8 million visitors in 2020.

Da Nang is a key part of the East–West Economic Corridor and is located at the eastern edge of the corridor. Roads and ports are being developed to serve as logistics bases. Access to the East–West Economic Corridor leading to the Lao PDR, Thailand, and Myanmar is also improving. For example, negotiations to adjust customs and mutual vehicle entry are continuing amongst the countries. A highway is being built that continues from Da Nang City to Zunkwat Economic Zone and Kuangai Province which has a petroleum refining base (No. 584). The highway runs along National Highway 1A,

which is 2,300 km in length and connects Hanoi with Ho Chi Minh City. The whole line is scheduled to open in the first quarter of 2018.

In Da Nang's main port, Tianza Port, berth development of 14 m depth (No. 634) has been in progress since 2017. The plan is for the port to be able to accept 70,000 DWT cargo ships, 4,000–5,000 TEU container ships, and 100,000 GRT (gross register tonnage) passenger ships. Also, in order to reduce the concentration of cargo at Tianza Port, construction of Lienchu Port about 25 km farther away is planned. The preparations for operating are under way with the aim to finish the feasibility study and start operations by 2022. Regarding customs procedures, the VNACCS (Viet Nam Automated Cargo and Port Consolidated System) system was introduced, supported by the Japanese government. By handling procedures in customs and other related administrative agencies online, procedures are being made paperless and service windows unified.

Da Nang Hi-Tech Park (No. 648) is regarded as one of Viet Nam's three major high-tech parks. It is located about 22 km west of Da Nang centre and was completed in 2017 with a total area of 1,128 hectares. Two companies have already moved into this park, and six companies have decided to move into this park. According to the Da Nang Investment Promotion Agency (IPA), in order to promote the high-tech industry and science and technology, in addition to supporting administrative procedures for tenant companies, various investment incentive schemes have been established: income tax exemption system, discount of infrastructure usage fee, and preferential treatment of land lease fee. Before companies can move in, they need to be certified as high-tech, by meeting both the criteria for high technology and high-tech products.

Da Nang will increase the number of enterprises from the current 21,000 companies (98% small and medium-sized enterprises) to 30,000 companies by 2020, focusing on sightseeing, trade, high-tech, and information and communications technology (ICT) companies. The aim is to be the 'Singapore of Viet Nam'. The third city of Viet Nam, Da Nang, is trying to achieve its own development as a city in the centre of the country across the north and south and as a hub at the eastern end of the East–West Economic Corridor.

Graphic 3:
Da Nang International Airport

Graphic 4:
Da Nang Hi-tech Park

Source: EAIC Team.

3.1.2 Progress of railway projects in metropolitan areas

(1) Progress of new railways construction in Jakarta

The airport rail link from Soekarno–Hatta International Airport to the city of Jakarta (No. 93) started operations in December 2017. It takes about 1 hour to reach downtown Jakarta from the airport station. It presents a new means for Indonesia's transportation to avoid traffic congestion, one of Jakarta's social problems. Spanning about 12 km between Soekarno–Hatta Airport Station and Batu Ceper Station, this airport rail link has been newly constructed and runs from Batu Ceper Station to all routes of the Kereta Commuter Indonesia (KCI) system. In September 2017, the Automated People Mover System (APMS), commonly known as the Skytrain, started operations. Passengers can use this airport link to move between terminals from Soekarno–Hatta Airport Station. The airport train consists of six cars that can carry 270 passengers. It is operated by PT Railink, a subsidiary of the Indonesian National Railways. Vehicles were manufactured by INKA, the Indonesian Rolling Stock Manufacturing Corporation. Regarding the fare when getting on/off at stations, it is Rp70,000 (US$5) and not calculated according to distance. Tickets can be reserved and purchased in advance through online booking sites or a smartphone application. To enter and exit, a barcode or QR code needs to be tapped at the automatic ticket gates. During the first half of 2018, the entire line was scheduled to open directly to Manggarai Station. Plans in the first plan to extend the line to Halim Perdana Kusuma Airport appear to have been cancelled.

The first domestic airport rail link in Indonesia was in operation in July 2013. It is the Kualanamu Airport rail link in North Sumatra (No. 100), which connects Kualanamu International Airport with the Medan City Railway Station, for a distance of 26 km. A

total of 720,000 passengers used this airport train in 2016. Construction of other airport rail links is planned in Minangkabau International Airport in Padang, West Sumatra and Adi Soemarmo International Airport in Solo, Central Java, Juanda International Airport (East Java), Ngurah Rai Airport (Bali), Kertajati Airport (West Java), and New Yogyakarta International Airport (No. 138) (Special Administrative Region of Yogyakarta).

As regards the high-speed railway plan, representatives of several Indonesian ministries and public and private agencies related to the high-speed rail between Jakarta and Bandung (No. 97) held meetings in February 2018. The Coordinating Minister for Maritime Affairs, Luhut Binsar Pandjaitan, said that the target for completing the number of railway operations, land acquisitions, work plan (budget), and extension of the railways will be changed from 2019 to 2020.The Jakarta–Bandung rail plan will operate a high-speed train that connects between Halim Perdanakusuma Airport in Jakarta and Bandung City with a total length of 142 km, a maximum design speed of 350 km/h, and 40 minutes travel time (down from the current 3.5 hours). In September 2015, the Indonesian government and China Railway Corporation (CRC) agreed to start this project as a private-sector project through a joint venture, meaning that no government fiscal expenditure and debt guarantee was required. Since the beginning, the loan amount to cover the land acquisition has not been agreed between them. A US$4.5 billion loan agreement was signed at the One Belt One Road (OBOR) Summit in Beijing in May 2017, which was attended by Indonesian President Joko Widodo and hosted by Chinese President Xi Jinping. Construction began in May 2017, but has only progressed 10%. Looking at future expansion plans of the high-speed train project, the Indonesian government is looking to extend the railways by 80 km to Soekarno–Hatta International Airport and Kertajati Airport (under construction in West Java) and also to Yogyakarta and Solo City, Central Java. Government subsidies are not expected to be introduced, and the increase of construction cost may influence a rise in the high-speed railway fee.

The Indonesian government also launched a study with the Japanese government on high-speed utilisation of existing railway lines from Jakarta to Surabaya, Java's second largest city. The gap on the renovation cost has been reported and no specific progress has been seen.

In Indonesia, construction of comprehensive infrastructure is being rushed towards 2019, the year of the presidential election. This rapid infrastructure build-up also aims to support Indonesia’s hosting of the Asian Games in August 2018. In the city of Jakarta, the light rail transit (LRT) system (No. 106) will be opening to support the Asian Games in August 2018. According to the plan, the MRT will start operating in March 2019 and is expected to solve the big problem of traffic congestion in Jakarta. In sum, the high-speed railway plans connecting between the large cities will contribute to improving the

infrastructure in Java Island as the centre of the country's economy, but there are many difficulties to complete them.

Graphic 5:
The airport rail link in Jakarta

Graphic 6:
Jakarta–Bandung High-speed Railway

Source: EAIC Team.

(2) Towards realisation of the Metro Manila Dream Plan

The Philippine railway system comprises the Philippine National Railways (PNR), the LRT (Light Railway Train) No. 1 and 2 lines on the elevated railroad, and the MRT (Metro Rail Transit) No. 3, which are used for commuting in Metro Manila. Although the transport capacity of the railways in the Metro Manila area is inadequate relative to the city population, most people still opt to use the LRT and/or MRT to avoid traffic congestion, particularly on weekdays. With rapid population growth and economic development, traffic congestion has become more serious. Time lost in traffic is estimated to be in the value of ₱3 billion (US$0.6 billion) per day. Existing public transport has many safety and environmental problems, and development of safe, comfortable, and stable railroads is a national concern. The Government of the Philippines has made efforts to find solutions. Philippine National Railways trains have frequently been cancelled or delayed due to problems with maintenance of vehicles and equipment, and the MRT has also had problems with a maintenance contractor, due to a series of vehicle failures and derailments (No. 399).

President Rodrigo Duterte launched his 'DuterteNomics' economic policy, which is based on a 3-year infrastructure development plan under the tagline 'Build, Build, Build'. About ₱10 trillion (US$200 billion) will be allocated for infrastructure improvement by 2020 and the plan promotes an aggressive policy of investing. The Philippine

Development Plan, the country's long-term vision until 2022, was finalised and approved by the National Economic and Development Authority (NEDA) in February 2017. NEDA aims to accelerate strategic infrastructure development during 2017–2022 and spend ₱8.44 trillion (US$168 billion) by 2022 during the President's term on infrastructure investment, which is the key to economic growth. A total of 75 projects in the total amount of ₱1.7 trillion (US$34 billion) are positioned as flagship projects, and the majority of their costs are occupied by the Railway sector.

Manila's railway construction plan is stipulated in NEDA's Metro Manila Dream Plan of June 2014. The Dream Plan is concerned with improving the traffic system around the transport network extending to the north and south, regional development, land use, and the environment. The Metro Manila Subway Project (No. 400) aims to connect the Quezon District in the eastern part of Manila, run about 25 km in length, and open a part of the line by 2022 during President Duterte's term – and the rest in 2025. The detailed design is currently in progress. The total budget for these projects is about ₱400 billion (US$80 billion). Japan is scheduled to fund JP¥600 billion (US$55 billion), which is 80% of the total project cost, at 0.1% interest rate with a repayment term of 40 years. NEDA also announced plans to expand Ninoy Aquino International Airport. Furthermore, the north and south commuter railroads (No. 401) are double-track electrified routes that are 180 km and connect the suburbs to Manila. The total project cost is about ₱550 billion (US$110 billion). The plan is to build 10 stations by linking the 38 km from Malolos Station in Bulacan Province to Tutuban Station in Manila, bringing travel time to 35 minutes. For several sections, construction will begin by 2018 with opening of stations in 2022. Official development assistance in the amount of JP¥242 billion (US$22 billion) from Japan was raised in November 2015.

When President Duterte met with President Xi Jinping in China in October 2017, financial support of ₱1,900 billion (US$38 billion) was agreed for the Philippine National Railways development projects of about 650 km from the Manila suburbs to Legazpi City in Albay province (No. 394). Moreover, China has proposed funding ₱35 billion (US$7 billion) to connect Mindanao Island via about 100 km of railroad from Davao, President Duterte's hometown, via Digos City and Tagum City. Based on the security issue surrounding the South China Sea, President Duterte strategically pulled out support from both Japan and China and began construction of large-scale domestic infrastructure. Particularly in Manila, which accounts for 40% of the population and 60% of the economy, the establishment of a public transport system and public transportation based on urban development is progressing at a rapid pace as a solution to the declining economic activity due to further population overcrowding and urban traffic problems.

Graphic 7:
MRT in Manila

Graphic 8:
Tutuban PNR Station in Manila

Source: EAIC team.

3.2 Tier 2

3.2.1 Connectivity and industrial development in the Lao PDR

In the country's 8th 5-Year National Socio-economic Development Plan 2016–2020, the Lao PDR set a goal to successfully step up from least developed country (LDC) status by 2020. Connectivity, improvement of logistics, and industrial development are keys to achieve the goal. As the only landlocked country in ASEAN, improvement of land logistics by road and railway is essential.

In the Road/Bridge sector, connectivity with surrounding countries has been getting better through the opening of East–West Economic Corridor and four friendship bridges with Thailand over the Mekong River. However, construction of infrastructure has not kept up with the economic development. The number of CADP 2.0 projects in the sector in the Lao PDR is 23, 15 of which relate to road improvement. In particular, one of the most important projects is Improvement of NR (National Road) 9: East–West Economic Corridor (184 km) (No. 196). NR 9 is an important main road in the East–West Economic Corridor, connecting the border (Lao Bao in Viet Nam) and Mukdahan in Thailand via Savannakhet in the Lao PDR. Because NR 9 had been damaged by the increasing traffic volume, the improvement of some road sections was completed with Japanese assistance and reconstruction of two bridges will be finished by June 2019.

In the Railway sector, construction of the Boten–Vientiane Rail Link (No. 209) has started, to connect Boten (on the Lao PDR border with China) and Vientiane. This project is a part of the 'One Belt One Road Initiative' to connect China with surrounding countries. This project is to construct a 427 km single track railroad. Building up bridges and tunnels

accounts for about 70% of this project. The railway will be operational in 2021 with a speed of 120 km/h for freight trains and 160 km/h for passenger trains. This project will cost approximately US$6.8 billion (China 70%, Lao PDR 30%). Of the Lao PDR's contribution, 40% (US$840 million) will come directly from the Lao PDR, with US$500 million financed by a 20-year loan from China at 3% interest rate. This is almost half of the country's annual gross domestic product (GDP). Although the time to go from Vientiane to Boten, which takes about 10 hours by bus, will be shortened dramatically, it is difficult to estimate the number of passengers taking the railway and how big the economic impact to the Lao PDR will be. All the construction related to railway techniques is being done by Chinese labour. Therefore, there are many concerns regarding employment of Laotian people, shortage of revenue, the operation system, maintenance, and so on.

On the other hand, it is necessary to conduct technology transfer and innovation in the Lao PDR by means of attracting foreign investment to industrial estates and special economic zones (SEZs) in order to achieve industrial development. The amended Investment Promotion Law (IPL) that came into force in 2017 added high-tech industry, energy-saving, research and development (R&D), and medical institutions, amongst others, in the investment promotion category that benefits from favourable tax treatment. In addition, the old law limited the framework of investment to three forms: (1) investment by domestic capital or foreign capital, (2) joint investment by domestic capital and foreign capital, and (3) business partnership based on the agreements. The amendment added two new forms: (4) joint investment by state-owned enterprise and private enterprise and (5) investment by PPP. The PPP framework has also become clearer.

Industrial estates and SEZs are also important to achieve industrial development. In CADP 2.0, there are four projects in the Industrial Estate/SEZ sector in the Lao PDR. In 2017, one of the projects became operational – that is, the Industrial Estate Development in Pakse SME SEZ, Champasak Province (No. 221) in Pakse, the third largest city in the Lao PDR. The total area of this SEZ is 195 hectares. The first term development (66 hectares) is now under construction and land-forming, and the infrastructure building in Area 1 (13 hectares) has already been completed. The construction of rental factories is also undergoing, having just gone operational in May 2018. A feature of this SEZ is that only Japanese small and medium-sized manufacturers can move into it. This is for two reasons. First, to attract Japanese manufacturers in the Lao PDR and promote industrialisation in the country. Second, to allow them to operate peacefully by limiting entry to medium-sized manufacturers – not big enterprises – and by restraining the increase in wages and hiring away of human resources. According to data from the Japan External Trade Organization (JETRO), the monthly wage of workers in the Lao PDR

(US$121) is about a third of those in Thailand (US$378). Furthermore, several companies have noticed the similarities between the Lao and Thai languages and been impressed by the skills of Lao workers, regarding the Lao PDR as a 'Thailand-Plus-One' candidate. Nevertheless, given the lower educational standard in the Lao PDR compared with Thailand, it is crucial to secure quality human resources. The SEZ has signed a memorandum of understanding with a vocational training school in Champasak, so that enterprises in the SEZ can get quality human resources preferentially. In turn, the enterprises hold training and seminars in the school to contribute to human resources development. This provides mutual benefits for both.

The Lao PDR is preparing to strengthen the country's connectivity by improving logistics and preparing legislation to ensure industrial development. It is also accelerating measures to graduate from least developed country status. The expanding influence of Chinese investment is noteworthy and serves as the engine of economic growth in the Lao PDR. Thus, it is important to monitor the future economic relationship between the Lao PDR and China.

Graphic 9:
Boten–Vientiane Rail Link

Graphic 10:
Pakse SME SEZ

Source: EAIC Team.

3.2.2. The birth of the special economic zones towards innovation

The Cambodia Industrial Development Policy 2015–2025 (IDP), enacted in 2015, is the action plan for improving the country's investment environment, attracting foreign direct investment by promoting SEZs, promoting innovation, and supporting industrial infrastructure. The Minister attached to the Prime Minister and Secretary General of the Council for the Development of Cambodia (CDC) Sok Chenda Sophea said that the concept of corporate attraction in Cambodia is 'Thailand-Plus-One' and 'China-Plus-One'.

Given Cambodia's strength, which is its inexpensive labour force, it is important to create attractive SEZs near the borders so that many Cambodians can work across the borders.

Poipet is a border town with Thailand located 310 km from Bangkok, 155 km from Siem Reap, and 410 km from Phnom Penh. Since ancient times, various kinds of goods have come and gone, and Poipet has developed as a key position of land trade. Currently it is a casino town with many Thai visitors. Poipet is situated on National Route 5, part of the Southern Economic Corridor, Asia Highway No. 1, and has the strategic geographical advantage of being approximately 250 km from the Port of Remcechavan in Thailand. Here, SEZ development according to the 'Thailand-Plus-One' concept is progressing. Poipet's infrastructure development is not sufficient, but it is advancing gradually.

The renovation work of National Route 5 of the Southern Economic Corridor that penetrates Cambodia to the east and west is the top priority in the Industrial Development Policy (IDP), but it takes time to complete the entire renovation. Asphalt pavement is most commonly used for roads in Cambodia as a quick and cheap material, but for the infrastructure to transport high value-added products from industrial agglomeration areas requires use of 'quality' material such as strong concrete pavement. Because of the simplified customs clearance system, Thai cars can enter within 20 km of the border without the need to transfer cargo. Currently, there is a plan to open a gate exclusive for trucks about 10 km southeast from the border gate (No. 32). The construction of a 600 m bridge connecting the two countries is also progressing.

On the other hand, there has been no progress with regard to the railroad line that became connected with the Thailand side in October 2016. The front of the connected bridge has become a parking lot, and the distance to the international train service is far. Passenger operations of the Royal Railway North Line (No. 41) began on 4 April 2018 between Poipet and Sisophon. This route had become a missing link after the civil war. Although railway accidents occur frequently and it has not yet become a major means of transportation in the area, it is expected workers will increasingly use the railway for their commute.In September 2016, Techno Park Poipet (No. 51), which is mainly a rental factory, started operations. A rental factory with a building area of 7,200 square metres houses many automobile-related parts manufacturers based in Thailand. As a service of Techno Park Poipet, workers are being dispatched after training based on human resources education. As farmers work as manufacturing workers, they start with basic education such as greetings and language studies.

The development of the Cambodian economy requires as its basis sustainable human resources development efforts – that is, securing human resources and follow-up, as well as time and costs. According to data from the Japan External Trade Organization

(JETRO), the monthly wage of a Cambodian worker (general worker) is US$170, half of that of a Thai worker (US$378). However, the rate of wage increase in Cambodia is about 10% per year, which is larger than in other neighbouring countries. It is therefore reasonable to assume that the wage gap will gradually be resolved. Together with the neighbouring six provinces including Banthy Men Chai State in Poipet City, adjacent Siem Reap Province, and Battambang Province, the population available for the labour force is about 3 million people. About 60% of the population is said to be under 30 years old. In addition, there are many migrant workers in Thailand, and they offer many advantages such as being able to communicate in the Thai language.

With Poipet making the best use of its geographical advantages and abundant labour force capabilities, along with the development of hard infrastructure as well as soft infrastructure such as customs clearance procedures and single stop inspection, it is becoming a base to capture the industry in Thailand. Labour-intensive forms of manufacturing such as garments will likely change to formation of industrial clusters bringing innovation with high value addition.

Graphic 11:
Techno Park Poipet

Graphic 12:
Royal Railway North Line

Source: EAIC Team.

3.3 Tier 3

3.3.1 Expansion of Indonesia's infrastructure development in remote islands

(1) Geothermal power development plan in Sumatra Island

The Indonesian government plans to develop 35 gigawatts (GW) of geothermal power by 2019 against increasing energy demand. Geothermal potential in Indonesia is approximately 28,000 MW Indonesia generates the second highest amount of

geothermal power around the world after the United States, so it has high development potential. The planned Sarulla geothermal project (No. 152) has been the backbone for the electricity supply from southern to northern Sumatra.

The Indonesian government has high expectations for renewable energy to support economic development and infrastructure connectivity around the country. The Sarulla geothermal power plant is one of the world's largest geothermal power plants. It is located about 70 km of north of Padang Sidempuan, North Sumatra Province, Indonesia. Construction of the plant was completed in December 2016, and Unit 1 started operations in January 2017 and Unit 2 in October 2017.

A contract to buy and sell generated electric power to PLN, the Indonesian state power company, for 30 years has been signed for 2 million MW. The construction of the Sarulla geothermal power plant employed about 2,000 local workers and contributed to employment creation and human resources development through long-term employment in power plant management.

In Sumatra Island, construction began in a geothermal power plant in Muara Laboh (No. 156), West Sumatra Province in 2017, which is scheduled to start power generation by October 2019. A loan agreement of US$540 million will be signed this year in the Rantau Dedap (Muara Enim) district of South Sumatra Province, and development of about 100 MW is scheduled.

In northern and southern Sumatra, the transmission line of 150 KV has already been completed. In addition, the government has advanced the two transmission line plans (275 KV, 500 KV (No. 165)) that run through the island, with the support of the Asian Development Bank (ADB). The electrification plan based on the Sumatra Island Electricity Network Enhancement Plan is progressing steadily.

Geothermal power generation development requires a great deal of time and expense – from the geological survey to the start of operation. It is consistent, however, with the policy of the Indonesian government, which places emphasis on the development of renewable energy. It can fulfil the purposes of correcting the economic equilibrium and supporting making a safe society. These geothermal power plants in Sumatra Island will contribute to the development of the industry in Sumatra, while realising sufficient supply of electricity in the area and improving the quality of life of the people.

Graphic 13: Sarulla geothermal power plant

Source: EAIC Team.

(2) Trans-Papua Road Project

The province of Papua in Indonesia covers an area of approximately 41,600 km^2. It is said that amongst the approximately 3.6 million inhabitants, the number of indigenous Papuans belonging to the Melanesian race has been halved through addition of immigrants from Java and Sulawesi Islands, since Papua was annexed to Indonesia in 1969.President Jokowi is promoting an aggressive infrastructure development plan in Papua and has allocated special funds to complete the Trans-Papua Road (No. 84) connecting Papua province and West Papua province by 2019. His policy aims to promote the development of backward regions and correct the domestic poverty gap, against a negative backdrop of independence movements and human rights violations in Papua.

The Trans-Papua Road Project plans to connect east and west Papua with a 4,325 km road. According to the Ministry of Public Works' Housing and Road Construction Bureau, the government has budgeted Rp6 trillion (US$430 million) annually for this road construction and Rp30 trillion (US$2 billion) by 2019. However, road construction in Papua is difficult for various reasons. The area is mountainous and has many fragile calcareous grounds, and the roads that have been built suffer from landslides due to heavy rain. In addition, the large-scale dynamic river width of the Taritatu River makes it difficult to construct a bridge. The transportation cost of large heavy machinery (excavators etc.) will be as much as Rp500 million (US$35,000) as it will have to be disassembled, transported, and then reassembled on-site.

Furthermore, prices in Papua are generally high. All goods are imported from all over Indonesia. Especially in the inland areas like Wamena, goods are transported by cargo aircraft or military aircraft because there are no roads, driving prices up twofold compared with Jayapura in the capital city. Moreover, the government distributes rice and goods for households, offers subsidies for purchasing gasoline, and provides employment assistance systems for Papuans. Due to the low rate of employment and dissatisfaction with price hikes, however, there is also concern about deterioration of security.

Table 2: Prices in Papua (August 2017) (Rp)

	Jakarta	Jayapura	Wamena	Raja Ampat
Water (500 ml)	10,000	10,000	20,000	10,000
Juice (paper pack)	5,000	5,000	10,000	10,000
POP Me (instant noodles)	3,000	5,000	10,000	10,000
Tobacco (Marlboro)	25,000	25,000	25,000	25,000
Gasoline 1 L (with government aid)	—	—	6,700	9,500
Gasoline 1 L (market price)	6,500	6,450	10,000	13,000

L = litre, ml = millilitre.

Note: Rp10,000 = US$0.7

Source: EAIC Team.

Papua is a conflict area with a separatist and independence movement, a group of anti-government forces opposing road construction and clashing with the national army. There have also been kidnapping incidents of construction workers for ransom, the amount for which may reach Rp1 billion (US$70,000). Although the road construction in Papua comes with high cost and risk, it is clear that goods distribution to the inland part of Papua will be more efficient and prices will drop sharply if this is realised. According to estimates by the Ministry of Public Works, cement is currently traded at a high price of Rp1 million (US$70) per bag in Papua. If the Trans-Papua Road network is upgraded, it is predicted that the price will be a tenth of the current one.

If the road is connected, infrastructure such as the power grid and the optical line will be developed, along with a shift in the logistics network from reliance on air freight, and life in the inland areas like Wamena will change drastically. However, the economic effects of the enormous cost associated with this plan are limited. The purpose of the road is not the economic development of the whole of Papua, but for the Indonesian government to govern Papua.

Graphic 14: Trans-Papua Road

Source: EAIC Team.

Chapter 4

Status of Other Projects

4.1 Eastern Economic Corridor (EEC) development plan in Thailand

Since 2014, the administration of Prime Minister Prayuth Chan-o-cha has rapidly developed various policies for the sustainable development of Thailand's economy. The Thailand 4.0 policy is a digital economy policy, border SEZ policy of regional economic promotion, and industrial cluster policy, which looked at the country's future economic development, and the Eastern Economic Corridor (EEC).

However, it is hard to say whether the public is satisfied with the economic policy. The production volume of automobiles, which is a representative index of the Thai economy, fell below that in the previous year in FY 2017. In order to break this trend and realise sustainable economic growth, the government is aiming to raise the economy by positioning the EEC development plan as the centrepiece of policy.

The concept of the EEC development plan is to create ASEAN's leading economic zone for industry, infrastructure, and urban development, which will lead the future of ASEAN, together with industrial agglomeration, infrastructure development, and urban development. It is an economic industrial advancement policy to escape from the 'middle-income trap' led by the government.

The EEC development plan was approved at the Cabinet meeting on 28 June 2016. It stipulated regulations for infrastructure development, city planning, private investment invitation, and the establishment plan for the aircraft maintenance base (Appendix 3). In addition, on 17 January 2017, the National Council for Peace and Order (NCPO) established the EEC Policy Committee with the regulations and contents that guide the EEC development plan (Appendix 4). In February 2018, the EEC development plan was passed into legislation by the National Legislative Body.

The promotion of the EEC development plan is through the reconstruction of infrastructure and large investment benefits. The preferential treatment of automobiles and petrochemicals of target industries in the super cluster in Chonburi Province and Rayong Province includes being exempt from corporate income tax for 8 years and an additional deduction of 50%. In addition, for projects that the Ministry of Finance deems particularly important, there is an exemption from corporate income tax for 10–15 years.

Companies that apply for benefits are obliged to cooperate with educational institutions, research institutes, or core research centres (or centres of excellence) located in the clusters to develop human resources and improve technology. The aim is to achieve

industrial innovation to promote cooperation between educational institutions and companies.

The infrastructure investment plan is divided into a short-term plan (up to 2018), a medium-term plan (up to 2021), and a long-term plan (after 2022). The total investment is estimated at ฿1 trillion (US$33 billion). Of these plans, 30% will be funded by the government, 10% by state-owned enterprises, and the remaining 60% will be promoted through PPPs. Amongst them, the EEC Policy Committee discussed six infrastructure investment plans.

The EEC development plan is a strategy that follows the traditional approach in terms of choosing industries with strengths in Thailand, concentrating on its industry and improving competitiveness. The plan recommendations and timelines are in line with the government's enthusiastic goal to realise further economic growth. Though an initial concept, the EEC development plan is gradually taking shape.

It is important to view the rebuilding of the eastern district called 'Detroit of the East' as a hub associated with the future economic growth of neighbouring countries.

Table 3: Infrastructure investment plan at the Eastern Economic Corridor Policy Committee on 1 February 2017

	Project Name	Summary	Budget
1	U-Tapao Airport expansion and related projects (No. 511)	Passenger terminal building expansion (annual/3 million people) Installation of Maintenance Repair and Overhaul Center Construction of the second runway Approval of private airport operation rights Development of aviation industrial park Human resources training centre for aviation industry and maintenance centre for aircraft	฿200 billion
2	Map Ta Phut port expansion work	In connection with the first phase port facility, development of the first half 0.8 square kilometres, the second half 0.7 square kilometres. Two tanker shore ports of liquefied natural gas and three gas transfer piers Cargo warehouse, natural gas-related establishment, sludge reservoir, breakwater construction	฿1.105 billion
3	Construction of the motorway (Pattaya–Map Ta Phut) (No. 441)	The motorway is the route of the Pattaya–Map Ta Phut section of National Highway No. 7 At present, expansion extension works of 32 kilometres are progressing, and it is scheduled to open in 2019.	฿35.3 billion

4	Construction of high-speed railway (Bangkok–Rayong) (No. 488)	Connects U-Tapao Airport, Suvarnabhumi Airport, and Don Mueang Airport Don Mueang Airport and U-Tapao Airport within 1 hour, Suvarnabhumi Airport and U-Tapao Airport within 45 minutes Operated by public–private partnership (PPP) system, transport capacity of 110 million people/year	฿158 billion
5	Laem Chabang deep sea port extension work (No. 510)	Construction of a wharf to increase cargo handling from current 7 million tonnes/year to 18 million tonnes/year Building a pier with a depth of 18.5 metres, it is possible to anchor a large ship with a capacity of 160,000 tonnes (15,000 TEU). Developed by PPP method	฿88 billion
6	Construction of railway double tracking	Double tracking of existing railway between Laem Chabang Port and Map Ta Phut Port	฿64.3 billion

Source: Ministry of Industry (Thailand), 2017.

4.2 Current status of Dawei development

Dawei is the state capital of Tanintharyi Division in Myanmar, 350 km to the west of Bangkok and facing the Indian Ocean. It is located at the western edge of the Southern Economic Corridor. A big project is planned, including the construction of an SEZ of about 200 km^2 (No. 322), to be the largest SEZ in Southeast Asia, and a deep sea port (No. 302). Dawei development will open up a route from Thailand to the Indian Ocean directly by land. Compared with the India western route via the Strait of Malacca, travel time will be shorter by about 3 days and the cost of transportation will be decreased. It will benefit enterprises already moving into Thailand, and Myanmar also intends to construct an industrial base including heavy and chemical industries by taking advantage of the deep sea port, vast land, and plentiful labour force.

In 2008, the Thai government and the Myanmar government signed a basic agreement regarding Dawei development. Italian–Thai Development Public Company (ITD) in Thailand achieved the right to develop the Dawei area from the Myanmar government and started developing it. However, ITD stopped the development because of financing difficulties, amongst others. After that, again recognising the importance of Dawei, Thailand and Myanmar signed a memorandum of understanding in July 2012 that made Dawei development a national project in the two countries. In September 2012, a cooperative committee consisting of six groups was founded. Then, in June 2013, Dawei SEZ Development Company, a special purpose vehicle company was founded in Thailand.

ITD's initial plan was to construct a road from the Thai border to Dawei SEZ, houses, amusement facilities, a residential area for foreigners, and a large reservoir, covering a range of industries from light to heavy around the deep sea port. This plan was reviewed and Dawei development was divided into the initial phase and full phase. The initial phase was undertaken by Myandawei Industrial Estate Company Limited (MIE), which has investment from ITD and Rojana Industrial Park Public Company Limited, which operated an industrial estate in Ayuthaya. The Thai government requested cooperation from Japan and the three countries (Thailand, Myanmar, and Japan) signed a memorandum of intention in July 2015. Still, Dawei development has stopped at the initial phase.

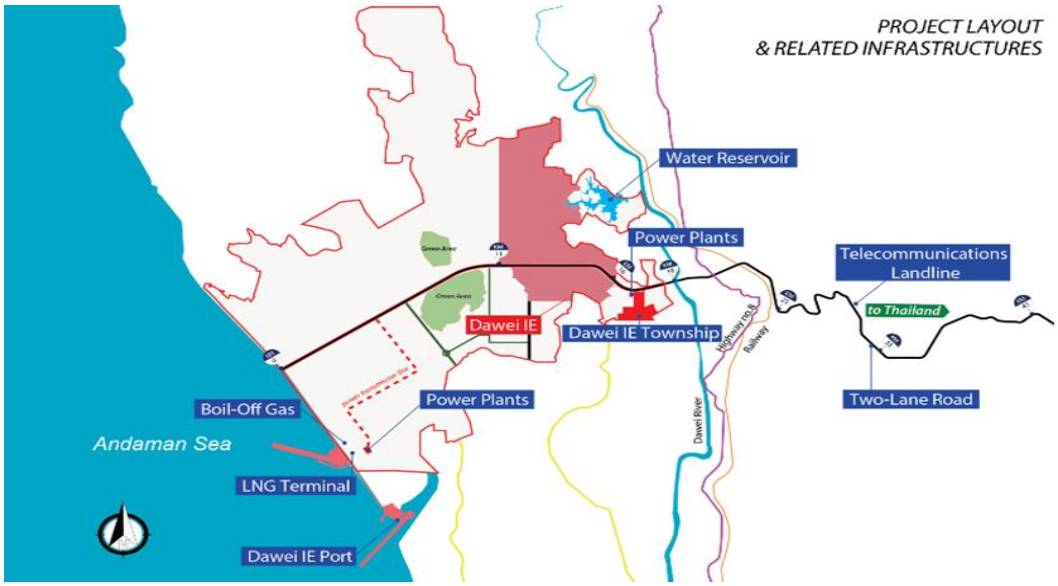
Currently, there is a 138 km earth road from the Thai border (Phunamron) to Dawei (No. 276), which is being maintained by MIE (or actually ITD). Compared with 2 years ago, the situation of the road has not changed. When it rains, it is very difficult to drive on the road even with a four-wheel drive. Moreover, the Karen National Union (KNU), an armed organisation, controls the area, collecting tolls when passing through the road.

In a meeting between Thailand and Myanmar held at the end of July 2017, the Myanmar government accepted a ฿4.5 million soft loan (grace term: 10 years, repayment term: 20 years, interest rate: 0.1%) as funds for public works, which essentially the Thai government had offered earlier for the construction of the road. In another meeting, this time including Japan, the Myanmar government proposed to spend the ฿4.5 million soft loan to expand the road and improve the slope. The purpose of the road is to transport goods and workers to develop Dawei. In the full phase, construction of a new four-lane road is planned.

The apparent reason for stopping the Dawei development is that Thailand is now focusing on internal policies such as Thailand 4.0, including the Eastern Economic Corridor. Thus, the degree of priority of Dawei has declined in Thailand. It is also thought that Myanmar has postponed the Dawei development plan because there are many other infrastructure projects in the country and there are not enough resources and money for investment. Though Japan has already signed the memorandum of understanding, they cannot propose a definite policy because the development progress of the initial phase is unclear.

Dawei development is a promising project and needs actions for several decades. Sellers in the crowded market of Dawei town offer varieties of seafood and cashew nuts. Facilities for travellers are increasing and the town is changing little by little. In order to open the future of Dawei, it is important to improve medium-grade connectivity by constructing the road to the Thai border and create local businesses such as agriculture/food processing, labour-intensive industries, and tourism.

Figure 6: Dawei development in the initial phase



Souce: Myandawei Industrial Estate Company Limited (MIE), 2015

Table 4: Current status of Dawei development in the initial phase

Projects in initial phase		Outline	Current situation
1	Two-lane road, connecting Dawei SEZ with the Thai border (No. 276)	Construct a 138-kilometre (km), two-lane expressway from the entrance of the special economic zone (SEZ) to the Thai border (Phunamron) and divide into three sections (51 km, 43 km, and 44 km respectively) Asphalt concrete pavement, lane width 3.5 × 2 metres (m), outer lateral clearance 1.5 m, maximum super-elevation 10%, maximum gradient 4–12%, vertical clearance 5 m	Construction has not started. Myandawei Industrial Estate Company Limited is in charge of operations and maintenance. Visibility while driving is bad because of dust clouds. Car collisions and falls from cliffs occur because there are many places with steep slopes and curves.
2	Small (IE) port	Construct a small port with two berths and 8 m approach channel for light industries. First birth: 100 m, 13,000 deadweight tonnage (DWT), and 400 TEU (twenty-foot equivalent unit) multipurpose vessels can get to the shore. Second berth: 150 m, 25,000 DWT, and 1,600 TEU Feeders can get to the shore.	First berth is already completed. Construction of second berth has not started.
3	Initial industrial estate (IE)	Develop a 27 km^2 industrial estate for light industries. It is divided into four sections (A–D), each to take 2 years to develop (8 years in total).	In A2 of Area A, 160 acres are already developed as a mock-up. Reservations of moving into this area have already started.

Projects in initial phase		Outline	Current situation
4	Temporary power plant and boil-off gas power plant	Construct liquefied natural gas (LNG) fired power plants for developing SEZ. Temporary power plant: 15 megawatts (MW) Boil-off gas power plant: 15 MW	Temporary power plant and boil-off gas power plant have not been constructed at all. There are a gas engine (1 MW) and diesel generator (1.5 MW) for the ITD camp. The gas engine has stopped operating.
5	Initial phase power plant (combined-cycle gas turbine)	Construct a power plant and increase the output sequentially considering the power demand of industrial estate (No. 3). It is expected that final power demand will be 421 MW and power supply will be 460 MW.	No progress.
6	Small water reservoir	Construct two reservoirs for industrial use. Pa Yain Byu Reservoir: Active storage of 7.70 million cubic metres (1,700 million gallons) Ta Laing Gya Reservoir: Active storage of 2.70 million cubic metres (600 million gallons)	Pa Yain Byu Reservoir is already completed. Construction of water treatment facility has not started. Construction of Ta Laing Gya Reservoir has not started. When the number of enterprises moving into the industrial estate increases and there is a concern about water shortage, the construction will start.
7	Telecommunications landline	Connect communication line from the Thai border to SEZ	Optical fibre with overhead wiring is already connected between the Thai border and SEZ along the temporary road.
8	Initial township	Construct nine apartments for workers, offices, amusement facilities, residence for foreigners (limited to supervisor and middle manager), golf course, etc. Residence for foreigners and golf course will be constructed in the northern edge of the SEZ along the coastline. Apartments for workers are five stories with 180 units; one room	One apartment for workers is already completed. Renovation of the office and KM 3 camp are also completed.

		(220.4 square metres) can accommodate four workers.	
9	LNG terminal	Construct facilities that import and supply gas for the power plants of the No. 4 project. Storage capacity: Minimum 125,000 m^3, incoming carrier size: up to 170,000 m^3, ultimate throughput: 2.0 metric tonnes per annum (MTPA), LNG send-out to shore: 300 m^3/h.	Construction has not started. A joint venture was formed between ITD, LNG Plus International, and Royal Dutch Shell, but Royal Dutch Shell left, so looking for a new partner for the joint venture.

Source: EAIC Team.

Graphic 15: Current status of Dawei development in the initial phase

1.Two-lane road, connecting Dawei SEZ with the Thai border	
	
2. Small port	3. Initial industrial estate
	

5. Initial phase power plant	6. Small water reservoir
	
8. Initial township	9. LNG terminal
	

Source: EAIC Team.

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Appendices

Appendix 1. Highlighted infrastructure projects

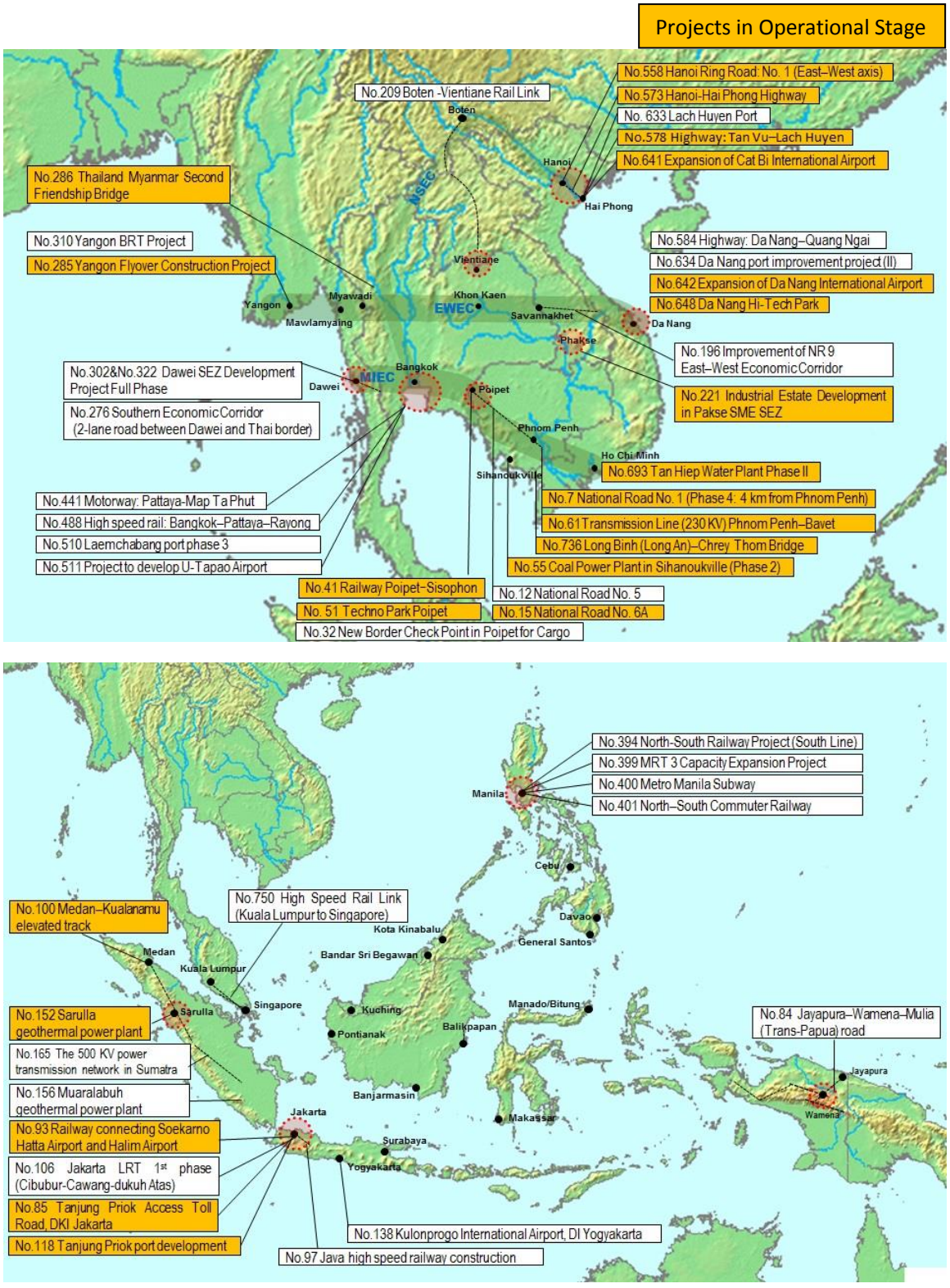
No.	Project Name	Country	Sector	Status	Reference Chapter
7	National Road No. 1 (Phase 4: 4 km from Phnom Penh)	Cambodia	Road/Bridge	Operational Stage	2.2.2
12	National Road No. 5 Improvement Project (Battambang–Sri Sophorn)	Cambodia	Road/Bridge	Construction stage	2.2.2
15	National Road No. 6A (PK44 to PK290)	Cambodia	Road/Bridge	Operational stage	2.2.2
32	New Border Check Point in Poipet for Cargo	Cambodia	Road/Bridge	Construction stage	3.2.2
41	SKRL missing link: Poipet–Sisophon (48 km)	Cambodia	Railway	Operational stage	3.2.2
51	Techno Park Poipet	Cambodia	Industrial Estate/SEZ	Operational stage	3.2.2
55	Coal Power Plant in Sihanoukville (Phase 2)	Cambodia	Energy/Power	Operational stage	2.1
61	Transmission Line (230 KV) Phnom Penh–Bavet	Cambodia	Energy/Power	Operational stage	2.1
84	Jayapura–Wamena–Mulia (Trans-Papua) road	Indonesia	Road/Bridge	Construction stage	3.3.1 (2)
85	Tanjung Priok Access Toll Road, DKI Jakarta	Indonesia	Road/Bridge	Operational stage	2.2.1
93	Railway connecting Soekarno Hatta Airport and Halim Airport	Indonesia	Railway	Operational stage	3.1.2 (1)
97	Java high speed railway construction	Indonesia	Railway	Construction stage	2.1 3.1.2 (1)
100	Medan–Kualanamu (North Sumatra) elevated track	Indonesia	Railway	Operational stage	3.1.2 (1)
106	Jakarta LRT 1st phase (Cibubur–Cawang–Dukuh Atas)	Indonesia	Railway	Construction stage	3.1.2 (1)
118	Tanjung Priok port development	Indonesia	Port/Maritime	Operational stage	2.2.1
138	Kulonprogo International Airport, DI Yogyakarta	Indonesia	Airport	Construction stage	3.1.2 (1)
152	Sarulla geothermal power plant	Indonesia	Energy/Power	Operational stage	2.2.3 3.3.1 (1)
156	Muaralabuh geothermal power plant	Indonesia	Energy/Power	Construction stage	3.3.1 (1)
165	The 500 KV power transmission network in Sumatra	Indonesia	Energy/Power	Construction stage	3.3.1 (1)
196	Improvement of NR 9: East–West Economic Corridor	Lao PDR	Road/Bridge	Construction stage	3.2.1
209	Boten–Vientiane Rail Link	Lao PDR	Railway	Construction stage	3.2.1

No.	Project Name	Country	Sector	Status	Reference Chapter
221	Industrial Estate Development in Pakse SME SEZ, Champasak Province	Lao PDR	Energy/Power	Operational stage	2.1 3.2.1
276	Southern Economic Corridor (2-lane road between Dawei and Thai border)	Myanmar	Road/Bridge	Conceptual stage	4.2
285	Yangon Flyover Construction Project	Myanmar	Road/Bridge	Operational stage	2.2.2
286	Thailand Myanmar Second Friendship Bridge	Myanmar	Road/Bridge	Operational stage	2.2.2
302	Dawei SEZ Development Project Full Phase (Deep Sea Port)	Myanmar	Port/Maritime	Feasibility study stage	4.2
310	Yangon BRT Project	Myanmar	Road/Bridge	Operational stage	2.2.2
322	Dawei SEZ Development Project Full Phase (Dawei SEZ and Cross Boarder)	Myanmar	Industrial Estate/SEZ	Feasibility study stage	4.2
394	North–South Railway Project (South Line)	Philippines	Railway	Feasibility study stage	3.1.2 (2)
399	MRT 3 Capacity Expansion Project	Philippines	Railway	Construction stage	3.1.2 (2)
400	Metro Manila Subway	Philippines	Railway	Feasibility study stage	3.1.2 (2)
401	North–South Commuter Railway	Philippines	Railway	Feasibility study stage	3.1.2 (2)
441	Motorway: Pattaya–MapTa Phut	Thailand	Road/Bridge	Construction stage	4.1
488	High speed rail: Bangkok–Pattaya–Rayong	Thailand	Railway	Feasibility study stage	4.1
510	Laemchabang port phase 3	Thailand	Port/Maritime	Feasibility study stage	4.1
511	Project to develop U-Tapao Airport into a commercial airport	Thailand	Airport	Construction stage	4.1
558	Hanoi Ring Road: No. 1 (East–West axis)	Viet Nam	Road/Bridge	Operational stage	2.2.1
573	Hanoi–Hai Phong Highway	Viet Nam	Road/Bridge	Operational stage	3.1.1 (1)
578	Highway: Tan Vu–Lach Huyen	Viet Nam	Road/Bridge	Operational stage	2.2.1 3.1.1 (1)
584	Highway: Da Nang–Quang Ngai	Viet Nam	Road/Bridge	Construction stage	3.1.1 (2)
633	Lach Huyen Port (Hai Phong)	Viet Nam	Port/Maritime	Construction stage	3.1.1 (1)

No.	Project Name	Country	Sector	Status	Reference Chapter
634	Da Nang port improvement project (II)	Viet Nam	Port/Maritime	Construction stage	2.2.1 3.1.1 (2)
641	Expansion of Cat Bi International Airport	Viet Nam	Airport	Operational stage	3.1.1 (1)
642	Expansion of Da Nang International Airport	Viet Nam	Airport	Operational stage	2.2.1 3.1.1 (2)
648	Da Nang Hi-Tech Park	Viet Nam	Industrial Estate/SEZ	Operational stage	2.2.1 3.1.1 (2)
693	Tan Hiep Water Plant Phase II	Viet Nam	Water Supply/Sanitation	Operational stage	2.2.1
724	Sojitz–Motherson Industrial Park	India	Industrial Estate/SEZ	Operational stage	2.1
736	Long Binh (Long An)–Chrey Thom Bridge	Cambodia, Viet Nam	Road/Bridge	Operational stage	2.1
750	High Speed Rail Link (KL to Singapore)	Malaysia, Singapore	Railway	Feasibility study stage	2.1

Source: ERIA, 2015 updated by EAIC Team.

Appendix 2. Highlighted infrastructure projects (Map)



Source: ERIA, 2015 updated by EAIC Team.

Appendix 3. The EEC development plan (The Cabinet meeting, 28 June 2016)

Urgent
At นร 0505/23955

The Secretariat of the Cabinet
Government House

30 June 2016

Subject : Eastern Economic Corridor Development Project

To : The Secretariat of the National Economics and Social Development Board

Reference : 1. Letter from Office of the National Economics and Social Development Board Urgent at นร 1112/3852, date on 27 June 2016
2. Letter from Office of the National Economics and Social Development Board Urgent at นร 1112/3853, date on 27 June 2016

Attachment : A copy of the letter from Office of the Council of State, urgent at นร 0905/126, date on 28 June 2016

According to a proposing of Eastern Economic Corridor Development Project to the cabinet for a consideration. The Office of the Council of State has proposed the comments for a consideration of the cabinet, details as shown in a copy of the letter as attached. The Cabinet had meeting to discuss on 28 June 2016 which agreed in principle for the Eastern Economic Corridor Development Project, and assigned to the Deputy Prime Minister Somkid Jatusripitak together with the Ministry of Transport, Royal Thai Navy and related organisations to make a project implementation plan and the budget to use from FY2017–2018, and complete in 3 months then propose to the cabinet. The details should cover the following issues:

1. The investment of infrastructure on transport that links to the whole system, energy sector, public utility and related public assistance, including research and development.
2. Implementation plan on City Planning and the use of land, environmental management plan, waste management and pollution which taking into account the impact on the environment and people in the area.
3. Laws and related regulations to support and attract the investment from private sector, especially a privilege on tax, leasehold land, and labour supply. Also establish One Stop Service to facilitate to the investor to get permit for the operation and the privilege.
4. The development plan of Aircraft Maintenance Center

Please be informed accordingly. The Secretariat of the Cabinet also informed to related organisations which the list as attached.

Yours sincerely,
(Mr.Teerapong Wongsiwawilas)
Deputy Secretary General to the Cabinet, Government agents
Cabinet Secretary

Strategy Development and Monitoring Policies Division
Phone: 0 2280 9000 ext.327 (Sopapan) 442 (Bootsakorn)
Fax: 0 2280 1446 www.soc.go.th

Appendix 4. The EEC development plan (The National Council for Peace and Order (NCPO), 17 January 2017)

Order from the head of National Council for Peace and Order
At 2/2016
Subject : Eastern Economic Corridor Development

The National Council for Peace and Order had a policy to promote and support the establishment of Special Economic Zone in order to promote trade and investment, and to facilitate to run the business which is important factor to enhance a competitiveness of the country. Moreover, it will help to expand the development which suitable to the potential of that areas and to develop a quality of life of people. This policy is in line with government policy to develop Eastern Economic Corridor that covered 3 provinces in the East ─ Chachoengsao, Chonburi, and Rayong, and nearby provinces or related to which have potential to develop in communication, transportation, infrastructure, the needs of entrepreneurs, providing resources and link to other economic centers. The implementation is under making related laws. Therefore, it's necessary to make measures of Eastern Economic Corridor Development before law enforcement in order to achieve the result quickly.
By virtue of Section 44 of the Constitute of the Kingdom of Thailand (interim), B.E.2557 (2014), the head of National Council for Peace and Order has order the following:

1. The meaning of Eastern Economic Corridor, the Eastern Economic Corridor Development, Promotion Zone, Policy Committee, Executive Committee of Eastern Economic Corridor Development, Secretariat Policy Committee of Eastern Economic Corridor Development, Office of Eastern Economic Corridor Development and Government sector.
2. To have Policy Committee of Eastern Economic Corridor Development
3. The duties and power of Policy Committee
4. To report the problems and obstacles
5. Give authority to the Secretariat to give permission, issue license, approve and registration in promotion zone.
6. To have Executive Committee of Eastern Economic Corridor Development
7. The duties and power of Executive Committee
8. To have meeting at least once a month
9. To have Office of Eastern Economic Corridor Development in the Ministry of Industry
10. To have Secretariat Policy Committee of Eastern Economic Corridor Development as commander, appoint and dismiss by the Prime Minister with the approval of the Cabinet.
11. Bureau of the budget support the budget to implement the project by using the budget of Ministry of Industry.
12. All related government agencies have to facilitate to run the project as plan.
13. In the important case, the Prime Minister or the Cabinet may propose to National Council for Peace and Order to revise or change this order.
14. This order is effective from the date announcement in the Government Gazette.

Order on 17 January 2017
Prime Minister Prayuth Chan-o-cha
The head of National Council for Peace and Order