Chapter 3

Highlighted Projects and Their Progress by Tier

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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.