Chapter **2**

Country Report

May 2017

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Chapter 2

Country Report

2.1. Cambodia

Table 1. Completed Projects of Cambodia in 2016 (including partial operation)

Project	Sector	Region	Tier
Rehabilitation of National Road No. 76	Road/Bridge	Mekong	Tier 3
(171.8 km): Banlong Triangle Border			
Point (C-L-VN)			
Urban Transport Planning in the	Road/Bridge	Mekong	Tier 2
Municipality of Phnom Penh			
Techno Park Poipet	Industrial	Mekong	Tier 2
	Estate/SEZ		
Coal Power Plant in Sihanoukville (Phase	Energy	Mekong	Tier 2
1: 270 MWs)			

MW = megawatt, SEZ = special economic zone. Source: EAIC Team .

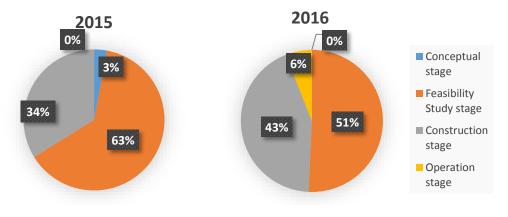


Figure 3. Project Status in Cambodia (2015–2016)

Source: EAIC Team.

Cambodia operationalised four projects in 2016. Nine projects advanced from FS stage to construction stage: (i) 3 in the transmission line sector, (ii) 2 in the road and bridge sector, (iii) 1 in the railway sector, and (iv) 1 in the SEZ sector. The reason for a higher number of transmission projects is the shortage of power supply, which is one of the biggest problems of Cambodia in attracting foreign direct investment. Thus, the development of transmission lines is of high priority.

We highlight Techno Park Poipet (TOYOTA Tsusho, 2016) as representative project in Tier 2 (Graphic 1). From the framework of CADP 2.0, Techno Park Poipet belongs to infrastructure for innovation in Tier 2 where industrial agglomeration starts and highquality SEZ projects attract companies that are principal elements for industrial agglomeration. The construction work started in May 2015 and the project was operationalised in September 2016. The contracts for six out of seven blocks were concluded. Poipet is expected to develop as a manufacturing hub directed at Thailand by making use of location advantage with proximity to Bangkok on the Southern Economic Corridor and affluent and affordable labour force.

However, the challenges are the infrastructure developments around the SEZ. The construction work of National Road No. 5, which is recognised as top-priority project, will take time to complete. The North Line of Cambodian Royal Railway between Phnom Penh and Poipet has missing link and has not been in operation. Electricity is mainly provided by Thailand and the cost is high.

To address the challenges, the following are concrete measures in the Cambodia Industrial Development Policy 2015–2025 to be achieved by end of 2018:

- (i) Prepare and implement a plan to reduce electricity tariffs for industrial and commercial purposes, including strengthening reliability and expanding coverage of electricity supply.
- (ii) Develop and implement a master plan for transport and logistic system development with the aim of creating an integrated and highly effective multimodal transport and logistic system, focusing on connecting the major economic poles and the three economic corridors – Phnom Penh–Sihanoukville, Phnom Penh–Bavet, and Phnom Penh–Poipet – to become key national economic corridors through the construction of highways of international standards and the setup of an effective logistic system.

Graphic 1. Techno Park Poipet (2016)



Techno Park Poipet(2016) Source: EAIC Team.



Railway between Thai border and Poipet (2016) Source: EAIC Team.

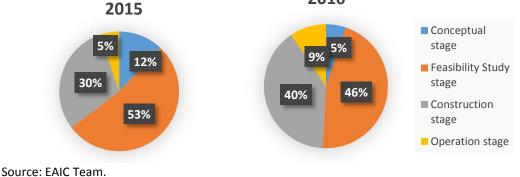
2.2. Indonesia

Table 2. completed in jetts of machesia in 2010 (including partial operation)			
Project	Sector	Region	Tier
Medan–Kualanamu (North Sumatra)	Railway	IMT+	Tier 2
Elevated Track			
Tanjung Priok Port Development	Port	BIMP+	Tier 1
Expansion of H. AS. Hananjoeddin	Airport	IMT+	Tier 3
Airport, Bangka–Belitung Island			
Expansion of Matahora Airport,	Airport	BIMP+	Tier 3
Southeast Sulawesi			
Sarulla Geothermal Power Plant	Energy/Power	BIMP+	Tier 3

Table 2. Completed Projects of Indonesia in 2016 (including partial operation)

Source: EAIC Team

Figure 4. Project Status in Indonesia (2015–2016)



2016

- The number of Indonesian projects that reached operational stage is five. The number of projects that reached construction stage is 16, which is higher because the Indonesian government executed its budget from the latter half of 2015 and issued Presidential Decree No. 3 in 2016 to expedite the development of infrastructures, especially the 225 national strategic projects. Of the 16 projects, 7 are included in the 225 strategic projects.
- We highlight two projects representing operational stage, Tanjung Priok Port expansion and Sarulla Geothermal Power Plant:
- (1) Tanjung Priok Port expansion (Susanty, 2016)
 - Tanjung Priok Port expansion project is the construction and operation of a new container terminal (CT) at Tanjung Priok Port, Jakarta, Indonesia (Graphic 2). The first of the five phases includes the construction of three terminals to be completed in 2019. In August 2016, one of the three container terminals (CT1) started commercial operation. In CADP 2.0, this project belongs to infrastructure for connectivity in Tier 1 and requires full-scale seaport and terminals with sufficient capacity. CT1 has a capacity of 1.5 million TEUs1 that expands the current container capacity by 30%. The completion of CT2 and CT3 will double the capacity of the existing CT. Moreover, after completion of dredging work in 2017, large-sized containers can utilise the port. These developments will lead to substantial reduction in service link cost. However, these expansion projects are insufficient with the rapidly increasing number of containers entering the port. Thus, the New Patimban Port project is proposed and is to be completed in 2019. But the challenge is the congestion that may arise between the port project and the industrial parks in east Jakarta. The construction of Tanjung Priok Access Road under the Official Development Assistance (Japan) is ongoing and is for completion in 2017. The access road and the proposed Jakarta Outer Ring Road 2 will reduce congestion in this area (IPC Port Developer, 2015).

¹ TEU = twenty-foot equivalent unit.

Graphic 2. Tanjung Priok Port



CT1, new container terminal Source: Mitsui & Co., Ltd.

(2) Sarulla Geothermal Power Plant² (Yoi, 2014)

- We highlight Sarulla Geothermal Power Plant project as representative of Tier 3 which came into operational in 2016 (Graphic 3). Tier 3 comprises 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. The project is in Tapanuli Utara District, North Sematera Province and set to be the largest geothermal power plant with a total installed capacity of 330 megawatts (MWs) when completed in 2019. The project consists of three phases of 110 MWs each. The first phase was completed in December 2016 and is scheduled to be under operation in 2017. It utilises highly advanced technology, such as geothermal reservoir management technology and plant operation and maintenance technology, which realises high-efficiency power generation.
- Indonesia is one of the world's largest geothermal power potentials estimated at 29,000 MWs. The rate of utilisation is about 5%. The country issued Presidential Decree No. 3 in 2006 which aims to achieve a capacity of 9,500 MWs. The plant's operation could trigger geothermal power development in the country.

² According to the staff of Kyushu Electric Power Co. related to the project, since the area around the power plant is mountainous and the road infrastructure around the power plant is not well developed, the route is changed based on the size of loads of the conveyer for transport to prevent spillage. Moreover, at the time of construction, basic construction work, especially soil improvement, was more difficult than the construction work of the power plant (20 December 2016).

Graphic 3. Sarulla Geothermal Power Plant



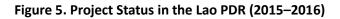
Source: EAIC Team.

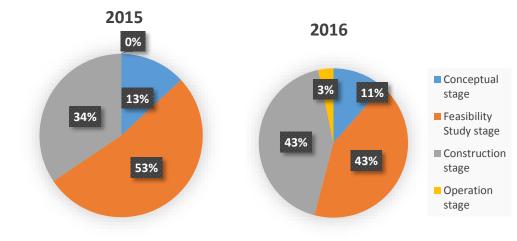
2.3. Lao PDR

Table 3. Completed Projects of the Lao PDR in 2016 (including partial operation)

Project	Sector	Region	Tier
Nasak–Khokkaodo Mekong Bridge	Road/Bridge	Mekong	Tier 3
Hongsa Lignite Mine Mouth Power	Energy/Power	Mekong	Tier 2
(1,878 MWs)			

Lao PDR = Lao People's Democratic Republic. Source: EAIC Team





- The Lao PDR has two projects that advanced to operational stage: (i) 1 coal-fired power plant and (ii) 1 bridge project. Infrastructure development in the logistic sector seems to be disrupted because of financial difficulties.
- Seven projects advanced from FS stage to construction stage: (i) 2 in the hydropower sector and (ii) 2 in the road sector. We highlight Boten–Vientiane Rail Link as notable project. The project consists of six sections covering a total length of 427 kilometres (kms), and requires an investment of about United States dollars (US\$) 7 billion. It is medium-speed and is scheduled to be completed in 2020. In CADP 2.0, this project is under the infrastructure for connectivity in Tier 2. Upon completion of this project, indirect economic benefit for the Lao PDR is expected through strengthening connection between two industrial hubs, Bangkok and Kunming. On the quality of infrastructure, the rail link will provide high-grade and dual modal connectivity (ERIA, 2015, p.29). However, economic viability could be a problem because its construction will involve high construction and maintenance cost since this railway will run through mountainous area and thus will require a lot of tunnel construction works.
- On securement of labour force and connectivity between Lao PDR and Bangkok, it is important to invite foreign investors to special economic and industrial zones, which will be constructed in big cities in Lao PDR, such as Vientiane, Savannakhet, and Pakse, where there are a substantial number of labour force. Vientiane Industrial Park is a remarkable example (Graphic 4) (ERIA, 2016, pp.96-97). The second phase of construction will start in 2017. More foreign investors will be attracted if provision of convenience improves by introducing one-stop services, among others (ERIA, 2016, pp.154-255).

Graphic 4. VITA Park (2016)



VITA PARK = Vientiane Industrial Park. Source: EAIC Team.

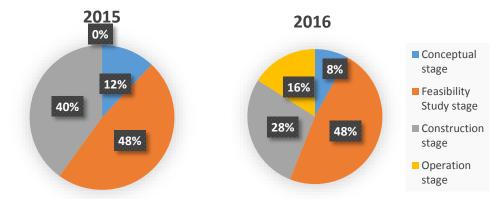
• We also touch on Vientiane–Hanoi Expressway project although it is not included in CADP 2.0. The project could be significant because it would boost connectivity between Hanoi, Vientiane, and Bangkok (ERIA, 2016, pp.96-97).

2.4. Malaysia

Table 4. Completed Projects of Malaysia in 2016 (including partial operation)

Project	Sector	Region	Tier
Klang Valley Mass Rapid Transit (MRT)	Railway	IMT+	Tier 1
Hulu Terengganu Hydroelectric Power	Energy/Power	IMT+	Tier 1
Plant (212 MWs)			
Tanjung Bin Coal-fired Power Plant	Energy/Power	IMT+	Tier 1
(1,000 MWs)			
Prai Combined-cycle Gas turbine (CCGT)	Energy/Power	IMT+	Tier 1
Power Plant			

Figure 6. Project Status in Malaysia (2015–2016)



Source: East Asia Industrial Corridor (EAIC) Team.

- Four out of the 25 projects in Malaysia advanced to operational stage: (i) 3 in the energy sector and (ii) 1 in the railway sector. Malaysia promotes diversification of power source by utilising natural gas, hydropower, and coal power because of the rapid growth in electric consumption.
- We highlight Klang Valley Mass Rapid Transit (MRT) as notable project under operational stage in Tier 1. The MRT project involves the construction of a rail-based public transport network which, together with the existing light rail transit, monorail transit, etc., forms the backbone of the Greater Kuala Lumpur or Klang Valley region. Phase one of the MRT Sungai Buloh–Kajang Line from Sungai Buloh to Semantan started operation end of 2016.³ This project belongs to infrastructure for innovation in Tier 1 where upper- middle-income countries should emphasise on the urban amenities in infrastructure development. The MRT will operate every 3 minutes and will be utilised daily by an average of 400,000 people. Moreover, this emphasises the development of a variety of shops inside the station building, such as convenience stores, drug stores, and restaurants. The smooth flow of traffic and the variety of services to be provided by this rail line are typical elements which infrastructure for innovation in Tier 1 should pursue.
- Project 3 B coal-fired power plant at Jimah is one project that advanced from FS stage to construction stage. The electric company Tenaga Nasional Berhad acquired the project interests of this coal-fired power plant in July 2015, and began construction in August 2016. This is a supercritical power plant of 2,000 MWs and the key to ensure Malaysia a stable power supply. It is scheduled to commence operation in 2019.

³ <u>http://www.mymrt.com.my/en/sbk/the-mrt-sungai-buloh-kajang-line</u>

2.5. Myanmar

Table 5. Completed Projects of Myanmar in 2016 (including partial operation)

Road/Bridge	Mekong	- ; a
	WERDING	Tier 2
Road/Bridge	Mekong	Tier 2
Airport	Mekong	Tier 2
Industrial	Mekong	Tier 2
estate/SEZ		
Energy/Power	Mekong	Tier 2
Energy/Power	Mekong	Tier 2
Energy/Power	Mekong	Tier 3
	Airport Industrial estate/SEZ Energy/Power Energy/Power	Airport Mekong Industrial Mekong estate/SEZ Energy/Power Mekong Energy/Power Mekong

Source: EAIC Team.

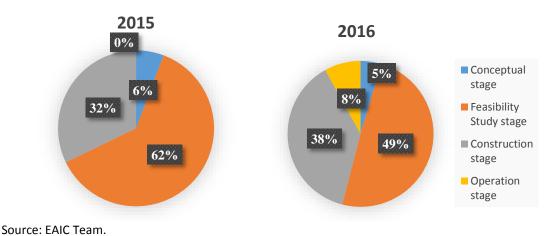


Figure 7. Project Status in Myanmar (2015–2016)

- Of the seven projects under operational stage, three are in the energy sector: (i) 2 gas-fuelled power plants and (ii) 1 hydropower plant. Since the inauguration of the new administration, progress of coal-fired power plants seems to have stopped.
- We highlight Thilawa Special Economic Zone A project as important project that advanced to operational stage (Graphic 5). Zone A launched its operation in September 2015. As of December 2016, 21 factories started operation and 53 factories started construction. Seventy-nine companies from 15 different countries opted to locate their factories, production facilities, or logistic facilities in Thilawa

with a total investment of more than US\$1 billion.⁴ On infrastructure surrounding SEZ, a gas-fuelled power station of 50 MWs was completed in 2016, and Thilawa Port is ongoing construction. An access road between Yangon City and the SEZ, and a bridge that will connect Yangon and Thanlyin over the Bago River will start construction soon. Moreover, construction of Zone B project started in February 2017.

 In CADP 2.0, this SEZ project belongs to infrastructure for innovation in Tier 2, where the role of SEZ in attracting foreign investors will be emphasised by making good investment in environments. The significant feature of the successful SEZ is its full back up by the Government of Japan to develop hard and soft infrastructure in and around the SEZ, which has been recognised as credible environment for investors.



Graphic 5. Thilawa Special Economic Zone A (2017)

- Of the 10 projects that advanced from FS stage to construction stage, three are in the road sector in Yangon City and four are in the energy sector.
- On the missing link of East–West Economic Corridor in Myanmar, the construction of Eindu–Kawkareik section has started. Also, the proposed construction of three bridges under the Official Development Assistance (Japan) loan will improve logistic flow and reduce service link costs. Moreover, construction of the bypass road

⁴ <u>http://www.bangkokpost.com/business/news/1204317/thilawa-sez-expanding</u>

between Myawaddy and Kawkareik, which areas used to cause bottleneck in the corridor, was completed in 2015. This reduces transportation lead time from 2-4 hours to 0.5 hour.⁵

 In Southern Economic Corridor in Myanmar, a two-lane road from Thai border to Dawei SEZ is ongoing construction (Graphic 6). In 2015, the EAIC team crossed this road, which had many curves and ran along mountainous area that a four-wheel drive was necessary to move from Thai border to Dawei SEZ. Almost all sections were unpaved. This road has a significant role in strengthening connectivity with Thailand and Dawei SEZ. The specifications of this road will be discussed in the next industrial master plan of Dawei SEZ since road quality depends on the industries that will move into the SEZ.



Graphic 6. Two-lane Road from Thai Border to Dawei SEZ (2015)



SEZ = special economic zone. Source: EAIC Team.

⁵ http://www.nittsu.co.jp/press/2015/20150909-1.html

2.6. Philippines

Table 6. Completed Project	s of the Philippines in 2016	(including partial operation)
		(

ge BIMP+	Tier 1
BIMP+	Tier 2
nitation	
	.80

Source: EAIC Team

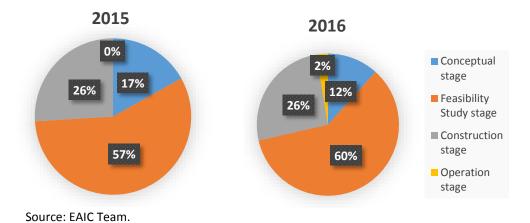


Figure 8. Project Status in the Philippines (2015–2016)

- The Philippines has two projects under operational stage: (i) NAIA Expressway and (ii) Water Supply and Wastewater in Boracay Island. Project progress was slow because of the presidential election in 2016 and the stagnation of public–private partnership projects in the Aquino administration.
- However, the Duterte administration approved 17 infrastructure projects since taking over in 2016 (Chanco, 2017). Two of these projects, the Plaridel Bypass Toll Road and North–South Railway, are included in CADP 2.0. The new government will accelerate infrastructure development by increasing infrastructure budget by 86 billion Philippine peso (+13.8%) in 2017.⁶ Moreover, legislation for infrastructure development is underway. In March 2016, Congress passed Republic Act No. 10752 to expedite land appropriation for infrastructure development (Business World Online, 2017). The impending enactment of build–operate–transfer amendments will also help accelerate the procurement of public–private partnership projects. CADP 2.0 selected many projects from public–private partnership pipelines. The project progress in the Philippines will be faster than in previous years.

⁶ <u>http://www.bworldonline.com/content.php?section=Economy&title=philippine-year-in-review-2016&id=138661</u>

2.7. Thailand

Table 7. Completed Projects of Thailand in 2016 (including partial operation)

Project	Sector	Region	Tier
Sirat–Bangkok Outer Ring Road	Road/Bridge	Mekong	Tier 1
Expressway			
Bangkok MRT: Purple Line (Bang Yai-	Railway	Mekong	Tier 1
Bang Sue)			
Multipurpose Port in Khlong Yai, Trat	Port	Mekong	Tier 2
The 4th Natural Gas Transmission	Energy/Power	Mekong	Tier 2
Pipeline (Rayong–Kaeng Khoi)			
Nakhornsawan On-shore Natural Gas	Energy/Power	Mekong	Tier 2
Pipeline, Phase 1 and Phase 2			

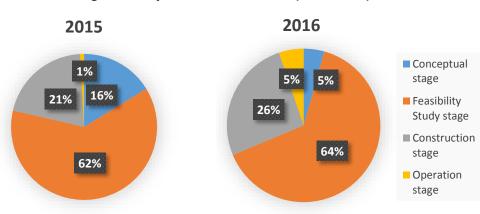


Figure 9. Project Status in Thailand (2015–2016)

- Five of Thailand's projects reached operational stage. The country's natural gas has been a major energy resource, and two natural gas pipeline projects and two transport infrastructure projects near Bangkok were completed.
- We highlight Bangkok MRT: Purple Line (Bang Yai–Bang Sue) (Graphic 7). In CADP 2.0, this project is under infrastructure for innovation in Tier 1. These infrastructure are required to promote the flow of people and things in the metropolitan area by developing efficient and speedy transportation and to create convenient and comfort cities. This project connects Bangkok with the adjacent western region by a high-standard railway. Connecting 22-km distance between Tao Poon Station, which is 1 km west side of Bang Sue Station, and Khlong Bang Phai Station in Nonthaburi Province will ease the traffic between Nonthaburi Province and the centre of Bangkok where population is increasing. However, changing trains between Tao

Source: EAIC Team.

Poon Station and Bang Sue Station of the subway Blue Line is inconvenient,⁷ and the utilisation rate is lower than expected because the fare is more expensive than bus fee.

- The proportion of projects beyond the construction stage is relatively low (31%) because 39 (34%) of Thailand's 115 projects are in the railway sector that need time and funding.⁸
- Eleven projects advanced from FS stage to construction stage, four of which are in the road sector. The Government of Thailand approved the plan to spend US\$50.8 billion on 20 major infrastructure projects by 2022. Three⁹ of the four projects cited above are included in the plan. Moreover, Bangkok–Chiang Mai High-speed Railway, which is also included in the plan, is scheduled to start construction in 2018.



Graphic 7. Bangkok MRT: Purple Line (2017)



MRT = mass rapid transit. Source: EAIC Team.

⁷ In February 2017, it took us about 4 minutes to travel without traffic congestion and 20 minutes when traffic jam occurred.

⁸ The railway project proportion is 16% of the 761 infrastructure projects.

⁹ Three routes: (1) Pattaya in eastern Chonburi Province–Map Ta Phut in Rayong Province, (2) Bang Yai in Nonthaburi

Province, northern suburb of Bangkok–western Kanchanaburi Province, (3) Bang Pa-In in central Ayutthaya–northeastern Nakorn Ratchasima Province.

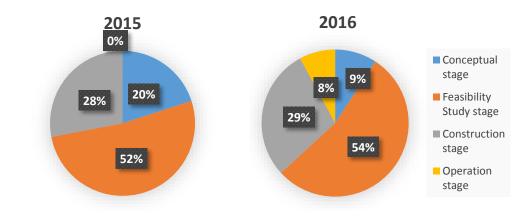
2.8. Viet Nam

Table 8. Completed Projects of Viet Nam in 2016 (including partial operation)

Sector	Region	Tier
Road/Bridge	Mekong	Tier 3
Road/Bridge	Mekong	Tier 3
Road/Bridge	Mekong	Tier 1
Road/Bridge	Mekong	Tier 1
Road/Bridge	Mekong	Tier 1
Railway	Mekong	Tier 1
Airport	Mekong	Tier 1
Energy	Mekong	Tier 2
Energy	Mekong	Tier 2
	Road/Bridge Road/Bridge Road/Bridge Road/Bridge Road/Bridge Road/Bridge Road/Bridge Road/Bridge Road/Bridge Road/Bridge Energy	Road/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongRoad/BridgeMekongEnergyMekongMekongMekong

Source: EAIC Team.





Source: EAIC Team.

Viet Nam has 12 completed projects and has the largest number in surveyed countries (8% of the 152 projects in Viet Nam): (i) 8 in the road and bridge sector, (ii) 2 in the electric power sector, (iii) 1 in the railroad sector, and (iv) 1 in the airport sector.

We touch on the Hanoi–Hyphon Expressway¹⁰ as representative project under operation (Graphic 8). The project is a high-grade arterial expressway composed of six lanes (two lanes for emergency) and connects Hanoi and Hyphon in about an hour drive, which used to be about 2.5 hours. It will make service link cost cheaper and industrial agglomeration bigger in the area within 100 kms from Hanoi. Moreover, Hyphon has been developed as an industrial and logistic hub. Since logistics around it have already been developed, high-quality industrial zones, such as Nomura–Hyphon industrial zone, VSIP industrial zone, and Vinh Bu industrial zone, are constructed. Cat Bi International Airport was completed in 2016, and Lack Huyen Deep Sea Port and Halon–Hyphon Highway are under construction (Graphic 9) (METI, 2015). The Lack Huyen Deep Sea Port will likely generate synergy with Hanoi–Hyphon Highway to improve connectivity with other big industrial hubs (Shino, 2016).



Graphic 8. Hanoi–Hyphon Expressway (2016)

¹⁰ The Government of Viet Nam is promoting the development of the highway network. In March 2016, it approved the 'Viet Nam Expressway Network Development Plan to 2020 and the Vision to 2030 (Extended 6411 kms)', which is the basic plan for expressway development up to 2020. It plans to expand the distribution network with border areas and port bases by starting from major cities of the country.

Graphic 9. Lack Huyen Port Construction Site (2016)



Source: EAIC Team.

 Ten projects (7%) advanced to construction stage: (i) 4 in the road and bridge sector and (ii) 3 in the water supply sector. The road projects include road infrastructure for innovation, such as Hanoi Ring Road No. 1 and Hoa Lac–Hoa Binh Highway, which will improve urban amenities in Hanoi.

2.9. Singapore and Brunei Darussalam

Table 9. Completed Projects of Singapore and Brunei Darussalam in 2016

(including partial operation)

Sector	Region	Tier
Road/Bridge	BIMP+	Tier2
		0

Source: EAIC Team.

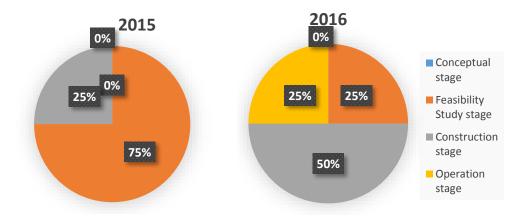


Figure 11. Project Status in Brunei Darussalam (2015–2016)

- We present the number of projects in Singapore and Brunei Darussalam collectively since the projects are few.
- The Singapore–Kuala Lumpur High-speed Rail Line project connecting the capital of Singapore and Malaysia is important. It is the first cross-border high-speed rail in Asia, which connects 350 kms distance between Singapore and Kuala Lumpur in 90 minutes minimum. Both the Government of Singapore and the Government of Malaysia signed an agreement on this project in December 2016. Construction will start in 2018; its opening is scheduled in 2026. The project is expected to (i) alleviate congestion at Changi International Airport in Singapore, (ii) revitalise urban development around the route and the flow of people for business and tourism between two countries, and (iii) have a big impact on the economies of both countries (Abidin, 2016).
- On Brunei projects, one was completed and two advanced to construction stage (Graphic 10). Both are road and bridge projects.



Graphic 10. Temburong Bridge Construction Site, Brunei Darussalam (2016)

2.10. Cross-border

Project	Sector	Region	Tier
Trans Borneo Power Grid (Sarawak-	Energy	BIMP+	Tier 2
West Kalimantan) (Part of ASEAN Power			
Grid)			

Table 10. Completed Project of Cross-border in 2016

Source: EAIC Team

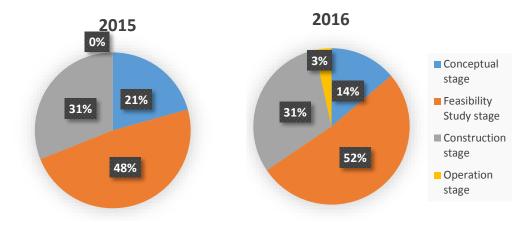


Figure 12. Project Status in Cross-Border (2015–2016)

Source: EAIC Team.

 Of the 29 cross-border projects, only one between Malaysia and Indonesia was completed. Malaysia began exporting electricity of 70,000 kw s from Sarawak State, Malaysia to West Kalimantan Province, Indonesia. As part of the Association of Southeast Asian Nations (ASEAN) Power Grid Plan, export of electricity is first time for Malaysia. With Indonesia purchasing surplus electricity from Malaysia, the former will save fuel cost of US\$100 million annually.