Chapter 6

Prospective projects for Logistics and Economic Infrastructure

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CHAPTER 6.

PROSPECTIVE PROJECTS FOR LOGISTICS AND ECONOMIC INFRASTRUCTURE

The conceptual framework presented in Chapter 3 and the simulation scenarios used in Chapter 4 will be realized through the implementation of a number of specific development projects. This chapter presents an overview of the long list of prospective projects for logistics and economic infrastructure, which was compiled based on the best available information and our tier-wise development strategies. In addition, several prospective projects selected from the long list are presented in relation to the tier-wise development strategies and sub-regional development scenarios.

6-1. Making the CADP strategy implementable

The conceptual framework of the CADP claims that East Asia can pursue the deepening of economic integration and the narrowing of development gaps by reducing services link costs. In the process, the remaining development gaps in the region can be utilized as a source of economic dynamism through relocation or concentration of economic activities. Enhanced connectivity enables low-income regions to invite labor-intensive production processes and to expand existing industries through greater access to large markets. High-income regions, often characterized by industrial agglomerations, can shift to higher value-added economic activities by relocating labor intensive production processes to lower-income regions. The simulation analyses in Chapter 4 confirmed the validity of this conceptual framework, by showing that enhanced connectivity in terms of reduction in money and time costs would accelerate economic growth in wider regions through dispersion and agglomeration forces. Further, it is confirmed that this process can narrow income gaps as measured by Gini coefficients.

Development of physical infrastructure is one of the necessary conditions to realize this scenario. Infrastructure projects are usually formulated by national governments, donor countries agencies including international development banks, and private companies. The list of projects presented below is a compilation of prospective projects for logistics and economic infrastructure, based on publicly available information. In addition, we classified prospective infrastructure projects in terms of sub-regions (Mekong, BIMP+, and IMT+), three tiers, and priority in accordance with

the conceptual framework of the CADP. Tables 6-1 and 6-2 summarize the number of prospective projects identified in the CADP and cost estimates respectively.

Table 6-1. Summary table: Prospective projects identified in the CADP

	Total	Mekong	BIMP+	IMT+	Brunei Darussalam	Cambodia	Indonesia	Laos	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	China	India
Total	**695**	**452**	**190**	**61**	**2**	**103**	**169**	**77**	**23**	**26**	**52**	**0**	**60**	**188**	**11**	**33**
Priority																
Top Priority	**170**	113	51	14	1	15	33	1	3	8	25	0	26	57	1	18
Priority	**166**	87	56	23	0	19	53	6	7	6	17	0	7	48	1	10
Normal	**359**	252	83	24	1	69	83	70	13	12	10	0	27	83	9	5
Tier																
Tier 1	**178**	109	63	6	0	0	45	0	7	0	18	0	22	65	1	20
Tier 2	**313**	217	59	45	1	58	60	26	10	22	27	0	34	110	4	7
Tier 3	**204**	126	68	10	1	45	64	51	6	4	7	0	4	13	6	6
Type																
Public	**541**	358	146	45	2	95	121	71	21	25	45	0	54	125	11	17
PPP	**154**	94	44	16	0	8	48	6	2	1	7	0	6	63	0	16
Sector																
Logistics	**443**	279	128	44	2	60	106	55	13	18	46	0	39	100	8	18
: Road / Bridge	*227*	150	66	11	1	37	54	43	2	6	21	0	10	49	5	7
: Railway	*66*	51	6	9	0	6	9	3	5	2	0	0	19	19	0	4
: Port / Maritime	*99*	44	41	22	1	8	34	1	5	9	18	0	7	23	0	6
: Airport	*36*	28	6	2	0	6	4	7	1	1	3	0	2	8	3	1
Other Economic	**201**	146	45	10	0	32	45	22	7	8	3	0	21	78	3	9
: Industrial Estate / SEZ	*56*	56	0	0	0	8	0	7	0	3	0	0	8	28	0	4
: Energy / Power	*135*	80	45	10	0	17	45	13	7	3	3	0	11	47	2	5
: Telecommunication	*12*	11	1	0	0	8	1	2	0	2	0	0	2	3	1	0
Urban and Social	**49**	25	17	7	0	11	18	0	3	0	3	0	0	10	0	4
Others (Soft)	**2**	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Table 6-2. Summary table: Cost estimates

	Mekong				BIMP+				IMT+				ALL Sub-regions			
		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total
Tier 1	Top Priority	139,205	36,721	175,926	Top Priority	41,088	15,206	56,294	Top Priority	272	0	272	Top Priority	180,565	51,927	232,492
	Priority	28,817	3,134	31,951	Priority	9,047	2,873	11,921	Priority	665	275	939	Priority	38,530	6,282	44,811
	Normal	271	0	271	Normal	1,148	2,075	3,223	Normal	279	0	279	Normal	1,698	2,075	3,773
	Sub-total	168,293	39,855	208,148	Sub-total	51,284	20,154	71,438	Sub-total	1,216	275	1,490	Sub-total	220,793	60,283	281,076
		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total
Tier 2	Top Priority	4,076	3,456	7,532	Top Priority	4,415	1,006	5,420	Top Priority	326	2,749	3,075	Top Priority	8,817	7,210	16,027
	Priority	6,154	3,553	9,707	Priority	5,557	690	6,247	Priority	1,501	818	2,319	Priority	13,211	5,061	18,272
	Normal	31,716	4,348	36,065	Normal	1,602	2,301	3,903	Normal	3,642	275	3,917	Normal	36,960	6,925	43,885
	Sub-total	41,946	11,357	53,303	Sub-total	11,573	3,997	15,570	Sub-total	5,469	3,842	9,311	Sub-total	58,988	19,196	78,184
		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total
Tier 3	Top Priority	0	0	0	Top Priority	0	0	0	Top Priority	0	0	0	Top Priority	0	0	0
	Priority	22	1,190	1,212	Priority	25	24	49	Priority	12	15	27	Priority	59	1,229	1,288
	Normal	15,277	1,683	16,960	Normal	8,929	2,469	11,398	Normal	821	0	821	Normal	25,028	4,152	29,180
	Sub-total	15,299	2,873	18,172	Sub-total	8,954	2,493	11,447	Sub-total	833	15	848	Sub-total	25,087	5,381	30,468
		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total		Public	PPP	Sub-total
ALL Tiers	Top Priority	143,281	40,176	183,457	Top Priority	45,503	16,212	61,715	Top Priority	598	2,749	3,347	Top Priority	189,381	59,137	248,519
	Priority	34,992	7,877	42,870	Priority	14,629	3,587	18,216	Priority	2,178	1,108	3,285	Priority	51,799	12,572	64,371
	Normal	47,265	6,031	53,296	Normal	11,680	6,845	18,524	Normal	4,742	275	5,018	Normal	63,687	13,151	76,838
	Sub-total	225,538	54,085	279,623	Sub-total	71,811	26,644	98,456	Sub-total	7,518	4,132	11,650	Grand-total	304,867	84,861	389,728

Another necessary condition for the CADP scenario is improvement in soft infrastructure. Liberalization and facilitation of trade in goods and services, as well as investment, are the typical elements. In the field of trade facilitation, the timely establishment of the ASEAN Single Window (ASW) should be regarded as one of the top priority initiatives. Moreover, transport facilitation measures such as the Cross Border Transport Agreement (CBTA) under the GMS initiative and transport facilitation agreements in ASEAN[1] are expected to reduce significantly the time and money costs of international trade in goods, as well as some services such as tourism. In order to enhance regional connectivity through reliable and economically viable shipping routes, various institutional arrangements would be necessary in addition to the development and improvement of physical infrastructure such as ports and related facilities. ASEAN's initiatives for an ASEAN Single Aviation Market (ASAM) and Air Transport Agreements with its dialogue partners are also expected to contribute to enhancing regional connectivity. Last but not least, the importance of capacity-building programs should not be underestimated.

In the rest of this chapter, section 6-2 links selected prospective projects with tier-wise development strategies discussed in Chapter 3, and section 6-3 provides additional discussion on the basic strategy for three sub-regions in relation to selected prospective projects. The full version of the long list of prospective projects, classified by three sub-regions (Mekong, IMT+, and BIMP+), three tiers, and priority, appears as Appendix 1.

[1] ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT), ASEAN Framework Agreement on the Facilitation of Inter-state Transport (AFAFIST), and ASEAN Framework Agreement on Multi-modal Transport (AFAMT). ASEAN has been accelerating the implementation of these agreements to support the establishment of the ASEAN Economic Community by 2015.

6-2. Prospective projects and the tier-wise development strategies

As discussed in detail in Chapter 3, the CADP proposes three tiers of development strategies, and the necessary logistic and economic infrastructure differs by tier. Tables 6-3 to 5 link selected prospective projects from the long list with the tier-wise development strategies.

Table 6-3. Prospective projects for tier-wise development strategies: Tier 1

Key infrastructure	Project name	Country
Logistics infrastructure		
1. Roads / bridges		
► Highway system, bridges and bypass roads in and around metropolitan areas	► Western Guangxi Road development	China
	► Expressway: Chennai − Bangalore	India
	► Outer ring road in Chennai: Phase II	India
	► Bangalore − Mysore Infrastructure Corridor (BMIC) and peripheral ring road (Phase I) in Bangalore	India
	► Highway management project: additional financing	Thailand
	► Expressway: Ha Noi- Lao Cai, phase I	Vietnam
	► Expressway: Noi Bai- Ha Long − Mong Cai	Vietnam
	► Expressway: Ben Luc − Long Thanh	Vietnam
	► Expressway: Gie − Ninh Binh, phase 1	Vietnam
	► Expressway: Bac Ninh − Lang Son	Vietnam
	► Expressway: Ho Chi Minh City − Thu Dau Mot	Vietnam
	► Expressway: Thrung Luong − My Tuan	Vietnam
	► Ha Noi − Lang Son Corridor: National road No.1	Vietnam
	► Bypass around Ho Chi Minh City	Vietnam
	► Ho Chi Minh City ring road No.3	Vietnam
	► Dinh Vu bridge	Vietnam
	► Vinh Thinh bridge	Vietnam
	► Intelligent Traffic System in Jabotabek	Indonesia
	► Improvement of transport information system in Jakarta	Indonesia
	► Central Ruzon highway and Japan Philippines Friendship Road	Philippines
	► Arterial highway bypass construction project	Philippines
	► Cavite − Laguna east−west narional road	Philippines
	► Cavite − Laguna north south highway	Philippines
	► Metro Manila C6 expressway	Philippines
	► Improvement of existi9ng bridges along Pasig River and Marikina River	Philippines
► Access roads/bridges to gateway ports/airports	► Chennai port − Ennore port accessway construction	India
	► Expressway: Bien Hoa − Vung Tau	Vietnam
	► Road construction to connect Noi Bai international airport and Nhat Tan bridge	Vietnam

	► NAIA expressway and MIAA's international cargo terminal	Philippines
2. Railways		
► Urban public transport system (subway, LRT, MRT) and railways to connect urban and suburban areas	► Bangalore METRO: Phase II	India
	► Bangkok MRT: various lines	Thailand
	► Jakarta MRT: various lines	Indonesia
	► Surabaya MRT	Indonesia
	► Manila LRT 1st line south extention	Philippines
	► Manila LRT 2nd line extention	Philippines
	► Urban railway: Hanoi- Lang Hoa Lac	Vietnam
	► Railway: Trang Bom − Hoa Hung	Vietnam
	► Railway: Ho Chi Minh City − My Tho	Vietnam
	► North − South high speed railway	Vietnam
► Access railways to gateway ports/airports	► Urban railway: Hanoi- Noi Bai international airport	Vietnam
	► Railway: Hanoi − Haiphong, phase 1	Vietnam
	► Railway: Ho Chi Minh City to Vung Tau (Cai Mep − Thi Vai port)	Vietnam
	► Railway to connect Soekarno Hatta airport and Manggarai	Indonesia
3. Ports / maritime		
► Sizable port facility to cater massive container transactions and specialized loading facilities	► Ennore port container terminal: phase 1	India
	► Laem Chabang port: phase 2, construction of container terminals C and D	Thailand
	► Penang port: expansion of container terminals	Malaysia
	► Transshipment port in Vung Tau − Ba Ria province	Vietnam
	► Petroleum gas service port development in Sao Mai − Ben Dinh	Vietnam
	► Lach Huyen port development	Vietnam
	► Cai Mep − Thi Vai port: operation and maintenance	Vietnam
	► Cai Mep − Thi Vai port: upgrading the channels	Vietnam
	► Cai Lan port: additional installation of quay clanes	Vietnam
	► Jakarta 2nd port	Indonesia
	► Greater Surabaya metropolitan port	Indonesia
	► Tanjung Perak port: new terminal and access road	Indonesia
	► World class Subic international seaport	Philippines
	► Manila port: expansion of container terminal	Philippines
	► Cebu port: development of new port	Philippines
4. Airports		
► Sizable airport facility to cater massive movements of passengers and freight	► Sriperumbudur international airport (Chennai)	India
	► Suvarnabhumi airport: phase 2	Thailand
	► Long Thanh international airport development (HCMC)	Vietnam
	► Cat Bi airport improvement (Hai Phong)	Vietnam
	► Terminal 2 construction of Noi Bai international airport (Hanoi)	Vietnam
	► Upgrading of Clark international airport	Philippines

	► KLIA capacity enhancement	Malaysia
Other economic infrastructure		
1. Industrial estates / special economic zones		
► High-tech park with private initiatives	► Ennore Industrial Park and SEZ	India
	► Sri City (integrated business city)	India
	► IT and ITES park in Pathum Thani comprehensive development zone (CDZ)	Thailand
	► Pharma and biotech city in Ayutaya	Thailand
	► Hoa Lac high tech park	Vietnam
	► Software technology park in Ho Chi Minh City	Vietnam
	► Petrochemical complex in Ba Ria − Vung Tau	Vietnam
	► Vietnam space center project	Vietnam
2. Energy / power		
► Stable and ample supply of electricity and energy for both industries and residences	► Nuclear power plant	Thailand
	► Can Tho − Ho Chi Minh City transmission line	Vietnam
	► Nhon Trach thermal power plant IPP project	Vietnam
	► Thin Ninh Thuan nuclear power plant	Vietnam
	► Song Hau coal fired power plant	Vietnam
	► Ho Chi Minh City ultra high voltage transmission line	Vietnam
	► Bakun submarine transmission cable	Malaysia
	► Upper Cisokan pumped strage power plant	Indonesia
	► Central Java coal fired steam power plant: up to 2000MW	Indonesia
	► Java − Bali submarine cable, 150kV, circuits 3&4	Indonesia
	► Muara Tawar add on block 2, 3, 4 combined cycle power plant: 825−1200 MW	Indonesia
	► Rehabilitation and modernazation of Paiton small power producer 1&2: 2x400MW	Indonesia
	► Nuclear power plant	Indonesia
	► Indramayu coal fired power plant	Indonesia
3. Telecommunication		
► Infrastructure services for innovative society	► Enhancement of ICT infrastructure in Hanoi	Vietnam
Urban and social infrastructure		
1. Water and sanitation, medical, and others		
► Metropolitan and social infrastructure for urban amenity	► GROPA W3: expanding piped water supply to urban poor in Surabaya	Indonesia
	► Water supply/sanitation: DKI Jakarta − Bekasi − Karawang	Indonesia
	► Water supply/sanitation: West Cikarang − Cibitung	Indonesia

Table 6-4. Prospective projects for tier-wise development strategies: Tier 2

Key infrastructure	Project name	Country
Logistics infrastructure		
1. Roads / bridges		
► Middle-distance roads for connecting industrial centers, logistics hubs, and neighboring industrial agglomerations	► Upgrading of road link between Phnom Penh to Sihanoukeville ports from 2 to 4 lanes	Cambodia
	► Reconstruction of national road No.3 from Phnom Penh to Kampot	Cambodia
	► Mekong Bridge in Neak Loung	Cambodia
	► Mekong Bridge in Takmov (Phnom Penh)	Cambodia
	► Cross border facilities at Moc Bai − Bavet	Cambodia, Vietnam
	► Development of road links from Dawei port to Bong Tee (Thailand border) and road from Bong Tee to Kanchanaburi in Thailand as 4−lane access controlled expressways	Myanmar, Thailand
	► Toll road: Medan− Binjai	Indinesia
	► Toll road: Medan− Kualanamu − Tebing Tinggi	Indinesia
	► Toll road: Pekanbaru− Kandis − Dumai	Indinesia
► Sub-urban road system for avoiding congestion	► Bypass around Phnom Penh city	Cambodia
	► Semplak bypass	Indonesia
	► Musi bridge III construction: Phase I	Indonesia
	► Construction of ring roads and bypasses in Georgetown, Pulau Pinang; Seremban, Negeri Sembilan; and Johor Bahru, Johor	Malaysia
	► Bypass: Palo	Philippines
	► Bypass: General Santos City	Philippines
	► Bypass: Korondal City	Philippines
	► Bypass: Tuguegarao City	Philippines
2. Railways		
► Development of regional arterial railway networks	► SKRL missing link: Bat Dang (Phnom Penh)- Loc Ninh section (255km)	Cambodia
	► SKRL missing link: Poipet- Sisophon (48km)	Cambodia
	► SKRL missing link: Loc Ninh to Ho Chi Minh City (129km)	Vietnam
3. Ports / maritime		
► Upgrading major ports to enhance handling capacity	► Rehabilitation of Phnom Penh port: container terminal	Cambodia
	► Expansion of Sihanoukeville port: extension of container terminal berth, additional installation of quay clanes	Cambodia
	► New Dawei deepwater port	Myanmar
	► Thilawa port: Terminal development and enhancement of management	Myanmar
	► Yangon port: Installation of quay cranes	Myanmar
	► The coastal channels and ports development	Thailand
	► Construction of international container port in Van Phong, Khanh Hoa Province	Vietnam
	► Lien Chieu port development	Vietnam

	► Ky Ha port (Chu Lai) development	Vietnam
	► Da Nang port improvement project, phase II	Vietnam
	► Muara port: Development of container terminal	Brunei
	► Tanjung Emas port: Development of deep water terminal	Indinesia
	► Makassar port: Development of container terminal	Indonesia
	► Dumai port development	Indonesia
	► Belawan port (Medan) Expansion	Indonesia
	► Greenfield development of Naklua port	Thailand
	► Phuket port improvement.	Thailand
	► Construction of new cargo port at Pakbara	Thailand
4. Airports		
► Upgrading major airports for both passengers and cargos	► Upgrading of Sihanoukeville airport	Cambodia
	► New Medan airport construction project	Indonesia
	► Savannakhet airport improvement: Phase I	Laos
	► Da Nang international airport: Construction of passenger terminal	Vietnam
	► Upgrading of Na San airport in Dien Bien Phu	Vietnam
Other economic infrastructure		
1. Industrial estates / special economic zones		
► SEZs in border areas and population centers	► Industrial estate in Koh Kong	Cambodia
	► Industrial estate in Poipet	Cambodia
	► Industrial estate in Ban Laem − Kamrieng or in Ban Pakkad−Pailin (Thai border)	Cambodia
	► Industrial zone in Sihanoukville	Cambodia
	► SEZ development in border area (Savannakhet Province)	Laos
	► SEZ/FTZ and international trade exchange center in Dawei	Myanmar
	► Moc Bai cross−border economic zone	Vietnam
	► Ca Mau industrial park	Vietnam
2. Energy / power		
► Stable and ample supply of electricity and energy for industries	► Transmission line between Kampot and Sihanoukville: 230kV, double circuits	Cambodia
	► Stung Meteuk 1 hydro power plant	Cambodia, Thailand
	► Gas pipeline: Atuthaya − Sakeo − Poipet	Cambodia, Thailand
	► Gas pipeline: Maptaphut − Chantaburi − Koh Kong	Cambodia, Thailand
	► Vietnam − PRC power interconnection project preparatory technical assistance and construction: GMS power interconnection phase 2	Vietnam, China
	► O Mon 2 combined cycle power plant as joint venture IPP	Vietnam
	► O Mon thermal power plant and Mekong delta transmission network project	Vietnam
	► Nghi Son thermal power plant construction project, phase II	Vietnam
	► Sarulla geothermal power plant	Indonesia

3. Telecommunication		
► Development/upgrading of trunk telecommunication network	► Fibre optic cable between Phnom Penh and Sihanoukville	Cambodia
	► Internet telephony infrastructure in Thailand and neighboring couutries	Thailand, Myanmar, Laos, Cambodia
Urban and social infrastructure		
1. Water and sanitation, medical, and others		
► Improving water and sanitary conditions in urban areas	► Water supply/sanitation in Bandung Municipality (Cimenteng)	Indinesia
	► Water supply/sanitation in Indramayu regency	Indonesia
	► Water supply/sanitation in Cirebon	Indonesia
	► Integrated solid waste final disposal and treatment facility for Bogor and Depok Area – West Java (Nmbo)	Indonesia
	► Water supply/sanitation in Medan municipality	Indonesia
	► Water supply/sanitation in Bandar Lampung municipality	Indonesia

Table 6-5. Prospective projects for tier-wise development strategies: Tier 3

Key infrastructure	Project name	Country
Logistics infrastructure		
1. Roads / bridges		
► Long-distance road connection and rural road networks for various industrial development	► Highway: Kanchanaburi - Dawei	Thailand / Myanmar
	► Ennnore Manali Road and NCTPS Road Imporvement	India
	► Northern Port Access Road	India
	► Upgradation and maintainance of Trans Slawesi road	Indonesia
	► Rehabilitation NR57: Batambang - Paylin - Thai border	Cambodia
	► Rehabilitation of national road No.64: Kg.Thom-Prehvihear	Cambodia
	► Rehabilitation of bridges along national road No.64	Cambodia
	► Improvement of roads in the southern region	Laos
2. Railways		
► Middle-distance railways for resource-based industries	► Railway for aluminum mining and manufacturing in the west plateau	Vietnam
	► Coal railway connecting Palaci and Bangkuang (coal mine to river port)	Indonesia
3. Ports / maritime		
► Upgrading of local ports	► Kemaman Port: Development of Multi Purpose Terminal	Malaysia
	► Bintulu Port: Expansion of Container Terminal	Malaysia
	► Sandakan Port: Development of Berthing facilities for berges	Malaysia
	► Kyaulphu Port: Upgrading the Jetty	Myanmar
	► Mawlamyine Port: Making the Plan for Port Development	Myanmar
	► Expansion of Vung Ang Port	Vietnam
	► Tanah Ampo cruise terminal, Karangasem (Bali)	Indonesia
	► Pontianak port: Dredging channel, renewal of quay cranes, expansion of terminal	Indonesia
	► Balikpapan port: Development of new container terminal	Indonesia
	► Bitung port: Expansion of terminal	Indonesia
	► Jayapura port: Extension of mult-purpose terminal	Indonesia
	► Sorong port: Expansion of container terminal	Indonesia
	► Banjarmasin port: Development of a master plan on utilization in port area	Indonesia
	► Kuala Enok port (South of Dumai) improvement	Indonesia
	► Ulee Lheue port (Banda Aceh) improvement	Indonesia
	► Mafahayati port (Banda Ache) improvement	Indonesia
	► Palembang port: Dredging channel	Indonesia
	► Panjang port: Developnment of general cargo teminal	Indonesia
	► Iloilo port: Installation of quay cranes	Philippines
	► Cagayan de Oro port: Development of ramp for RORO ships	Philippines

	► Davao port: Development of quay crane and expansion of container terminal	Philippines
	► General Santos port: Installation of quay cranes	Philippines
	► Zamboanga port: Development of international passenger terminal	Philippines
	► Songhkla Port: Dredging Channel and Installation of Quay Crane	Thailand
4. Airports		
► Upgrading/development of local airports	► Mondolkiri airport development	Cambodia
	► Preah Vihea airport improvement	Cambodia
	► Stung Treng airport improvement	Cambodia
	► Kraches airport improvement	Cambodia
	► Ratanakiri airport improvement	Cambodia
	► Wattay international airport improvement	Laos
	► Upgrading of Pakse, Savannakhet and Luang Prabang airports	Laos
	► Construction of Luang Namtha airport	Laos
	► Upgrading of Dawei airport	Myanmar
	► International Airport Development: Chu Lai	Vietnam
	► International Airport Improvement: Cam Ranh	Vietnam
	► Construction of Duong To international airport, Phu Quoc	Vietnam
	► Van Don international airport improvement	Vietnam
Other economic infrastructure		
1. Industrial estates / special economic zones		
► Industrial estates in growth nodes	► Agro−forestry SEZ in Thakek	Laos
	► Luang Namtha Development Industrial Zone (200 ha)	Laos
	► Economic and service centres in Luang Prabang	Laos
2. Energy / power		
► Development of power plants taking advantage of location advantages	► Xe Katam hydroelectric power project for the export of electricity to Thailand	Laos
	► Nam Ngum 1 hydropower station expansion	Laos
	► Hoa Binh hydropower plant extension project	Vietnam
	► Lahendong geothermal project	Indonesia
	► Sembalun GEOPP, Lombok (2x10 MW)	Indonesia
	► Marea hydropower plant construction project	Indonesia
	► Bonto Batu hydropower plant construction project	Indonesia
► Local supply of electricity and energy	► Rural electrification along national road No.9	Laos
	► Rural energy II: Additional financing	Vietnam
3. Telecommunication		
► Local telecommunication networks	*No relevant project*	
Urban and social infrastructure		
1. Water and sanitation, medical, and others		
► Improving water and sanitary conditions	► Provincial capital water supply improvement project: Phase II	Cambodia

	► Rehabilitation of Siem Reap stream	Cambodia
	► Improvement of water supply systems of Maros and Takalar	Indonesia
	► Construction of dams (Raknamo, Temef) for water resources development in NTT Province	Indonesia
	► Water supply to Sabah, Sarawak, Pahang, Kelantan, Terengganu and Kedah states	Malaysia
	► Flood mitigation Works for Kota Bharu and other selected areas along Sungai Kelantan in Kelantan	Malaysia
	► Tami Nadu water supply project	India
	► Karnataka water supply and sanitation Projects	India

6-3. Selected prospective projects and sub-regional development scenarios

This subsection provides brief explanation on how to apply the conceptual framework of the CADP to the tier-wise development strategies from sub-regional points of view, by highlighting selected prospective projects in the long list presented in the last sub-section.

6-3-1. Mekong sub-region

The Mekong sub-region in the CADP has a slightly wider scope than the Greater Mekong Subregion (GMS) under the ADB initiative, in the sense that we also highlight the connectivity between ASEAN and India, as discussed in the simulation scenario of the Mekong India Economic Corridor (MIEC)[2].

The Mekong sub-region consists of vibrant industrial agglomerations such as Bangkok, Hanoi, Ho Chi Minh, and Chennai (Tier 1), cities with high potential to join international production networks in the region such as Phnom Penh, Vientiane, Yangon, Danang, Kunming, and many cities in Thailand (Tier 2), and regions which may take a certain time period to participate in the production networks such as the mountainous areas in Cambodia, Laos and Myanmar (Tier 3). A distinctive feature of the Mekong sub-region is the huge diversity in the levels of economic development, as indicated by differences in income levels (Figure 2-13). As discussed in Chapter 1, the wage differentials and differences in location advantages can be a main driving force of fragmentation, through which international production networks expand the frontiers. In order to pursue deepening economic integration and narrowing development gaps, a number of policy measures, including infrastructure development, should be designed in an integrated manner to enhance the location advantages of each region.

As illustrated in Figure 6-1, existing industrial agglomerations (Tier 1) will require that infrastructure projects in particular make themselves more innovative. Improvement in urban transportation is one of the most important elements for this purpose. In Bangkok, for example, the Mass Rapid Transport (MRT) network should be expanded to accommodate more economic activities while mitigating negative congestion effects. The bypass around Ho Chi Minh and rail links from Hanoi to neighboring cities including the Noi Bai International Airport need to be developed or enhanced to meet rapidly growing demand. In addition, special purpose industrial zones, such as the Hoa Lac High Tech Park and a software technology park, are proposed in order to facilitate innovative activities.

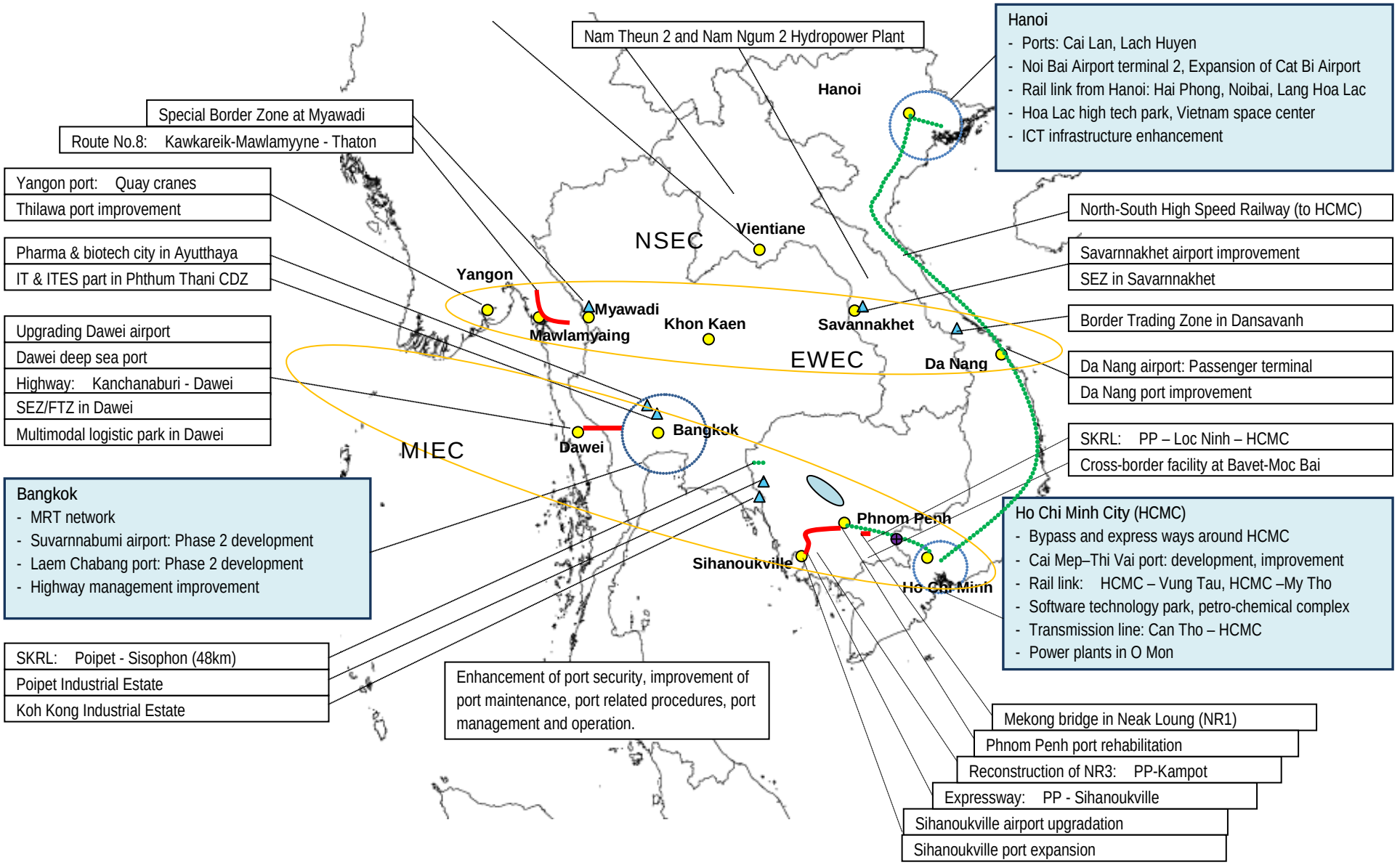
[2] Refer to subsection 4-2-2-(3).

For the development of Tier 2, elimination of the remaining missing or weak links in the regional transport networks is of crucial importance. For example, as illustrated in Figure 4-2-3a, the construction of a Mekong bridge in NeakLoung, Cambodia, is expected to have a strong impact on the Mekong region, by facilitating fragmentation of some parts of production activities from the neighboring industrial agglomerations and other regions. The biggest missing link in the Mekong India Economic Corridor (MIEC) resides between Kanchanaburi and Dawei. By developing a highway and deep seaport in Dawei, economies in the Indochina Peninsula will have a short-cut to the Andaman Sea. The expected impact on the Mekong sub-region becomes much larger than without, as indicated in Figure 4-2-3b. Da Nang, being the terminal city of the East West Economic Corridor (EWEC), is expected to improve its port and airport facilities, as this would enhance the attractiveness of all regions along the corridor.

The development of Dawei can be regarded as an example of Tier 3 development strategy. In addition to the highway connection with Thailand and the deep sea port, it is recommended to develop a special economic zone (SEZ), free trade zone (FTZ), and a multimodal logistic park in Dawei. By doing this, Dawei can enhance its location advantages, that is, lower labor costs, proximity to Bangkok, and the favorable geographical position as a gateway port to the Andaman Sea. Another example of Tier 3 strategy is the development of industrial estates in border areas, such as Poipet, Koh Kong, Savarnakhet, and Dansavanah, where wage differentials can be relatively easily utilized.

In addition to physical infrastructure, institutional connectivity should be enhanced through various trade and transport facilitation measures, such as the ASEAN Single Window (ASW), the Cross Border Transport Agreement (CBTA), and ASEAN's framework agreements on transport facilitation, as these are expected to reduce the cost of border crossing, in terms of both money and time.

Figure 6-1. Selected Prospective Projects in Mekong Sub-region



6-3-2. IMT+ sub-region

The IMT+ sub-region in the CADP is an extended concept of the Indonesia, Malaysia, and Thailand Growth Triangle (IMT-GT), in the sense that IMT+ pays explicit attention to the connectivity with neighboring industrial agglomerations, i.e., Bangkok and Jakarta. This reflects our view on the important roles of existing industrial agglomerations (Tier 1) as a large market as well as a potential source of economic activities to be located in, or relocated to, the main part of the IMT+ through fragmentation. In the center of the IMT+ sub-region, there are two industrial agglomerations on the west side of the Malay Peninsula, spanning from Kuala Lumpur to Penang, and Singapore and surrounding regions[3]. Although the other part of the IMT+ region has not yet been industrialized, several cities in Sumatera Island, such as Medan, Pekanbaru/Dumai, and Palembang, can be regarded as Tier 2 because of their potential for taking advantage of lower labor costs, large population, and the proximity to existing industrial agglomerations. The remaining part of IMT+ can be regarded as Tier 3, characterized by resource-based economic activities such as agriculture and agro-basedindustry, mining, and tourism.

Industrial agglomerations in Malaysia and Singapore are already well developed in terms of infrastructure, and are connected by high quality toll roads and highways. Although the expansion of the Kuala Lumpur International Airport (KLIA) and the Light Rail Transport (LRT) system is proposed, the development strategy for these two industrial agglomerations should focus more on policy measures to support innovative activities, as discussed in section 3-2.

From a region-wide perspective, the development strategy for the IMT+ sub-region should focus on how the large potential of Sumatera Island can be exploited. For this purpose, the connectivity between Sumatera Island and the Malay Peninsula needs to be enhanced by establishing efficient and reliable shipping routes. Considering the short distance and presumably low traffic volume, at least at the initial stage, it is recommended that the shipping routes are established by RO-RO (Roll on – Roll off) vessels. Potential routes could be Belawan (Medan) – Penang and Dumai – Malacca. In order to accommodate RO-RO vessels and more traffic volume, it is necessary to improve the ports of Belawan and Dumai, as well as access roads to the ports.

Another strategy is to drastically upgrade the Trans-Sumatera Highway, which connects major cities in North and South Sumatera, as envisaged in the Indonesia Economic Development Corridor (IEDC). Several toll road construction projects

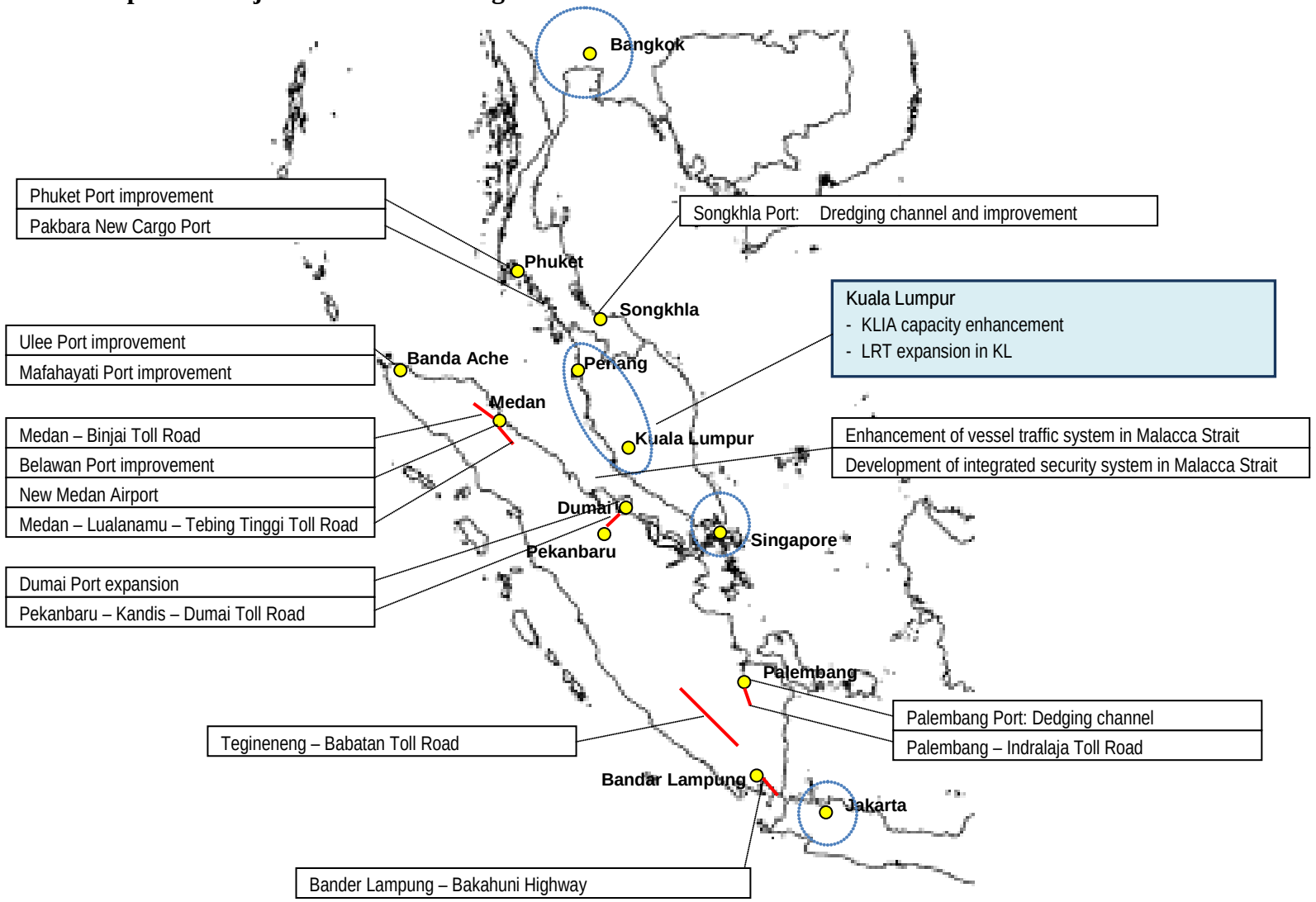
[3] Singapore, Johor (Malaysia), and Riau islands (Indonesia) have been known as SIJORI, or IMS-GT (Indonesia, Malaysia, and Singapore Growth Triangle). The concept of the grouping is similar to that of the CADP, as it focuses on how to make the best use of location advantages.

along the Trans Sumatera Highway are highlighted in Figure 6-2; that is, the Palembang – Indralaja section and the Bandar Lampung – Bakahuni section. The latter section is of particular importance, as Bakahuni is the gateway port to the island of Java, where another industrial agglomeration (Jakarta) exists.

These logistic infrastructure improvements are expected to facilitate the fragmentation of production blocks from the Tier 1 areas to Tier 2 areas, particularly in machinery industries. Enhanced connectivity to large markets would also help existing industries in Sumatera expand production. For example, rubber plantations, the rubber processing industry, and the coal mining industry will benefit from the closer access to neighboring industrial agglomerations such as Kuala Lumpur and Jakarta. As illustrated in Figure 4-2-5, these logistic improvements should not only drastically boost regional GDP in Sumatra but also spread out to other territories of IMT+ and beyond

Again, it should be stressed that the development of the physical infrastructure itself is insufficient to establish an efficient and reliable shipping network across the Strait of Malacca. A certain amount of soft infrastructure intended to maintain the safety and security of the shipping network will also be necessary. In addition, in order to establish international RO-RO routes, institutional arrangements on transport facilitation to allow cross border movement of trucks need to be implemented.

Figure 6-2. Selected Prospective Projects in IMT+ Sub-region



6-3-3. BIMP+ sub-region

The BIMP+ sub-region in the CADP is much larger than the Brunei Darussalam, Indonesia, Malaysia, of the Indonesia, Malaysia, and the Philippines East ASEAN Growth Area (BIMP-EAGA), in the sense that BIMP+ expands the geographical scope to include Manila and Jakarta (and Surabaya) as neighboring industrial agglomerations in the sub-region. In order to formulate an effective development strategy for the sub-region, it is necessary to take explicit account of the interaction with neighboring industrial agglomerations.

As compared to the Mekong and IMT+ sub-regions, the BIMP+ sub-region has a geographic disadvantage. As it consists of a number of islands in a wide geographic area, it is more difficult for BIMP+ to enhance intra-regional connectivity. In addition, industrial agglomerations (Tier 1) in BIMP+, Jakarta and Manila, are relatively less developed, when compared to those in other sub-regions. Therefore, there remains more room for physical infrastructure to contribute to upgrading existing industrial agglomerations in the BIMP+ sub-region.

TanjungPriok Port in Jakarta, the gateway port to Indonesia, has long been at full capacity. A substantial expansion of the port, or the development of a new port, is of crucial importance for the development of Jakarta. In order to mitigate the congestion in Jakarta, a Mass Rapid Transport (MRT) system and an Intelligent Transport System (ITS) would be effective infrastructure developments. A railway connection from Soekarno-Hatta International Airport to Jakarta will also contribute to attracting more economic activity to Jakarta. Surabaya, the second largest city in Indonesia, can be regarded as an emerging industrial agglomeration, and shares similar problems with Jakarta. Here, the expansion of Tanjung Perak Port and the development of a MRT system are required. Manila also shares similar problems. It is important for Manila to upgrade urban infrastructure such as its Light Rail Transport (LRT) system and highways in the city, including the access roads to Manila Port and Ninoy Aquino International Airport.

Because the BIMP+ sub-region is an archipelago, participation in regional production networks is difficult. However, several cities in BIMP+, such as Bander Sri Begawan, Semarang, Makassar, Pontianak, Kota Kinabalu, Davao, and Cebu, have the potential to join regional production networks (Tier 2). In order to realize this scenario, BIMP+ should significantly enhance connectivity within the sub-region and with other parts of the region. Particularly, large islands such as Kalimantan, Sulawesi, and Papua need to enhance road networks within the islands, as illustrated in Figure 6-3 as the Borneo Economic Corridor, and Indonesia Economic Development Corridors (IEDC) in Kalimantan and West Sulawesi. At the same time, the major cities (Tier 1

and 2) need to be connected, both among themselves and with other parts of the region, by efficient and reliable shipping routes. Therefore, it is highly important to improve port infrastructure as indicated in Figure 6-3. A recent study conducted by ASEAN revealedthat most of the 47 designated ports in ASEAN need to be expanded or improved. In order to establish a transport network consisting of road and sea (RO-RO) transport, a number of lessons can be learned from the Philippines' experience in establishing the Nautical Highway Network (ADB, 2010). However, as mentioned above, it requires a number of additional institutional arrangements to establish international RO-RO networks.

A large part of BIMP+ can be regarded as Tier 3. A coal railway between Palaci and Bangkuan in Figure 6-3 is an example of facilitating the development of a Tier 3 region. Central Kalimantan is rich in coal. The proposed coal railway is expected to make the coal mining there more productive. The eastern part of Indonesia is known for its potential for geothermal power generation. This is also a strategy to make the best use of location advantage.

Figure 6-3. Selected Prospective Projects in BIMP+ Sub-region