Chapter **6**

Maximisation of Economic Benefits and Industrial Development Strategies through the Vientiane–Hanoi Expressway: The Case of Thailand

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Chapter 6

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The Case of Thailand

Narong Pomlaktong

1. Introduction

Connectivity with industrial clusters is becoming more important for global value chains. At the manufacturing or firm level, the aim is to connect low-wage industrial regions with potential new markets. At the government level, the incentive is to boost economic growth and create wealth. Ultimately, the improvement in connectivity, especially in terms of roads and other logistics infrastructure, will benefit people in the surrounding areas (Isono, 2011).

In terms of connectivity, the railway project linking Vientiane to Vung Ang Economic Zones in Ha Tinh Province, Viet Nam, is expected to enable the Lao People's Democratic Republic (Lao PDR) to be more active in facilitating the transit of goods to and from Lao PDR.¹ In addition, road transport from Thailand to Viet Nam via the Third Mekong River Crossing Bridge (Nakhon Phanom–Khammouane) is central for the East–West Economic Corridor. The development project of the Vientiane–Hanoi Expressway (VHE) is expected to increase trade flows between Thailand, Lao PDR, and Viet Nam, and to result in more options for trans-shipment from Thailand to Viet Nam and China (Figure 6.1). This expressway project is also likely to help Lao PDR to become a regional freight hub, of which neighbouring countries will take full advantage.

¹ Lao PDR and Viet Nam signed an agreement on 14 September 2015 to build a railway to connect Vientiane and Vung Ang, and a highway to connect the two capitals. This railway infrastructure project is part of the strategic agreement on transport co-operation for 2016–2025, with a vision towards 2030. It is reported that Viet Nam will also create favourable conditions for Lao PDR to use Viet Nam's ports, especially Vung Ang Port (VietNamNet Online Newspaper, 2017).



Figure 6.1: Vientianei–Hanoi Expressway Development Project

km = kilometre. Source: Google Maps, modified by the author.

2. New Route Choice to Increase Thailand–Lao PDR–Viet Nam Trade Flow

Isono (2011) notes that having additional routes is considered a solution for tightening connectivity as well as narrowing the development gap between countries and regions. For firms, it is beneficial to have several alternative routes because they can avoid natural disasters such as floods at specific points or congestion caused by accidents. For people, alternative routes allow them to participate in the expanding production network in the Mekong region.

As shown in Figure 6.2, the 5th Mekong River Crossing Bridge Project – from Muang District, Bueng Kan Province in Thailand to Pak San District, Bolikhamsai Province in the Lao PDR – is a highway network development aimed at making connections with Thailand, the Lao PDR, and Viet Nam under the Greater Mekong Subregion (GMS) Economic Cooperation Programme. It also consolidates the development strategy of competition competency in the upper northeastern region of Thailand in terms of economy, trade, and foreign investment.

The Department of Highways (2014) focuses on three strategic areas which have a direct impact on project progress: (i) the area of the First Mekong Friendship Bridge (Nong Khai–Vientiane), (ii) the Third Mekong Friendship Bridge Area (Nakhon Panom–Khammouane), and (iii) the area near the tariff office at the Bueng Kan–Bolikhamsai border crossing.





Source: Department of Highways (2014).

The study applied the structure of Thailand's national transport model (NAM) and used NAM's information to analyse and forecast transport and travel demands in six study areas in five provinces of Thailand (Nong Khai, Bueng Kan, Nakhon Phanom, Sakon Nakhon, and Udon Thani) and four districts in the Lao PDR (Vientiane, Bolikhamsai, Chiang Kwang, and Khammouane), as shown in Figure 6.3.



Figure 6.3: Thailand–Lao PDR–Viet Nam Road Network

According to the Department of Highways (2014), the 5th Mekong Bridge is projected to attract a shift of 12.47% of travel and product transportation from the First Mekong Bridge (Nong Khai–Vientiane) and 18.2% from the Third Mekong Bridge (Nakhon Phanom–Khammouane). The 25-year forecast estimates that about 2,071,800 people per year (5,676 persons per day) and 313,694 cars per year (1,722 cars per day) will cross the 5th Mekong Bridge in 2039. The 5th Mekong River Crossing Bridge Project would result in large economic benefits in terms of greater net income from border trading, as well as indirect benefits such as cost saving from vehicles used and travel time, as shown in Table 6.1.

Lao PDR = Lao People's Democratic Republic. Source: Department of Highways (2014).

	Cost saving from	Cost saving from	
	vehicle used	travel time	Net income from border trading
Year	(🛱 million)	(₿ million)	(₿ million)
2020	0.5	32.3	358.7
2021	0.6	33.5	370.6
2022	0.7	34.8	382.8
2023	0.6	36.3	395.2
2024	0.5	37.8	407.8
2025	0.4	39.3	420.6
2026	0.2	40.8	433.6
2027	0.1	42.3	446.8
2028	0.2	43.6	460.3
2029	0.2	45.0	474.0
2030	0.2	46.3	487.9
2031	0.2	47.7	502.1
2032	0.3	49.0	516.5
2033	0.2	50.6	531.1
2034	0.2	52.2	546.0
2035	0.1	53.8	561.2
2036	0.1	55.3	576.6
2037	0.1	56.9	592.2
2038	0.1	58.7	608.2
2039	0.2	60.5	624.4

Table 6.1: Benefits of the 5th Mekong River Crossing Bridge Project

Source: Department of Highways (2014).

More concretely, border trade in the vicinity of Bueng Kan province will enjoy greater benefits when the bridge opens to Thailand, and at the same time, Lao PDR travellers will save both time and costs. It is anticipated that the value of exports and imports at the Nong Khai, Bueng Kan, and Nakhon Phanom customs are likely to grow thanks to the 5th Mekong Bridge that will greatly enhance the physical connectivity between the two countries (Figure 6.4). It should be noted that, in particular, Beung Kan has relatively few imports and exports because currently transport to and from Beng Kan is only by ferry.



Figure 6.4: Total Value of Imports and Exports (B million)

Source: Department of Foreign Trade (2017).

The import and export customs statistics show that Nong Khai and Bueng Kan have the most imports and exports of petroleum and electrical energy. Nakhon Phanom has the highest value of imports and exports of processors and microchips, and telephone sets and cellular networks. It may be speculated that the goods crossing Nong Khai and Bueng Kan are mostly consumed and produced in the Lao PDR. The products exported and imported at Nakhon Phanom are usually exported and imported from Viet Nam and China, as shown in Table 6.2.

However, when the 5th Mekong Bridge is open to traffic, the value of imports and exports is expected to increase. Cross-border goods will be diverted to the new infrastructure, as it can accommodate more import and export volumes, and trade will flow smoothly with more choice of routes.

	Nong Khai Customs		Bueng Kan Customs		Nakhon Phanom Customs		
	Exports	Imports	Exports	Imports	Exports	Imports	
1	Petroleum oils	Electrical energy	Petroleum oils	Electrical energy	Processor and microchips	Telephone sets and cellular petworks	
2	Cars and other vehicles	Insulated wire and cables	Water, mineral water, and carbonated water	Woods	Foods	Computers and electronic devices	
3	Trucks	Parts of footwear	Cars and other vehicles	Теа	Fresh fruit	Women's T- shirts and shirts	
4	Water, mineral water, and carbonated water	Water, mineral water, and carbonated water	Beauty or make-up products	Manioc (cassava)	Dried Iongan fruit	Gas tanks	
5	Motorcycles	Silicon metal	Cement	Chopsticks	Batteries	Printed circuit boards	
6	Telephone sets and cellular networks	Electrical transformers	Electrical transformers	Lac and natural gums	Electrical energy	Fashion bags	
7	Organic surface- active agents	Thermometers and pyrometers	Rice cookers and microwave ovens	Incense sticks	Petroleum and additives	Knitted or crocheted shirts for	
8	Pasta, spaghetti, and macaroni	Palm hearts (containing added sugar)	Monosodium glutamate (MSG)	Incense	Computer headsets	Clothing and accessories	
9	Products used in animal feed	Thermostats	Shampoos and conditioners	Stone	Gas tanks	Chiffon and wool	
10	Flat-rolled products of iron or non- alloy steel	Trucks	Glutinous rice	Bamboo sticks	Snacks	Knitted or crocheted shirts for men	

Table 0.2. Indiana STOP TO Exports and imports
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Source: Department of Foreign Trade (2017).

3. Thailand's Economic Impact Assessment

Logistics become increasingly important as the world economy develops. To keep up with the pace of development, countries must collaborate with their neighbours to improve the competitiveness of regional logistics. This section employs a computable general equilibrium (CGE) model to examine how such collaboration in the development of the VHE and the consolidation of 'Bangkok–Vientiane–Hanoi

industrial corridor' affect national economic growth and geographical distribution of income in Thailand.

As markets in real world economies are mutually interdependent, general equilibrium analyses provide important insights into the factors and mechanisms that determine relative prices and the allocation of resources within and between market economies. The CGE approach evaluates the physical and economic impacts of proposed expenditure plans in the near future by considering the direct and indirect benefits in other sectors of the economy. This is done by measuring the increased demand for goods and services used in other economic sectors (Gritsana and Sompote, 2017).

The impact cycle starts with an increase in investment as a source of production, the value added of goods and services, and real gross domestic product (GDP). The increase in the net current capital stock is the result of the growth in investment during the previous period. The decrease in the cost of production, driven by the increase in capital supply, is the source of the reduction in the cost of goods and services across the economy. Growth in real GDP is also stimulated by increases in exports, while the use of domestically produced goods and services become favourable as more import consumption is discouraged, as shown in Figure 6.5.



Figure 6.5: Growth Connection of the Economic System

GDP = gross domestic product. Source: Author's compilation. To assess the impact of regional collaboration on the development of cross-border transport infrastructure, this study sets three alternative scenarios:

Scenario 1: Eastern Economic Corridor (EEC)

Scenario 2: EEC + the 5th Mekong Bridge Project

Scenario 3: EEC + the 5th Mekong Bridge Project + Special Economic Zone (SEZ) (Kanchanaburi)

The rationale behind setting up these three scenarios is as follows:

- Infrastructure connectivity is a necessary condition for trans-boundary economic impacts. The Bangkok–Vientiane–Hanoi Expressway fulfils this condition.
- Impacts through improved trade and passenger flows cannot be realised unless the countries along the corridor harmonise rules and regulations to accommodate and enhance logistics requirements for both freight and passengers.

Therefore, it is essential that countries along this corridor pursue a collaborative industrial policy that leads to the strengthening of the corridor's value/supply chain. Figure 6.6 depicts the dimensions of international transport and logistics performance improvement: interconnectivity, interoperability, and market access.

Figure 6.6: Dimensions of International Transport and Logistics Development



ASEAN = Association of Southeast Asian Nations. Source: Author's compilation.

According to the General Agreement on Trade in Services (GATS), for a service to be produced or delivered effectively, proximity between the consumer and the supplier is often a necessary condition. Thus, in addition to the cross-border supply of services (mode 1), GATS covers service provision cases where consumers move outside their home territory (mode 2), suppliers move to the territory of consumers to provide their services by establishing a commercial presence abroad (mode 3), and services are provided through the presence of natural persons (mode 4). This study, based on Baldwin et al. (2002), demonstrates the interaction of these four modes in Figure 6.7. More generally, these four modes are grouped into two forces: dispersion and agglomeration forces.



Figure 6.7: Dispersion and Agglomeration Forces

Source: Baldwin et al. (2002).

Boxes 1 and 2, together with Figures 8 and 9, provide details of the EEC and SEZs. Figure 6.10 shows the linkages between the three scenarios mentioned above.

Box 1: The Eastern Economic Corridor Project

The Eastern Economic Corridor (EEC) Development Plan under the Thailand 4.0 scheme aims to revitalise and enhance the Eastern Seaboard Development Program, which supported Thailand as a powerhouse for industrial production for more than 30 years. The EEC development plan will lead significant development and transformation of Thailand's investment in physical and social infrastructure in three eastern provinces – Chachoengsao, Chonburi, and Rayong – as shown in Figure 6.8.

The EEC development plan has highlighted opportunities and investment trends in 10 key industries, which would improve Thailand's competitiveness. These 10 industries are divided into two categories: (i) first S-curve industries: next-generation automotive industry, intelligent electronics industry, advanced agriculture and biotechnology, the food processing industry, and high wealth and medical tourism industries; and (ii) new S-curve industries: digital industries, robotics, aviation and logistics, comprehensive healthcare, and biofuel and biochemical industries.

Statistics for the 2017 period show direct investments in the EEC region totalling 259 projects valued at B310.337 billion: Chonburi – 133 projects valued at B117.311 billion, Rayong – 93 projects valued at B162.751 billion, and Chachoengsao – 33 projects valued at B30.275 billion (EEC Office, 2018).

The EEC will connect Thailand with the Lao People's Democratic Republic (Lao PDR), China, and Cambodia through the infrastructure development of double-track railways. It focuses on the implementation of infrastructure development projects and seamless transport links. Large

infrastructure projects on the EEC development list include the Utapao airport expansion (B215 billion), the Map Ta Phut deep seaport expansion (B10 billion), the Laem Chabang deep seaport expansion (B35 billion), double-track railways (B64 billion), a high-speed train (B64 billion), and a motorway (B35 billion) (Lamonphet and Apornrath, 2017).



Box 2: The Special Economic Zones Project

Special Economic Zones (SEZs) have been established in 10 Thai provinces. The first phase was in Tak, Mukdahan, Sa Kaeo, Trat, and Songkhla. The second phase was in Nong Khai, Narathiwat, Chiang Rai, Nakhon Phanom, and Kanchanaburi, as shown in Figure 6.9.

The Kanchanaburi SEZ location will be a logistics hub and production base alongside Dawei SEZ in Thailand's Eastern Economic Corridor (EEC), where the Thai government will provide infrastructure such as Highway No. 367; a motorway (Bang Yai–Kanchanaburi) project; and customs, immigration, and quarantine. The target industries are automotive, electronic, agriculture and food, and plastics. Shipping is accessible via Dawei Seaport to Indian Ocean economies, the Middle East, and Europe; and via Laem Chabang Seaport to Asia-Pacific economies (Thailand Board of Investment, 2015). Dawei SEZ would also strengthen the supply chain linkage with Thailand's Eastern Economic Corridor, providing opportunities for co-manufacturing linkages and inducing economic activities along the corridor.

Figure 6.9: Thailand's Special Economic Zones



Source: National Economic and Social Development Board (2016).

Figure 6.10: Linkage of Dawei SEZ, Eastern Economic Corridor, and the5th Mekong River Crossing Bridge Project



SEZ = Special Economic Zone. Source: Google Maps, modified by the author.

The CGE projection of the impacts of Thailand's industrial development strategies finds important contributions to real GDP growth. Table 6.3 shows simulation results for the three scenarios. Given the size of the investment in the EEC for scenario 1, investing in various sectors as formulated in the national industrial development strategies will promote the economy of the Bangkok–Vientiane– Hanoi corridor. Investing in the EEC accumulates capital in the industrial sector. This is an important driving force of the country's economic growth, which is based on exports. On the other hand, Thailand's industrial production still depends on intermediate inputs being imported from abroad. Increased production in the export sector causes imports of intermediate inputs from abroad to increase. Meanwhile, demand for labour increases, stimulating employment and improving wages. The increase in domestic consumption also affects the country's nominal GDP, which increases by

0.19%. Despite the higher consumer price index (CPI), Thailand's economy will continue to grow in terms of real GDP.

Comparison of the three scenarios indicates that more investment leads to higher inflation. The price of intermediate input and labour also rises because of the increased demand.

Variable	Percentage change $(\Delta\%)$		
	Scenario 1	Scenario 2	Scenario 3
Consumer price index	0.031001	0.031395	0.031677
Labour demand	0.177153	0.180874	0.183796
Total value of exports	0.350214	0.354074	0.354261
Total value of imports	0.338177	0.341928	0.342383
Nominal GDP	0.190142	0.192873	0.194793
Real GDP	0.164418	0.166817	0.168404

Table 6.3: Economic Impact of Thailand's Industrial Development

GDP = gross domestic product.

Note: The computable general equilibrium model is consistent with the 2010 edition input–output table, released by the National Economic and Social Development Board (2010). Source: Author's calculation.

The geographical impact of industrial investment on gross provincial product (GPP) reflects the economic structure of each province. Investment in the projects of the EEC, SEZ in Kanchanaburi, and the 5th Mekong River Crossing Bridge will affect the GPP in accordance with the provincial production structure.

The provinces with the highest increase in GPP are Ayutthaya, Chachoengsao, Chonburi, and Lamphun, where many industrial estates are situated. This is particularly true for provinces where the majority production structure is in the automotive and electronics sectors, as shown in Scenario 1 of Figure 6.11. Scenario 2 develops the link between Thailand and the Lao PDR – the 5th Mekong Bridge Project – as it increases the efficiency of transport flow. International transport is expected to increase, so there is a chance of economic growth as a result of the higher trade volume. The geographical impact on income redistribution, measured by GPP, expands in many provinces because of the benefits of being the production base for suppliers' raw materials and goods for export to the Lao PDR at Bueng Kan border via the 5th Mekong Bridge. In Scenario 3, Thailand's industrial development strategies (the EEC and SEZ) and infrastructure development (double-track railways, motorway, and the 5th Mekong

Bridge) can expand the GPP of the areas along the economic corridor, resulting in increased economic growth. This is particularly true for the GPP of Bueng Kan province.



Figure 6.11: Geographical Economic Impacts of Thailand's Investment Plan

GDP = gross domestic product. Source: Author's compilation. Unlike the geographical simulation model, the CGE model used in this study is based on an inputoutput table of the Thai economy. Therefore, it is only applicable to Thailand. To reflect the rationale provided in Figures 6 and 7, this study explored the effect of collaborative industrial policies amongst the three connecting countries (Thailand, the Lao PDR, and Viet Nam) via external shocks on trade flow. Scenario 3 was used as the basis for showing the effect of trade flow increases of 10%, 20%, and 30%.

Table 6.4 depicts the trade flow cases based on collaborative industrial policies of Thailand, the Lao PDR, and Viet Nam. The main focus is on six major sectors: food processing and preserving, petroleum, chemical products, industrial machinery, electrical machinery and apparatus, and motor vehicles and repairs. The impacts of trade flow as well as industrial investment provide an important contribution to the growth of Thailand's economy, increasing real GDP. Trade flow increases of 10%, 20%, and 30% increase raise the real GPP by 0.181%, 0.183%, and 0.184% respectively. The GPP results are shown in Figure 6.12. The simulation analysis clearly shows positive impacts on the northeastern region of Thailand.

Variable	Percentage Change (△%)					
	Scenario 3 (EEC + the 5th Mekong Bridge + SEZ)	Scenario 3 + trade flow increased by 10%	Scenario 3 + trade flow increased by 20%	Scenario 3 + trade flow increased by 30%		
Consumer price index	0.031677	0.033970	0.034743	0.034998		
Labour demand	0.183796	0.196714	0.198842	0.200092		
Total value of exports	0.354261	0.391027	0.395085	0.398481		
Total value of imports	0.342383	0.377159	0.381085	0.384304		
Nominal GDP	0.194793	0.209241	0.211792	0.213205		
Real GDP	0.168404	0.181119	0.183024	0.184240		

Table 6.4: Thailand's Economic Impact on Increasing of Trade Flow (Thailand–Lao PDR)

EEC = Eastern Economic Corridor, GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, SEZ = Special Economic Zone.

Note: The computable general equilibrium model is consistent with the 2010 edition input–output table, released by the National Economic and Social Development Board (2010). Source: Author's calculation.



Figure 6.12: Geographical Economic Impacts of Industrial Investment and Trade Flow

GDP = gross domestic product. Source: Author's compilation.

According to scenario 3, industrial and infrastructure investment affects the productivity of each industry. The sectors that benefit are related to industrial investment in the EEC. Increasing productivity leads to economic growth and distribution to the corridor. In the case of industrial investment associated with the EEC in the Lao PDR and Viet Nam, it will also lead to more transshipment. However, whether the investment in the Lao PDR and Viet Nam increases or not is not clear from the model, as it is only possible to assume the trade flows.

The results are reported in a simulation of trade flow assumptions. Increases in trade flows of 10%, 20%, and 30% lead to increases in the total value of industry-specific sectors of 37.43%, 54.88%, and 64.81%, respectively, at Bueng Kan. This indicates that investment in the EEC, the 5th Mekong Bridge, and the SEZ (Kanchanaburi) – with increases in trade flow of 10%, 20%, and 30% – could increase net income from border trading to \$858.12 million, \$967.53 million, and \$1,029.64 million respectively in 2039, as shown in Table 6.5.

	Net income from border trading						
	(₿ million)						
	Base case Scenario 3 Scenario 3 + Scenario 3 +						
		(EEC + the 5th	trade flow	trade flow	trade flow		
		Mekong Bridge +	increased by	increased by	increased by		
Year		SEZ)	10%	20%	30%		
2020	358.7	358.9	492.9	555.8	591.4		
2021	370.6	370.8	509.4	574.3	611.2		
2022	382.8	383.0	526.1	593.2	631.3		
2023	395.2	395.4	543.1	612.3	651.7		
2024	407.8	408.0	560.4	631.9	672.4		
2025	420.6	420.8	578.0	651.7	693.5		
2026	433.6	433.8	595.9	671.9	715.0		
2027	446.8	447.1	614.1	692.4	736.8		
2028	460.3	460.5	632.6	713.2	759.0		
2029	474.0	474.2	651.4	734.4	781.6		
2030	487.9	488.2	670.5	756.0	804.6		
2031	502.1	502.3	690.0	778.0	827.9		
2032	516.5	516.8	709.8	800.3	851.7		
2033	531.1	531.4	729.9	823.0	875.8		
2034	546.0	546.3	750.4	846.1	900.4		
2035	561.2	561.8	771.2	869.6	925.4		
2036	576.6	576.9	792.4	893.4	950.8		
2037	592.2	592.6	813.9	917.7	976.6		
2038	608.2	608.5	835.9	942.4	1,002.9		
2039	624.4	624.7	858.1	967.5	1,029.6		

Table 6.5: Net Income from Border Trading with Increased Trade Flow Assumptions

Source: Author's estimates based on Department of Highways (2014).

The estimated direct benefit is derived from saving vehicle operating costs from traffic volume passing through the 1st Mekong Friendship Bridge (Nong Khai–Vientiane), the 3rd Mekong Friendship Bridge (Nakhon Phanom–Khammouane), and the 5th Mekong Friendship Bridge (Bueng Kan–Bolikhamsai) (Table 6.6 and Figure 6.13). This study assumes that traffic volumes have increased in line with economic growth and trade flows, and that all traffic used the VHE. The results show that the investment in the EEC, the 5th Mekong Bridge, and SEZ (Kanchanaburi) – with trade flow increases of 10%, 20%, and 30% – could save vehicle operating costs of $B_{9,225.26}$ million, $B_{10,063.92}$ million, and $B_{10,902.58}$ million respectively in 2039.

				• •	•	•		
Years	Traffic volume			Vehicle operating cost savings			ngs	
	(cars per year)			(B million per year)				
	1st	3rd	5th	Total	1st	3rd	5th	Total
	bridge	bridge	bridge		bridge	bridge	bridge	
Base cas	se					-		-
2024	637,310	105,761	98,721	841,792	2,125.2	244.2	265.9	2,635.3
2029	738,433	122,542	114,385	975,360	2,462.4	282.9	308.1	3,053.4
2034	856,018	142,056	132,600	1,130,674	2,854.5	328.0	357.1	3,539.6
2039	2,024,812	336,016	313,649	2,674,477	6,752.0	775.7	844.8	8,372.5
Scenario	o 3 (EEC + the	e 5th Mekor	ng Bridge + S	SEZ)				
2024	638,383	105,939	98,887	843,210	2,128.8	244.6	266.3	2,639.7
2029	739,677	122,748	114,578	977,003	2,466.6	283.4	308.6	3,058.5
2034	857,460	142,295	132,823	1,132,578	2,859.3	328.5	357.7	3,545.6
2039	2,028,222	336,582	314,177	2,678,981	6,763.4	777.0	846.2	8,386.6
Scenario	o 3 + trade fle	ow increase	d by 10%					
2024	702,222	116,533	108,776	927,531	2,341.7	269.0	293.0	2,903.7
2029	813,644	135,023	126,035	1,074,703	2,713.2	311.7	339.5	3,364.4
2034	943,206	156,525	146,106	1,245,836	3,145.2	361.4	393.5	3,900.1
2039	2,231,044	370,240	345,595	2,946,879	7,439.7	854.7	930.8	9,225.3
Scenario 3 + trade flow increased by 20%								
2024	766,060	127,127	118,665	1,011,852	2,554.5	293.5	319.6	3,167.6
2029	887,612	147,298	137,493	1,172,403	2,959.9	340.1	370.3	3,670.2
2034	1,028,951	170,754	159,388	1,359,094	3,431.2	394.2	429.3	4,254.7
2039	2,433,866	403,898	377,013	3,214,777	8,116.1	932.4	1,015.4	10,063.9
Scenario 3 + trade flow increased by 30%								
2024	829,898	137,721	128,553	1,096,172	2,767.4	317.9	346.2	3,431.6
2029	961,580	159,573	148,951	1,270,103	3,206.5	368.4	401.2	3,976.1
2034	1,114,697	184,984	172,670	1,472,352	3,717.1	427.1	465.1	4,609.2
2039	2,636,688	437,556	408,430	3,482,675	8,792.4	1,010.1	1,100.1	10,902.6

 Table 6.6: Traffic Volume and Vehicle Operating Cost Savings from

 Hanoi–Vientiane Expressway Development Project

Source: Author's estimates based on Department of Highways (2014).



Figure 6.13: Route and Distance of Road Network (Thailand–Lao PDR–Viet Nam)

km = kilometre, Lao PDR = Lao People's Democratic Republic. Source: Google Maps, modified by the author.

4. Conclusion

Thailand's industrial development strategies focus on direct investments in the EEC region valued at \$310.337 billion. These include investments of \$237.454 billion (77%) in the next-generation automotive segment, intelligent electronics, advanced agriculture and biotechnology, food processing, and high wealth and medical tourism. Other industries, valued at \$72.883 billion (23%), comprise the digital, robotics, aviation and logistics, comprehensive healthcare, biofuel, and biochemical industries.

Thailand can definitely maximise the benefits of the VHE development project with industrial development, which requires investment in the economic corridor. The industrial development strategies of Thailand (the EEC and SEZ) and infrastructure development (double-track railways, motorway, and the 5th Mekong Bridge) will enhance the expansion of GPP in the areas along the economic corridor, resulting in increased economic growth. It is anticipated that the volume of transborder traffic in Thailand and the Lao PDR will increase as a result of economic growth. Furthermore, the VHE project will increase transportation between Thailand, the Lao PDR, Viet Nam, and China, which support Thailand's EEC and SEZ.

Although the growth in traffic and trade flows is not obvious, the modelling results demonstrate better income redistribution in the border areas and provinces near the Lao PDR, which may have a spillover effect on neighbouring countries. The 5th Mekong River Crossing Bridge Project linking Thailand and the Lao PDR will also improve the efficiency of transport and hence trade flows. Cross-border transport is expected to increase in the case of advanced industrial development in the Lao PDR and Viet Nam, and the transport of goods related to the high-technology industry in the EEC is also likely to rise.

The economic impact on Thailand from the VHE development project will partly depend on industrial investment in the Lao PDR and Viet Nam, which are expected to benefit from the project. This would result in logistics redesign, and demand for imported and exported goods in Thailand would change accordingly. The simulation results regarding industrial investment and increases in trade flows indicate an important contribution to the growth of Thailand's economy. This will bring significant positive impacts, particularly to the northeastern region of Thailand.

Finally, the results of the analysis can be useful as supporting data for the government's decision making in prioritising, planning, and preparing transport and logistics development projects. The information is also useful for identifying the location of such development and prioritising the issues and areas to be addressed subsequently, so that grants are allocated to the most advantage and benefit to Thailand.

Policy advocacy must be considered to cope with potential changes in investment and achieve crossborder transport links as follows:

Government policies and investment projects. The economic impact assessment indicates that government investment in the projects is not always sufficient to generate a strongly positive outcome for every region of the Thai economy. According to the simulation results, in particular, development of the economic corridor with increased trade flow can reduce the inequality of the geographical distribution, especially along the corridor.

Modal shift and logistics management. The Government of Thailand has positioned effective logistics management as a key priority of its agenda to promote national competitiveness. Hence, logistics infrastructure, including the transportation network and its related services, needs to be developed urgently. This will require a modal shift strategy – a concept recognised by many developed and developing countries – to help reduce costs and provide service advantages. In light of rising oil prices, a country that is heavily dependent on road transportation of passengers and goods, like Thailand, should make an effort to reduce logistics costs to enhance its competitiveness. Rebalancing modes of

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transport by shifting some traffic from roads with higher energy consumption to other less energyintensive modes, such as railway and water transportation (inland water and coastal shipping), is also a good strategy to improve the competitiveness, apart from the development, of the economic corridor.

REFERENCES

- Baldwin, R., R. Forslid, P. Martin, G. Ottaviano, and F. Robert-Nicoud (2002), 'The Core-Periphery Model: Key Features and Effects', in S. Brakman and B.J. Heijdra (eds.) *The Monopolistic Competition Revolution in Retrospect*. Cambridge: Cambridge University Press, pp. 213–35. <u>http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.454.1287&rep=rep1&type=pdf</u> (accessed 19 February 2019).
- Department of Foreign Trade, Thailand (2017), 'Border Trade Statistics and Cross-Border Trade in Thailand' (unpublished statistics).
- Department of Highways, Thailand (2014), 'Feasibility Study of Economic Engineering and Environmental Impact Assessment and Detailed Design for the 5th Mekong River Crossing Bridge Project (Bueng Kan–Pak Xan)' (unpublished paper).
- EECOffice(2018),'InvestmentStatistics'.Bangkok:EECOffice.https://www.eeco.or.th/en/content/investment-statistics (accessed 19 February 2019).
- Gritsana, P. and K. Sompote (2017), 'The Economic and Environmental Assessment of Thailand's Rail Transport Investment', *NIDA Development Journal*, 57(2), pp.239–70.
- Isono, I. (2011), 'Possible Alternative Routes for Further Connectivity in the Mekong Region', in M.
 Ishida (ed.) *Intra- and Inter-City Connectivity in the Mekong Region*, BRC Research Report, No.
 Bangkok: Bangkok Research Center, IDE-JETRO, pp.377–407.
- Lamonphet, A. and P. Apornrath (2017), 'Who wants in on the EEC?', *Bangkok Post*, 9 October. <u>https://www.bangkokpost.com/news/politics/1339203/who-want</u> (accessed 19 February 2019).
- Ministry of Commerce of the Republic of the Union of Myanmar, (2017), 'Dawei Special EconomicZone'.Yangon:RoyalThaiEmbassy.http://www.thaibizmyanmar.com/docs/Dawei%20SEZ.pdf (accessed 19 February 2019).
- National Economic and Social Development Board (2010), Input–Output Tables 2010, Bangkok: Office of the National Economic and Social Development Council. <u>https://www.nesdb.go.th/nesdb_en/more_news.php?cid=158&filename=index</u> (accessed 14 March 2019).
- National Economic and Social Development Board (2016), *Thailand's Special Economic Zones*. Bangkok: Office of the National Economic and Social Development Council. <u>http://www.nesdb.go.th/ewt_dl_link.php?nid=5194</u> (accessed 19 February 2019).
- Thailand Board of Investment (2015), 'A Guide to Investment in the Special Economic Development Zones'. Bangkok: Thailand Board of Investment. <u>https://www.boi.go.th/upload/content/BOIbook%202015_20150818_95385.pdf</u> (accessed 19 February 2019).

- Thailand Development Research Institute (2011), 'Sharing the Benefits from Transportation Linkages
and Logistics Improvements in the GMS: A Study of the East-West and North-South Corridor',
final technical report submitted to the International Development Research Centre, 15 April
2011. https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/46334/132833.pdf
(accessed 19 February 2019).
- VietNamNet Online Newspaper (2017), 'Hanoi-Vientiane Highway to be Built', *VietNamNet*, 9 March. <u>https://english.vietnamnet.vn/fms/society/174147/hanoi-vientiane-highway-to-be-built.html</u> (accessed 19 February 2019).