

Chapter 7

Economic Impact of New Sub-corridor Development in the Mekong Region

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The recent economic impact of the sub-corridor development (i.e., in Cambodia, Lao PDR, Myanmar, and Viet Nam) in the Mekong Region is examined by utilising the Geographical Simulation Model. There are three main findings. First, the sub-corridor development can contribute towards narrowing development gaps within a country as well as in the Mekong region. Second, road development mainly contributes to the service industry, unless the communities along the road originally have a manufacturing base. Third, road infrastructure, together with industrial estate development, will have a greater economic impact on both the manufacturing and service sectors. Results strongly suggest that road development should be accompanied by industrial development measures.

Introduction

The official establishment of the ASEAN Economic Community (AEC) was, undoubtedly, one of the major milestones of the Association of Southeast Asian Nations (ASEAN). Trade volumes and foreign direct investment in and between ASEAN countries as well as in the neighbouring countries significantly increased. The income level of each ASEAN member state also climbed steadily. Furthermore, the latecomers to the ASEAN – i.e., Cambodia, Lao PDR, Myanmar, and Viet Nam – enjoyed higher growth rates than the rest of the member states.

However, many ASEAN member states have to contend with development gaps domestically. Most foreign direct investments are made in the largest and often more economically advanced cities and their surrounding areas. People and households are moving from rural areas to large cities, and many farmers in rural areas continue to have relatively lower incomes. A simulation analysis done by the Institute of Developing Economies-Geographical Simulation Model (IDE-GSM) shows that a free trade agreement (FTA) or free trade area may further

widen development gaps because firms located near or in the largest economic cities benefit more from the development than do firms located in remote areas.

The development of new economic corridors can be one of the solutions to narrow the development gaps. Economic corridors can create opportunities for people in rural areas to start new businesses as well as to purchase goods from the central areas at cheaper prices.

This study examines the economic impacts of the new sub-corridor development in the Mekong Region by utilising the IDE-GSM. Specifically, five new economic sub-corridors have been selected for the analysis:

- Northern sub-corridor in Cambodia
- National Highway No. 13N (North) in Lao PDR
- Lao PDR section of North-South Economic Corridor and Lao–Myanmar Friendship Bridge
- National Highway No. 3 in Myanmar
- Noi Bai–Lao Cai Expressway

Amongst these corridors, the National Highway No. 13N (North) in Lao PDR and the National Highway No. 3 in Myanmar are designated as priority projects in the Master Plan on ASEAN Connectivity (ASEAN 2011), which aims to upgrade ‘below Class III’ roads within ASEAN’s designated Transit Transport Routes.

These five sub-corridors have different road specifications and stages of development. The Noi Bai–Lao Cai Expressway is the only highway with four lanes (the others are two-lane highways). As of early 2016, National Highway No. 13N (North) in Lao PDR and the National Highway No. 3 in Myanmar have not been completely improved, while a part of the access road to the Lao–Myanmar Friendship Bridge has not been paved. Meanwhile, there are bridges with weight limits of 25 tons only in the northern sub-corridor in Cambodia. Other than the Noi Bai–Lao Cai Expressway, all these projects should be completed by 2020 and are included in the simulation analysis by ERIA (2015). However, in this latest simulation analysis, it is assumed that all these infrastructure improvements have been completed and are therefore included in the impact analysis on the region.

The main objective of the simulation analysis is two-fold: (i) to analyse the potential role of a new economic corridor and sub-corridor development in the more integrated ASEAN and Mekong region and to detail how the improvements contribute towards narrowing the development gaps; and (ii) to explain how policymakers should view development corridors when drafting regional development policies.

There are three main findings. First, road development and improved border crossings can help develop the areas traversed by the roads, but they do not significantly improve the whole country. Second, road development mainly contributes towards the service industry, unless the region already has an existing manufacturing base and linkages to existing industrial clusters. This implies that road development, in itself, is not enough to enable the regions to expand their manufacturing activities if they do not yet have at least a fledgling manufacturing sector to speak of. Third, road infrastructure, when combined with industrial estate development, will have greater economic impact on both the manufacturing and service sectors.

Section 2 of this chapter briefly introduces the setting of the IDE-GSM system. Section 3 summarises the scenarios and simulation results. Section 4 outlines the conclusions and policy recommendations.

1. The Setting of Simulations

Table 7.1 summarises the features of IDE-GSM 2015.¹ The model includes China, India, and other economies in East and South Asia such as Japan, the Republic of Korea, Sri Lanka, Bhutan, and Nepal. In addition, the model covers 65 other countries, which represent the rest of the world.

Subnational data are used for Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Japan, Korea, Lao PDR, Malaysia, Nepal, the Philippines, Sri Lanka, Taiwan, Thailand, and Viet Nam. Brunei Darussalam, Hong Kong, Macao, and Singapore are treated as one unit. Country data are used for the other 65 countries, where the capital city represents their respective countries. Border costs, and tariff and non-tariff barriers are collected and estimated separately and incorporated into the latest version of the model.

¹ See Kumagai et al. (2013) for the details of the model.

Table 7.1. IDE-GSM 2015

	IDE-GSM 2015
Version of IDE -GSM	9.0
Number of economies in East and South Asia	21
Number of regions	1,818
Number of nodes	5,833
Number of routes	10,906
Number of transport modes	Road, Sea, Air and Rail
Number of industries	7
Intermediate goods	Yes
Non-tariff barriers	Yes
Rest of the World	65 economies
Tariff data	Yes
SEZ/disaster analysis	Yes
Congestion	Yes

SEZ = Special Economic Zone
Source: Author.

The current version of the IDE-GSM also incorporates changes in its productivity parameters, which describe Special Economic Zone (SEZ), as well as congestion at the borders, ports, and airports that are endogenously calculated in the model.

2. Scenarios and Results

In the alternative development scenarios, impact is shown as *Impact Density*. That is, the impact (in US dollars) is divided by area and the percentages are compared with the gross domestic product (GDP) or regional GDP in the baseline scenario for 2030.

2.1 Baseline Scenario

In the baseline scenario, the following assumptions are made to describe the changes between 2010 and 2015:

- Expressway development between Yangon and Mandalay, road improvement between Mandalay and Tamu, and port expansion in Yangon by 2015
- Double track rails in Northern Malaysia by 2015
- The Tsubasa Bridge at Neak Loeung in Cambodia by 2015
- Population of each country increases according to the forecast of the United Nations Population Division
- Technological progress in each country is calibrated to replicate the average GDP growth rate during the 2010–2020 period, as forecast by the World Economic Outlook, International Monetary Fund
- Tariff rates decrease, as scheduled in the ASEAN Trade in Goods Agreement and the five ASEAN+1 FTAs.

Any improvement pertaining to the economic corridor development outlined in this study, such as a fourth Thai–Lao Friendship Bridge, are excluded.

2.2 Alternative Development Scenarios

This study has five alternative scenarios aside from the baseline scenario. Each scenario has a combination of different types of improvement. Road development and improvements provide a new road section or reduce the time at specific road sections. Border facilitation reduces the time and cost at a specific border crossing. Industrial estate development raises the productivity parameter of the selected industry in the specific regions of the model.

How do the GDPs/Gross Regional Domestic Products (GRDPs) change in the model when an economic corridor is developed? First, reduced times can lower the costs for firms shipping their products to customers, leading to lower transport costs. Specifically, the cheaper transport costs make it possible for firms either located in regions with better infrastructure or

near road corridors to sell their products or services at lower prices. Consumers in the regions will also benefit, as they will be able to buy goods and services at lower prices. At the same time, firms in the manufacturing sector will be able to purchase parts and components at lower prices, thus incurring lower cost of production. This may even increase the sales and revenues of firms by precipitating more sales in the market.

Increased sales and revenues can lead to higher profits, more employment, and higher salaries for employees. Together with lower prices for products, higher salaries allow workers to demand for more goods and services. This, in turn, will attract and encourage workers from other regions to move into the associated regions. Such influx of workers will further increase the sales and profits of firms and the salaries and consumption of workers, thereby generating a ripple effect that attracts even more workers. In the end, these direct and indirect effects could raise the regional GDPs.

On the other hand, there are benefits as well as drawbacks for the other regions situated far from the improved infrastructure. First, firms in remote areas can seize the opportunity to utilise the better infrastructure and sell more products and services, although most consumers are located far from the firms and the potential sales increases are small. Second, firms and consumers in remote regions may also benefit by being able to purchase products and services from the improved regions at lower prices. However, some firms may face fierce price competition with counterparts in the improved regions, which may then lead to fewer customers for the former. In addition, some workers may eventually migrate out of the remote regions. Therefore, an improvement in the infrastructure may lead to a negative impact on remote provinces.

2.3 Northern Sub-corridor in Cambodia

The northern sub-corridor in Cambodia runs between Siem Reap, Cambodia, and Quinhon, Viet Nam. Specifically, the following development scenarios are assumed in the analysis:

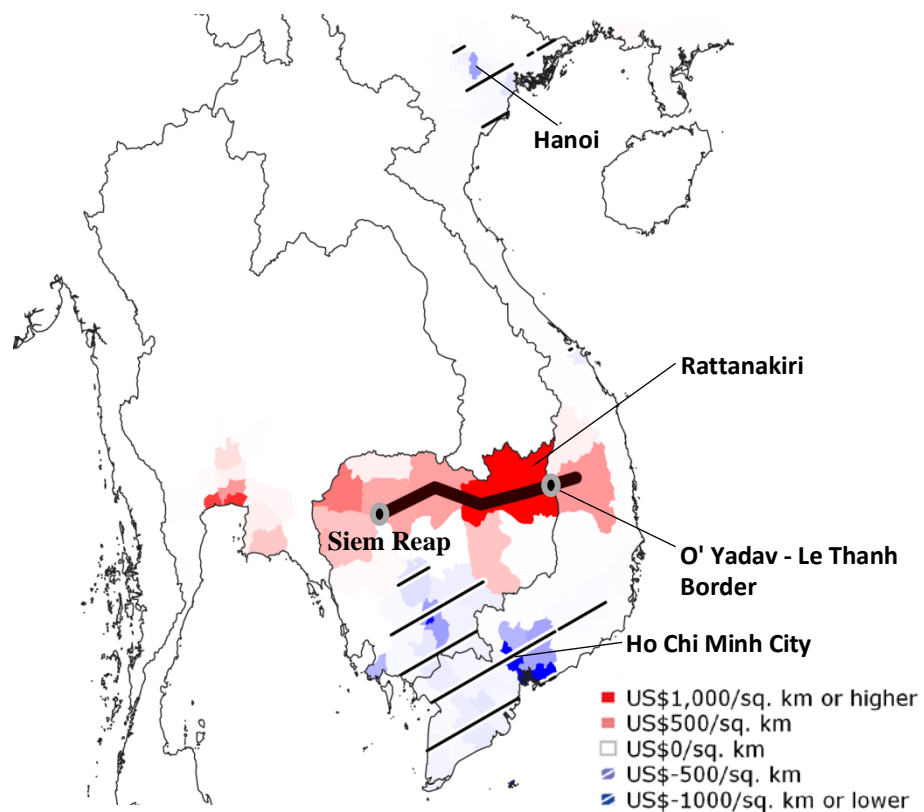
- A road between Siem Reap and Stung Treng is being improved so that trucks can travel this section at a speed of 38.5 km/h. This includes the construction of a bridge crossing the Mekong River near Stung Treng;

- A road between Stung Treng and Banlung is being improved so that trucks can travel this section at a speed of 38.5 km/h;
- Time and cost at the O' Yadav–Le Thanh border are halved.

Figure 7.1 shows the economic impact of the northern sub-corridor in Cambodia on the region in 2030. Regions marked in red will experience a positive impact compared with the baseline scenario, and areas in blue or with a hatched design will experience a negative impact.

Figure 7.1. Economic Impact of the Northern Sub-corridor in Cambodia

(Impact Density, 2030)



Source: Institute of Developing Economies-Geographical Simulation Model result.

Results show that improvements on roads and border crossings will benefit the provinces along the corridor. That is, Rattanakiri and Stung Treng will respectively experience a positive 10.07% and 8.45% economic impact. These results are consistent with the findings in the study of Ishida and Isono (2012). Preah Vihear will have a relatively smaller impact at 2.31%, while that

of Siem Reap will be even smaller at 0.23%. Meanwhile, Gia Lai will experience a positive impact of only 0.16%.

On the other hand, the central and southern parts of Cambodia, the southern part of Viet Nam, and the regions near Hanoi will experience negative impacts. These results imply that the development of this particular sub-corridor mainly benefits the provinces along the corridor and negatively affects the other areas. In the baseline scenario, more workers move from the provinces along the corridor to the big cities, such as Phnom Penh, Ho Chi Minh City, Hanoi, and their surrounding provinces. In the presence of better infrastructure in the sub-corridor, fewer workers will move from the provinces to the big cities, leading to a positive impact for the provinces along the corridor and negative impact for other regions.

Table 7.2 shows the components of the positive impact by industry for Rattanakiri and Stung Treng. These two provinces will experience a large positive effect, mostly on the service sector. Considering that these provinces have a small manufacturing base and that the corridor does not connect these provinces with any big cities, there will be a relatively smaller impact on the agriculture and manufacturing sectors.

Table 7.2. Economic Impact of the Northern Sub-corridor in Cambodia by Economic Sector (Selected Areas)

	Agriculture	Manufacturing	Services	All
Rattanakiri	5.2%	1.7%	93.2%	100.0%
Stung Treng	3.7%	3.6%	92.7%	100.0%

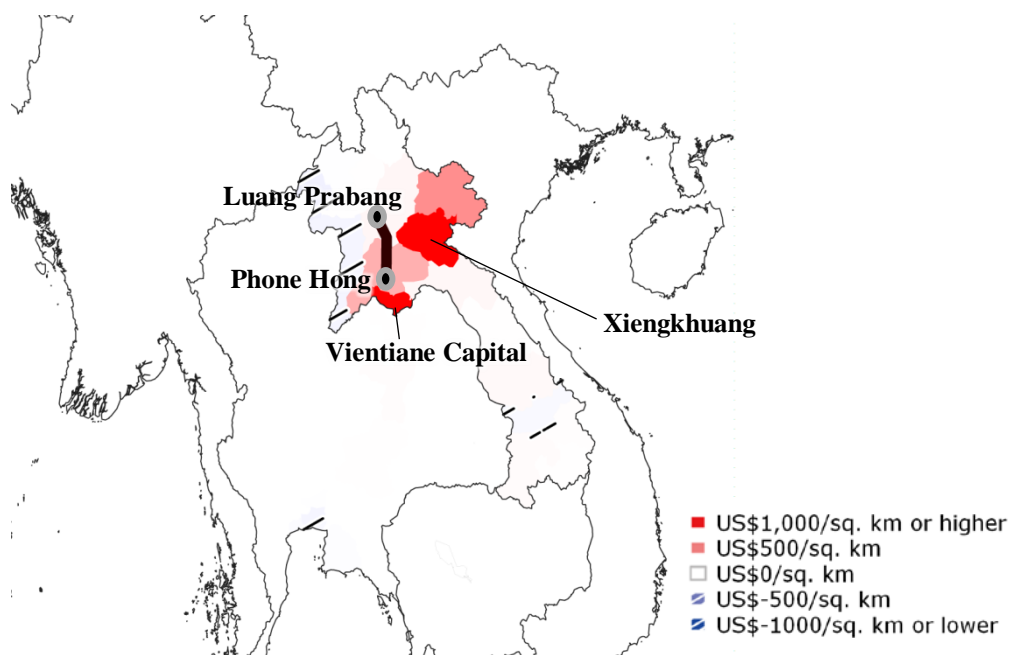
Source: Institute of Developing Economies-Geographical Simulation Model result.

2.4. National Highway No. 13N (North) in Lao PDR

The scenario for National Highway No. 13N (North) in Lao PDR covers the section between Phone Hong and Luang Prabang. In particular, the development scenario assumes an improvement on the road section between Phone Hong and Luang Prabang so that trucks can travel at a speed of 38.5 km/h.

Figure 7.2 shows the economic impact. Xiengkhuang, Houaphan, Vientiane, and Vientiane Capital will experience relatively large positive effects. Xiengkhuang, for example, will experience a positive impact of 7.12%. On the other hand, there will be a negative impact on Bokeo, Sayaboury, Salavan, and Luang Namtha. For example, Bokeo and Sayaboury will experience a negative impact of 0.06%. The economic impact on Luang Prabang is relatively positive but small.

Figure 7.2. Economic Impact of National Highway No. 13N (North) in Lao PDR
(Impact Density, 2030)



Source: Institute of Developing Economies-Geographical Simulation Model result.

Table 7.3 shows the impact by economic sector. The main findings indicate that Xiengkhuang will only experience a positive impact in its service sector. Likewise, both Vientiane and Vientiane Capital will also receive a positive impact on their service sector. Such results indicate that the improvement of the corridor cannot help Lao PDR develop its manufacturing sector if there are no industrial development measures or SEZs in the area.

**Table 7.3. Economic Impact of National Highway No. 13N (North) by Economic Sector
(Selected Areas)**

	Agriculture	Manufacturing	Service	All
Xiengkhuang	2.6%	0.9%	96.5%	100.0%
Vientiane	-0.5%	0.2%	100.3%	100.0%
Vientiane Capital	-5.1%	-8.3%	113.5%	100.0%

Source: Institute of Developing Economies-Geographical Simulation Model result.

2.5. Lao PDR Section of the North–South Economic Corridor and the Lao–Myanmar Friendship Bridge

In the case of the Lao PDR section of the North-South Economic Corridor and the Lao–Myanmar Friendship Bridge, the scenario in the analysis assumes an improvement in the road section of the North-South Economic Corridor in Lao PDR, a new bridge across the Mekong River, and a new access road between Luang Namtha, Lao PDR and Mong Lin, Myanmar via the new bridge. In particular, the scenario involves:

- Improvement on the road between Houayxay and Boten so that trucks can travel this section at a speed of 38.5 km/h.
- Facilitation of cross-border transit between Boten, Lao PDR and Mohan, China; and between Houayxay, Lao PDR and Chiang Khong, Thailand.
- Construction of a new road that will allow an average travel speed of 38.5 km/h between Luang Namtha and Mong Lin. It includes the construction of a bridge across the Mekong River near Xiengkok.

The simulation reveals similar effects on the provinces along the corridor, even positively affecting Thailand and China. The economic impact (by province) is shown in Figure 7.3. Bokeo, Luang Namtha, Sayaboury, Oudomxay, and Phongsaly will experience a large and positive impact at 8.44%, 1.38%, and 0.81%, respectively.

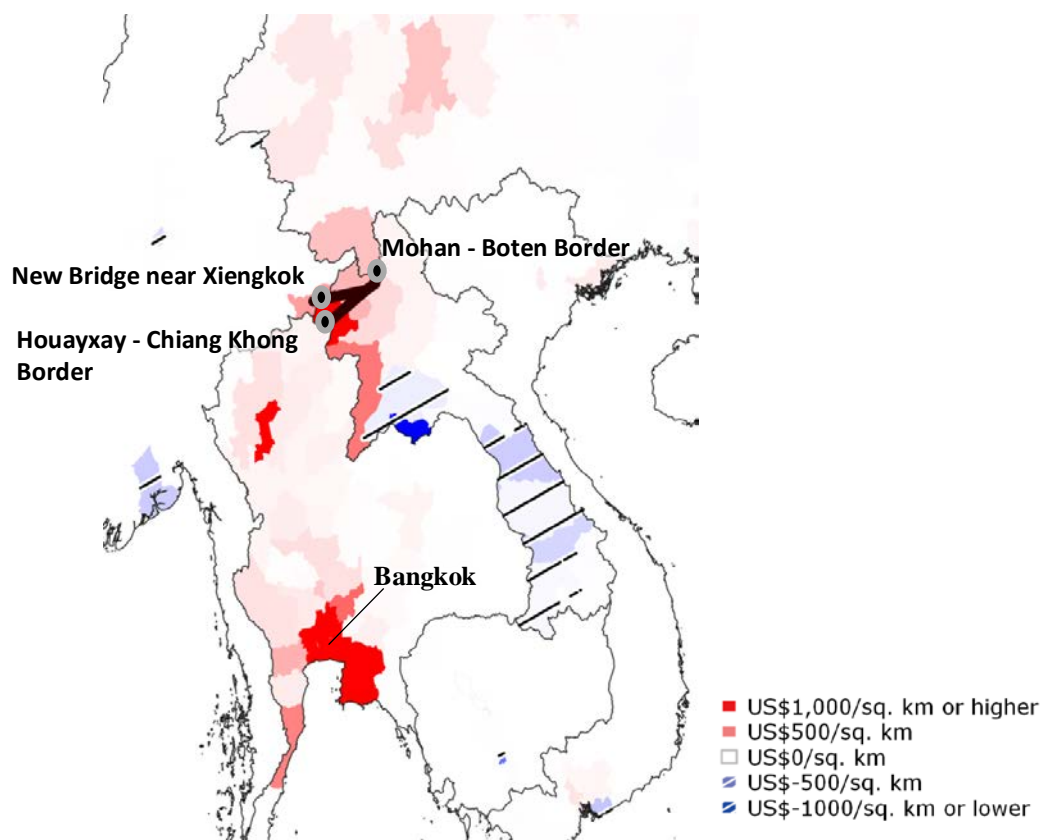
On the other hand, Vientiane Capital, Vientiane province, and the southern part of Lao PDR will be negatively affected, with Khammouane receiving the largest negative impact at 0.14%.

The positive economic impact on Tachileik, Myanmar will be 0.07%. However, the effect on the whole of Myanmar will be minimal because the negative effect on the Yangon area will offset the positive impact on Tachileik.

Figure 7.3 shows that Xishuangbanna and other regions in Yunnan Province, China, as well as Lamphun, Bangkok, and the surrounding regions of Bangkok will be positively affected by the scenario; that is, China and Thailand will benefit from the improvement of the North–South Economic Corridor in Lao PDR.

Figure 7.3. Economic Impact of the Lao PDR Section of the North–South Economic Corridor and the Lao–Myanmar Friendship Bridge

(Impact Density, 2030)

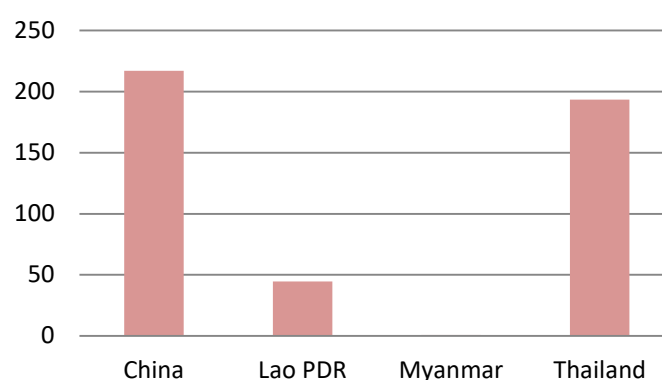


Source: Institute of Developing Economies-Geographical Simulation Model result.

The positive impact on China and Thailand will, in fact, be larger than that on Lao PDR or Myanmar in terms of absolute values (Figure 7.4). The main beneficiaries of the corridor development will be China and Thailand, although the economic impact they will receive in terms of percentages is small. This implies that the North–South Economic Corridor can stimulate the transit trade between China and Thailand via Lao PDR.

Figure 7.4. Economic Impact on Four Countries

(in US\$ million: constant 2010 prices)



Source: Institute of Developing Economies-Geographical Simulation Model result.

2.6. National Highway No. 3 in Myanmar

The improvement of National Highway No. 3 in Myanmar has been a much-awaited project because it is an important connector between Thailand and the major cities in Myanmar, but has long been in poor condition. In mid-August 2015, a new bypass between Myawaddy and Kawkareik was opened, which is expected to facilitate land transport between Thailand and Myanmar.

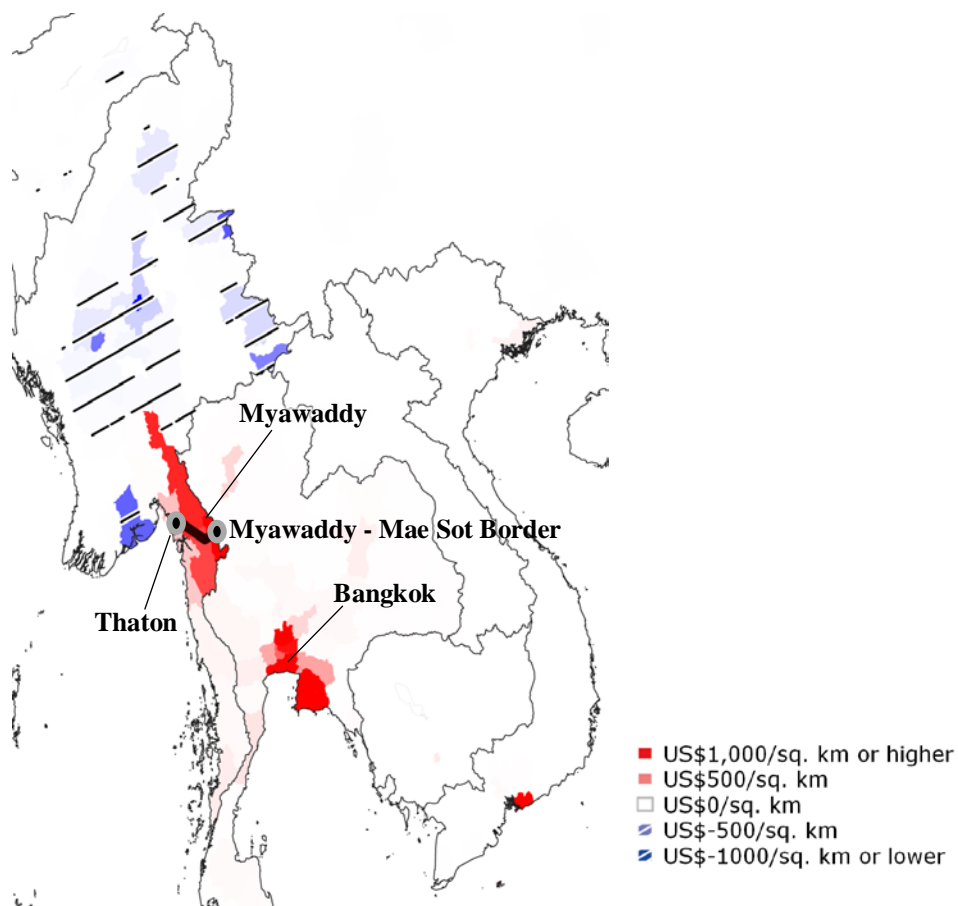
In this chapter's simulation analysis, the scenario also includes unfinished projects such as a new bridge between Myawaddy, Myanmar and Mae Sot, Thailand; and a road improvement between Kawkareik and Thaton, to assess the overall potential impact on the region. In particular, the scenario assumes:

- Improvement of a road between Myawaddy and Thaton so that trucks can travel this section at a speed of 38.5 km/h;
- Facilitation of cross-border transit between Myawaddy, Myanmar and Mae Sot, Thailand. This includes the construction of a new bridge between Myawaddy and Mae Sot.

The economic impact of National Highway No. 3 in Myanmar is shown in Figure 5. The national highway is estimated to positively impact Myawaddy by 25.03%. It will also have a positive effect on Kawkareik, Hpa-An, and Thaton.

Figure 7.5. Economic Impact of National Highway No. 3 in Myanmar

(Impact Density, 2030)



Source: Institute of Developing Economies-Geographical Simulation Model result.

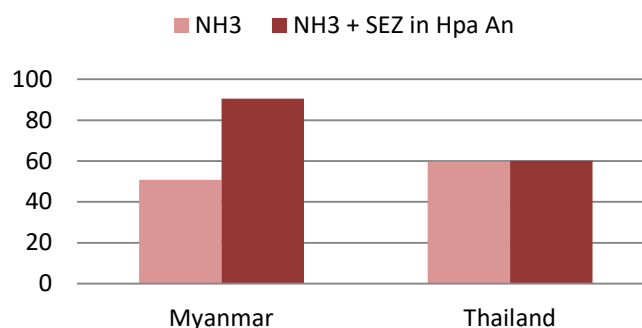
While the Tak province in Thailand, which shares a border with Myawaddy, is expected to receive a relatively small impact of 0.01%, the effect on Bangkok and its surrounding regions will be larger in terms of absolute value. The infrastructure improvements will also bring some positive effects on Ba Ria-Vung Tau, Viet Nam. This implies that an improvement of this section of the highway may benefit the economic activities along the southern economic corridor that connects Bangkok to southern Viet Nam.

Major cities in Myanmar such as Mandalay, Kyaing Tong, Tachileik, Pyin Oo Lwin, and Yangon will experience negative effects under this scenario because the economic activities are expected to move away from these cities and towards the regions traversed by National Highway No. 3. The positive impact on Myawaddy, Kawkareik, Hpa-An, and Thaton will be offset by the negative impact on the other regions of Myanmar.

In sum, the overall economic impact on Myanmar will be smaller than that on Thailand (Figure 7.6). Such results thus justify Thailand's support for this bypass project.

In addition, the positive impact on Hpa-An, Kawkareik, and Myawaddy are mainly on the service sector. In fact, 84.0% of the positive impact on Myawaddy is in the service sector. Recognising these issues, the simulation study set an additional scenario wherein Myanmar is assumed to establish a Hpa-An SEZ, which then increases the technological parameter of the manufacturing sector in Hpa-An by 10%, in addition to the improvement of National Highway No. 3 (the original scenario).

Figure 7.6. Economic Impact on Myanmar and Thailand
(in US\$ million, constant 2010 prices)



SEZ = Special economic zone.

Source: Institute of Developing Economies-Geographical Simulation Model result.

As shown in Figure 7.6, the economic impact of this revised scenario on Myanmar is 1.7 times higher than that of the original National Highway No. 3 scenario. Moreover, the contribution of the manufacturing sector to the overall economic impact on Hpa-An increases from 12.7% (under the original National Highway No. 3 scenario) to 73.1% (under the National Highway No. 3 + SEZ scenario). The result suggests that the development of an SEZ, in addition to road improvement, can enhance the industrial development of the region.

2.7 Noi Bai–Lao Cai Expressway

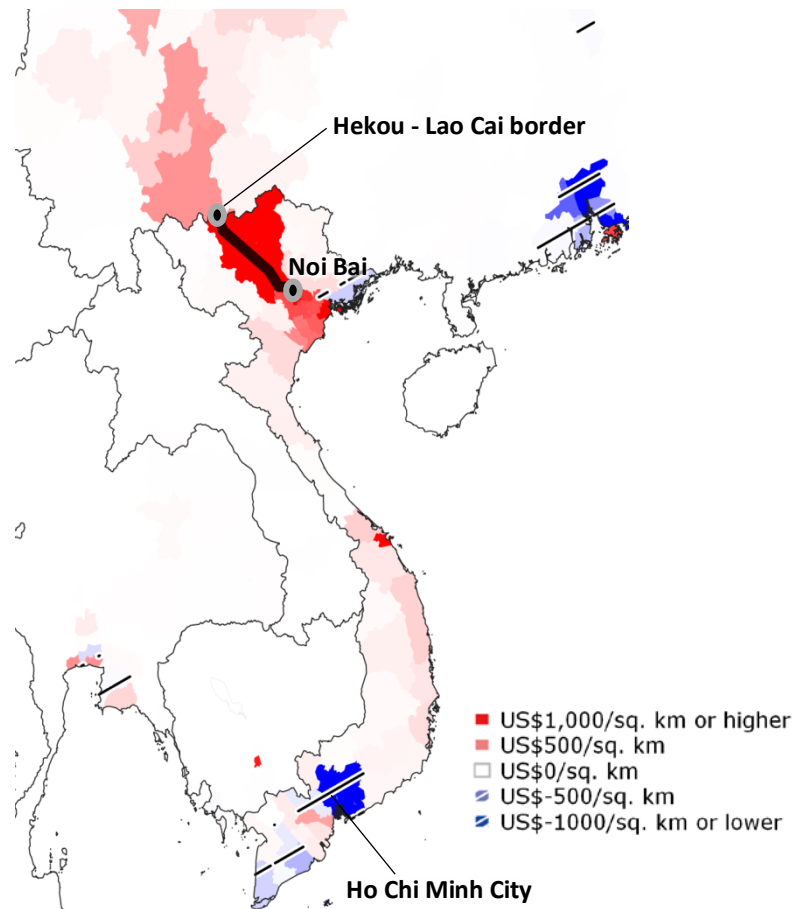
For the Noi Bai–Lao Cai Expressway, the scenario consists of the following:

- Improvement on the road between Noi Bai and Lao Cai (both in Viet Nam) so that trucks can travel this section at a speed of 60 km/h;
- Facilitation of border traffic between Lao Cai, Viet Nam; and Hekou, China.

Figure 7.7 shows the economic impact of the expressway's construction. In absolute value, Vinh Phuc, Phu Tho, and Lao Cai are the top three recipients of the positive impact from this scenario. Hanoi, Hai Duong, and the Hai Phong industrial belt area and the regions in Yunnan Province, China will also be positively affected by the developments. In contrast, the developments will negatively impact the southern part of Viet Nam – in particular, Ba Ria-Vung Tau, Dong Nai, and Ho Chi Minh City. In fact, the overall positive impact on China is 32.1% larger than that on Viet Nam because the negative effect on the southern part of Viet Nam reduces the overall positive impact on the nation.

Figure 7.7. Economic Impact of the Noi Bai–Lao Cai Expressway

(Impact Density, 2030)



Source: Institute of Developing Economies-Geographical Simulation Model result.

Table 7.4 lists the impact of the Noi Bai–Lao Cai Expressway on selected cities by economic sector. The importance of the manufacturing sector in Phu Tho (27.8%) is relatively higher than that in the other scenarios (Refer to Tables 2 and 3). This implies that Phu Tho has a manufacturing base, and the expressway can benefit Phu Tho province's industrial development. The significance of the manufacturing sector in the two Vietnamese areas Lao Cai and Yen Bai, are lower than that of Phu Tho, but still higher than that in the other scenarios in this study.

Table 7.4. Economic Impact of the Noi Bai–Lao Cai Expressway by Economic Sector (Selected Cities)

	Agriculture	Manufacturing	Service	All
Lao Cai	0.1%	13.2%	86.7%	100.0%
Phu Tho	0.4%	27.8%	71.9%	100.0%
Yen Bai	0.3%	17.2%	82.5%	100.0%

Source: Institute of Developing Economies-Geographical Simulation Model result.

3. Conclusions and Policy Implications

The simulation analyses on the five sub-corridor projects show different policy implications:

First, a sub-corridor development can help narrow the development gaps in a country as well as in the Mekong region. All scenarios indicate that the regions where there is an improved infrastructure will experience positive effect. These developments will also prevent the excessive influx of workers as well as mitigate traffic congestion in the largest economic cities. Based on simulation results, one cannot make a definitive conclusion that the road development in the Lao PDR section of the North–South Economic Corridor will not have any impact on Lao PDR (particularly the northern area of Lao PDR) at all just because its road will be used only for the transit trade between China and Thailand.

Second, any road improvement may not contribute much to the industrial development if the region does not have any existing industrial base. The scenario for the Noi Bai–Lao Cai Expressway shows that the expressway's construction can positively contribute to industrial development. On the other hand, results under the other scenarios in this study show that there is almost no positive impact on the manufacturing sector. An additional scenario regarding National Highway No. 3 suggests that the development of an SEZ, in addition to road development or improvement, can be a solution that will stimulate manufacturing activities in the region.

Third, a significantly positive impact on neighbouring countries is seen in the following projects: the Lao PDR section of the North–South Economic Corridor, the National Highway No. 3 in Myanmar, and the Noi Bai–Lao Cai Expressway. Such results justify the financial and technical support provided by higher-income neighbouring countries on these projects.

Improvements are not solely brought about by infrastructure development. Soft infrastructure initiatives such as the ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT) and bilateral memoranda of understanding, which facilitate the transit of trucks and drivers across borders, will also stimulate the economies on both sides of the border. Under bilateral agreements, a country that has a lower relative income and accepts traffic from a neighbouring country should consider the maintenance costs of their road and the appropriate ways to collect user fees because the benefits and costs should be shared between the two countries.

Lastly, these sub-corridor projects should be combined with the infrastructure projects in other regions. All five simulation results show that the positive economic impact cannot be spread all over a country, and that whatever positive effects there is could even be offset by the negative impact on other regions within the same country. Therefore, strategies on infrastructure projects should always have a regional perspective.

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