

# Chapter 4

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

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## Chapter 4

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

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### 1. Introduction

Since gaining independence in 1975, Lao PDR has instituted several economic reforms, notably the New Economic Mechanism, and adopted an open and more liberated market economy. International economic cooperation began after the adoption of the New Economic Mechanism in 1986, and the government's vision, strategy, and national socio-economic development plans have determined the terms of regional and international integration. Lao PDR's Socio-economic Development Vision, 2030 anticipates the country's economic and social development progress during 2015–2030 'to be able to broadly and deeply integrate and connect with the region and the world' (MPI, 2016). To this end, the 10-Year Socio-Economic Development Strategy, 2015–2025 includes a sub-strategy on improving regional and international integration and connectivity in which the focal tasks are to upgrade and develop transport infrastructure and improve logistics services (Box).

#### **Box: Sub-Strategy on Improving Regional and International Integration**

The sub-strategy on improving regional and international integration and connectivity under the 10-Year Socio-Economic Development Strategy, 2015–2025 focuses on the following areas:

- implementing international cooperation commitments and mobilising financial resources in terms of foreign direct investment and overseeing development assistance;
- participating in regional and international integration processes, particularly in the framework of the Association of Southeast Asian Nations (ASEAN) Economic Community; ASEAN+6 (Australia, China, India, Japan, Republic of Korea, and New Zealand); the Greater Mekong Subregion; and the World Trade Organization;

- creating a favourable investment and business environment and mobilising quality foreign direct investment, accompanying expertise, transferable technology, and export market;
- developing local enterprises to enable them to integrate into regional and global supply chains; and
- upgrading and developing road, railway, and aviation infrastructure and improving logistics services to make them convenient, safe, and modern.

Source: Government of Lao PDR (2016), 10-Year Socio-Economic Development Strategy, 2015–2025.

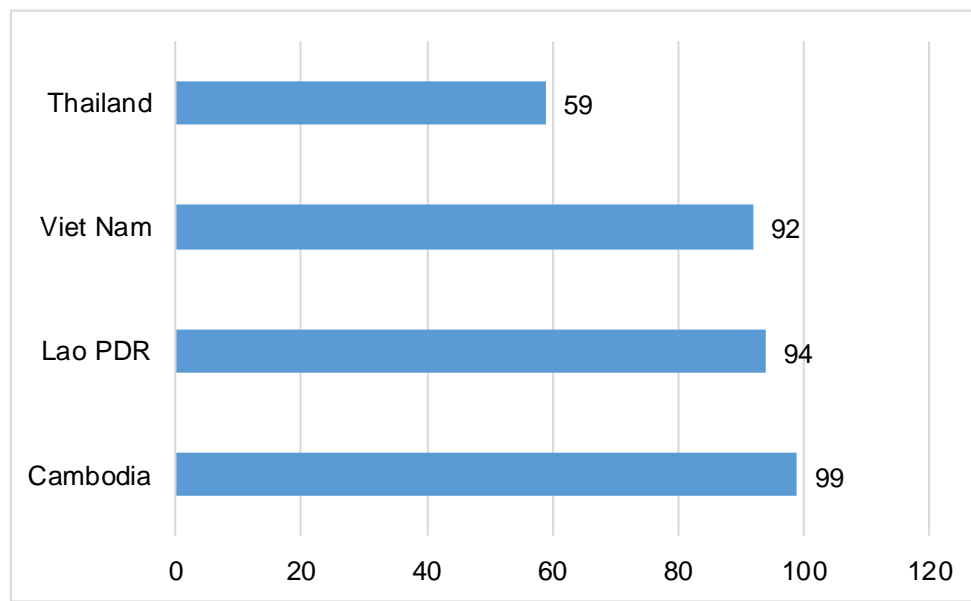
To promote trade and foreign direct investment, it is widely acknowledged that countries that are landlocked, a condition that was once generally considered an impediment to economic development, should instead be viewed as ‘land-linked’ in the context of promoting regional economic integration and connectivity. Recognising this opportunity, the Government of Lao PDR has promoted regional and international economic cooperation to economically integrate and connect the country with its neighbours and with global value chains.

The launch of the East–West Economic Corridor (EWEC) integration scheme during the 8th Greater Mekong Subregion (GMS) Ministerial Meeting in 1988 provided momentum for integration. As one of the flagship initiatives of the GMS, the corridor adopted a holistic approach to developing a cost-effective way of instituting an efficient transport system for moving goods and people in the subregion, while simultaneously developing telecommunications and energy infrastructure, tourism, and a policy and regulatory environment that facilitates and encourages private sector development. The corridor traverses and links many member countries of the Association of Southeast Asian Nations (ASEAN), passing through Da Nang, Dong Ha, Thua Thien Hue, and Quang Tri in Viet Nam (271 kilometres (km)); Dansavanh and Savannakhet in Lao PDR (229 km); Mukdahan, Kuchinarai, Kalasin, Khon Kaen, Phitsanulok, Mae Sot, and Tak in Thailand (620 km); and Mawlamyine and Myawaddy in Myanmar (200 km). This provides opportunities for Lao PDR to access regional markets and attract more investment from neighbouring countries.

Located in the centre of GMS and sharing borders with all GMS countries, Lao PDR has the potential to create a transport hub (ERIA, 2016). Nevertheless, the mountainous topography and lack of infrastructure are obstacles to further development and the fulfilment of this potential, and connectivity within the country and with the region remains a major challenge. Lao PDR has poorer-quality roads than Thailand and Viet Nam (Figure 4.1), and, unlike its neighbours, its roads do not meet weight

standards. The highway security system is inadequate and border facilities do not accord with international standards (MPWT, 2015). Moreover, more than 80% of the roads are earthen or gravelled, while concrete, asphalt, and paved roads make up less than 20% of the total length (Figure 4.2). Some sections, particularly those connecting urban and rural areas, are impassable in the rainy season.

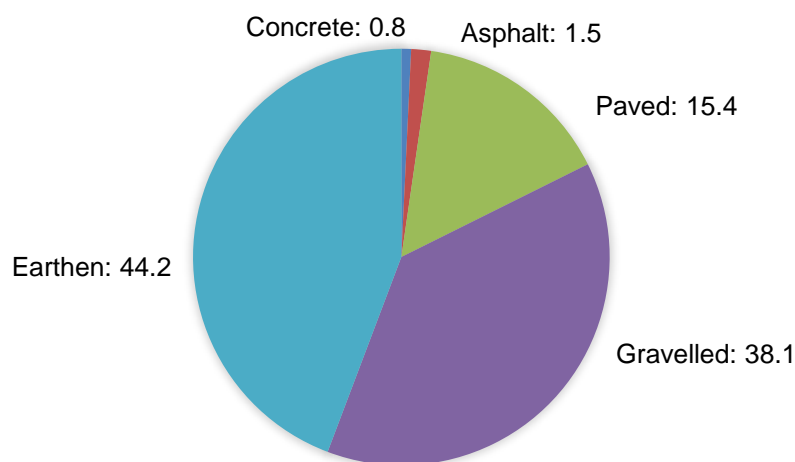
**Figure 4.1: Road Quality Ranking, 2018**



Note: Figures indicate the rank amongst 137 countries. Economies are ranked on their quality of road from 1 to 137.

Source: The Global Competitiveness Report, World Economic Forum.

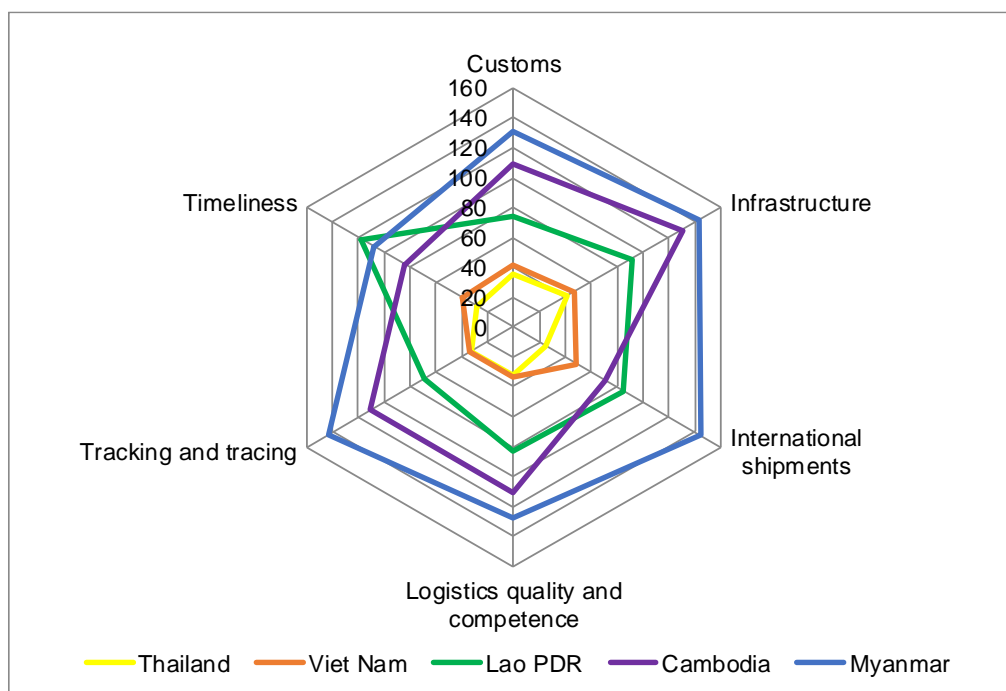
**Figure 4.2: Road Types, 2016 (%)**



Source: Ministry of Public Work and Transport, Lao PDR.

Many improvements are also needed in areas related to road infrastructure. Although Lao PDR has improved its ranking in the Logistics Performance Index, which measures the physical movement of goods within and across borders, it still ranks lower than Thailand and Viet Nam in all areas (Figure 4.3). It ranks lower than Cambodia and Myanmar for the timeliness of shipments arriving at their destination in the specified delivery time. It also ranks lower than Cambodia in the ease of arranging competitively priced shipments, as represented by the international shipment index.

**Figure 4.3: Logistics Performance Index, 2018**



Source: Logistics Performance Index, World Bank.

The transport and logistics sector is therefore amongst the sectors prioritised for support. The ongoing construction of the Lao PDR–China railway, as well as several planned highways connecting the country to the region, particularly the Vientiane–Hanoi Expressway (VHE) under the EWE scheme, and the proposed construction of friendship bridges across the Mekong River are significant steps in this direction.

As well as creating a smooth link between Vientiane and Hanoi, the development of the VHE is seen as a missing part of Hanoi–Bangkok connectivity, which will provide economic benefits to the economy of the entire Mekong region through increased international trade. The potential trade and investment benefits from this expressway are therefore expected to be felt by Thailand and Viet Nam at the far ends

of the VHE route in addition to the Lao PDR. This paper focuses mainly on a case study of Lao PDR, but it will also consider the potential qualitative benefits to be gained by Thailand and Viet Nam.

Section 2 provides more details of the transport plan and current development in the context of regional and international economic integration and connectivity. Section 3 qualitatively assess the potential economic development benefit for Lao PDR of the transport infrastructure connectivity provided by the VHE. Section 4 provides concluding remarks.

## **2. Transport-Related Infrastructure Development and the Planned Vientiane–Hanoi Expressway**

As a landlocked country, land transport is the most important mode of transport in Lao PDR. Land transport makes up almost 80% of total transport, river transport 18%, and air transport 2%. Effective land transport infrastructure development is also crucial to overcome the constraints of low population density and hilly terrain; provide an efficient connection between the northern, central, and the southern economic centres of the country; and connect each centre with neighbouring road networks. For this reason, the Eighth Five-Year National Socio-Economic Development Plan, 2015–2020 (Outcome 1, Output 7); the strategy on regional and international integration, 2016–2025 of the Ministry of Public Works and Transport (MPWT); and the national and sector plans all emphasise two modes of land transport infrastructure development: roads and highways, and railways.

### **2.1 Roads and highways**

The National Socio-Economic Development Plan focuses on improving and expanding existing roads such as national roads, roads linking provinces to districts and villages, and ASEAN main roads. This is in line with the MPWT's Strategy on Regional and International Integration, 2016–2025, under which the MPWT's focal tasks are to upgrade existing national roads to regional highways and to construct road networks and expressways. The study, survey design, and construction of the VHE – the shortest connecting road between Vientiane Capital and Hanoi – is also one of the MPWT's focal tasks specified in the 2016–2020 strategy on road transport.

The VHE is a flagship initiative of the governments of Lao PDR and Viet Nam, and the two countries have requested financing cooperation from the Government of Japan for its construction. In response to this request, the Japan International Cooperation Agency (JICA) decided to collect data and undertake a comprehensive analysis of the VHE. The JICA study proposed for government consideration an alternative route that is less costly and impinges less on the national forest reservation. According to the study, the first phase of construction, in 2021–2026, will be from Vientiane Capital to Ban Viengkham. The density of vehicles will exceed 20,000 a day during this period. The last phase, in 2028–2040, will be from Ban Viengkham to the Viet Nam border. Vehicle density will exceed 10,000 a day during this period.

To capitalise on the development of the VHE, existing roads and highways in Lao PDR need to be upgraded. Eight ASEAN highways (the AH3, AH11, AH12, AH13, AH15, AH16, AH131, and AH132), with a total length of 2,835 km, need to be upgraded to meet ASEAN standards by 2025 in compliance with the Master Plan on ASEAN Connectivity, 2025. However, the most important connecting main roads to undergo upgrading are the AH12 (also known as the NR13 North), and the NR13 South, which connect the expressway to the northern and southern parts of the country. At the same time, the ongoing construction of the expressways from Vientiane Capital to Vangvieng (part of the 460 km expressway from Vientiane Capital to the Chinese border) will link VHE to China in the north. Construction is divided into four phases. The first phase, from Vientiane Capital to the town of Vangvieng, in Vientiane Province, is under construction and expected to be completed by 2020. The second phase, from Vangvieng to Luangprabang Province will run from 2021 to 2024. The third phase, from Luangprabang Province to Oudomxay Province, will run from 2024 to 2027. The last phase, from Odomxay Province to the town of Boten, in Luangnumtha Province, will run from 2027 to 2030.

## **2.2 Railways**

Based on the MPWT's strategy, seven railway projects with total length of 1,594 km are planned for construction by 2030. These railway lines will run from (i) Vientiane Capital to the city of Nongkhai, in Thailand; (ii) the town of Boten, on the Chinese border, to Vientiane Capital (the Lao PDR–China Railway); (iii) Vientiane Capital to the town of Thakhaek to Mugla; (iv) Savannakhet to the town of Lao Bao on the Viet Nam border; (v) Thakhaek via Savannakhet and Pakse to Vangtao (on the Thai border);

(vi) the city of Parse to Veunkham town on the Cambodian border; and (vii) Vientiane Capital, connecting the Lao PDR–China Railway to the city of Nongkhai in Thailand. To date, only the project connecting Boten to Vientiane Capital (the Lao PDR–China railway) is under construction.

The Lao PDR–China railway project is a joint investment of the governments of China and Lao PDR. The Government of China will invest 70% of the \$6 billion required and the Government of Lao PDR will contribute the remaining 30%. Construction began in December 2016 with the boring of tunnels and construction of bridges at various points along the route. By the end of 2018, about 55.7% of the project’s total works had been completed, including 69 tunnels with a total length of 126,544 metres and 96 bridges. This railway will provide the VHE with a northern link. More importantly, as part of the Kunming–Singapore or Pan-Asian railway network concept, and more broadly, China’s One Belt, One Road Initiative, this planned railway network will connect Kunming and Singapore via various routes passing through Cambodia, Lao PDR, Myanmar, Thailand, and Viet Nam.

The other planned railways are still far from realisation. The ongoing Savannakhet–Lao Bao Railway Project, privately funded by a Malaysian company and Government of Lao PDR, for example, was approved in 2012 but has only reached the preliminary stage of installing corridor posts along the route.

### **2.3 Bridges**

The Government of Lao PDR also plans to construct new bridges across Mekong River, including bridges connecting Lao PDR and Thailand’s major provinces, such as between the towns of Paksan and Bueng Kan, Ban Paktaphan and Khemarath, and Vientiane Capital and Nongkhai (a railway bridge). The design and determination of the location of the Paksan–Bueng Kan bridge, which is closest to the VHE, were completed in 2018.

### **2.4 Dry ports**

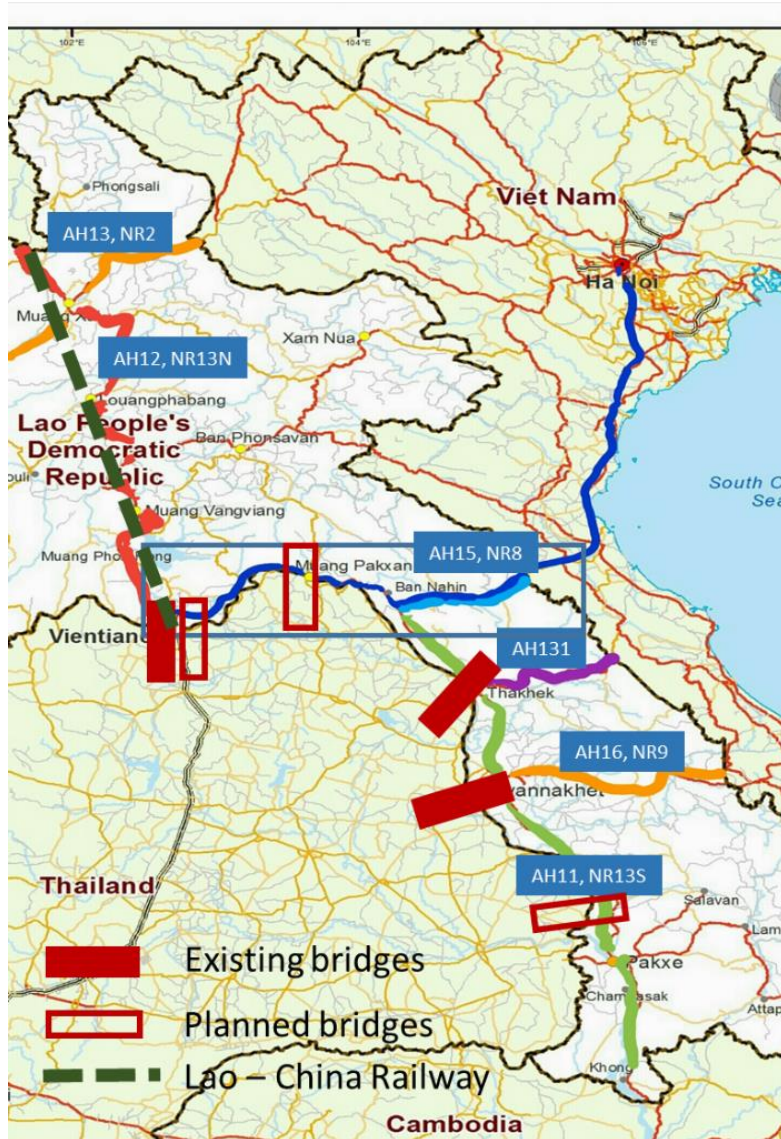
Other important factor needed to enhance the benefits of road infrastructure is the development of dry ports. The first dry port in Lao PDR was established at the Savan Park Zone C in the Savan–Seno Special Economic Zone (SEZ) in 2017. This is the only port in full operation so far. There are plans to



develop dry ports in the provinces of Bolikhamxay, Champasack, Khammuan, Luangnamtha, and Vientiane.

For Vientiane, the development of a dry port at Thanaleng, close to the first friendship bridge, will be further delayed as there is a need for an additional feasibility study following the completion of the JICA-supported pre-feasibility study by Nippon Express Logistics Co. The memorandum of understanding to conduct the additional study is being drafted. Another dry port in the process of investment approval is in the Vangtao Economic Zone in Champasack Province. JICA has already completed a feasibility study for this project. However, it is clear from the current situation that there are not enough dry ports to support the future development of road transport infrastructure, including the VHE. There is, however, a plan to develop such infrastructure near the Lao PDR border checkpoints with Viet Nam, and these plans should be brought forward.

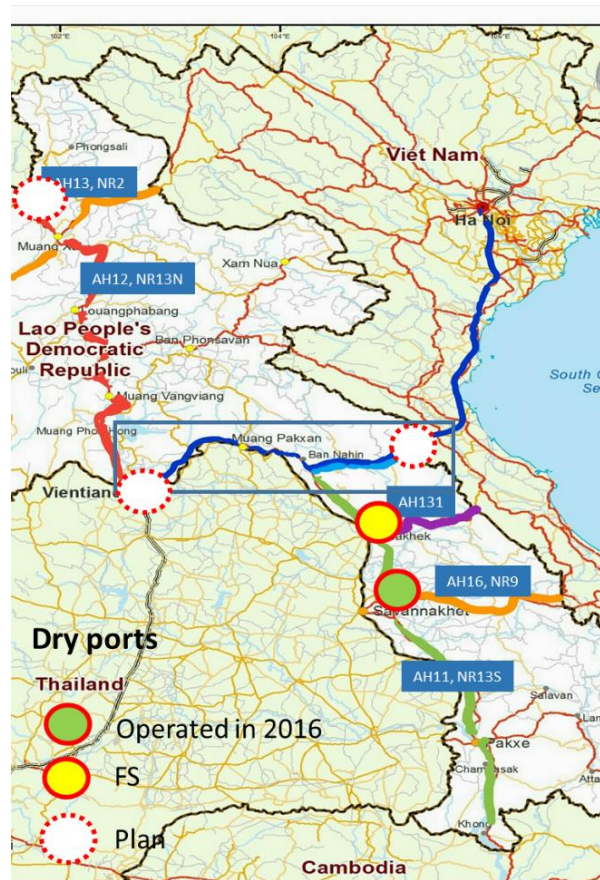
Figure 4.4: Planned ASEAN Highways, Railways, and Bridges



AH = ASEAN highway, ASEAN = association of Southeast Asian Nations, NR = national road.

Source: Google Maps, modified by the author.

Figure 4.5: Dry Ports



AH = ASEAN highway, FS = feasibility study, NR = national road.  
 Source: Google Maps, modified by the author.

## 2.5 Soft infrastructure

In addition to hard infrastructure development, soft infrastructure is needed to improve the institutional framework, procedures, and logistics services related to the road sector. This is an important factor that needs to be in place to boost the benefits of the planned VHE. A great deal of effort has also been made in this area. For instance, long-term transport strategies for environmentally sustainable transport and logistics have been drafted for the government’s consideration. Since 2011, the government has revised legislation to bring it more into compliance with regional and international agreements to which it is committed. This includes the road transport law, the road traffic law, the multimodal transport law, and the regulation of maximum permissible gross weight for trucks (MPWT, 2015b).

Under the framework of the GMS Cross-Border Transport Facilitation Agreement, a pilot project on a Lao PDR–Viet Nam single-stop inspection service has been implemented since December 2015 in the common control area at the Lao Bao–Densavanh International checkpoint in the provinces of Savannakhet in Lao PDR and Quant Tri in Viet Nam. The e-custom system installed by the project will simplify cross-border administrative procedures by reducing the number of documents to be filled and offices to be visited and, consequently, border-crossing time. A similar model will soon be applied in Savannakhet–Mukdahan international checkpoint at the second Lao–Thai friendship bridge at another end of the AH16 and later to other important international border checkpoints. There are also plans to strengthen the Public Works and Transport Institute and training centres to enhance heavy freight transport management and road safety management and promotion, improve the legislation in the area of road traffic, and modernise the information system to manage vehicle registration and the issuance of driving licences.

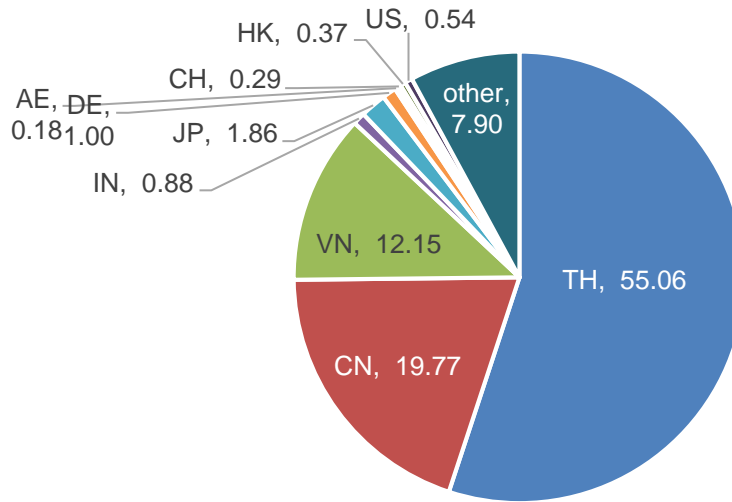
### **3. Potential Benefits of the Vientiane–Hanoi Expressway for Economic Development in Lao PDR**

#### **3.1. Enhancing international and transit trade**

As a landlocked country, any additional good road infrastructure connecting the country with its neighbours will not only promote trade of the host country with its neighbours but will also enhance the transit trade. A study by Rajvong (2010) on the impact of Road No.3 on trade in China, Lao PDR, and Thailand showed that the establishment of the road in early 2008 doubled trans-border trade between Thailand and China from \$12.6 million in 2008 to \$27.1 million in 2009. A similar effect could also be expected from the development of the VHE.

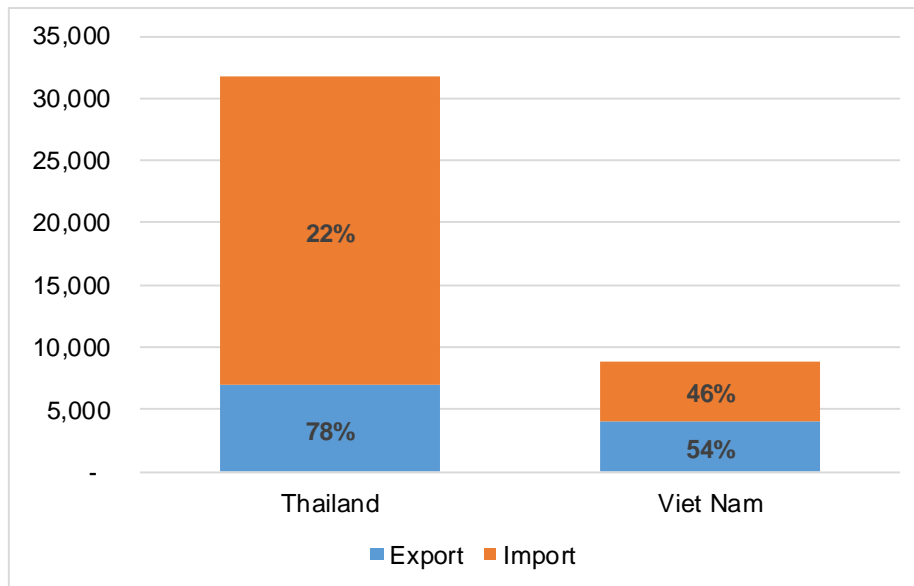
Thailand, China, and Viet Nam are the Lao PDR's top three trading partners (Figure 4.6). During 2010–2017, trade with Thailand grew at an average annual rate of 8% and trade with Viet Nam grew by 16% per year. Imports account for 70%–80% of the trade in goods with Thailand and 50% of that with Viet Nam is (Figure 4.7). Moreover, almost all the trade in goods by the two countries is conducted by inland transport. Therefore, there is no doubt that any planned expressways will facilitate and benefit not only expansion of Lao PDR's exports, but also, to a greater degree, those of Thailand and Viet Nam.

**Figure 4.6: Top 10 Trade Partners, 2013–2017 (%)**



AE = United Arab Emirates, CH = Switzerland, CN = China, DE = Denmark, HK = Hong Kong, JP = Japan, TH = Thailand, VN = Viet Nam, US = United States.  
 Source: Author, based on data from the Ministry of Commerce and Industry, Lao PDR.

**Figure 4.7: Lao PDR Trade with Thailand and Viet Nam (\$ billion)**

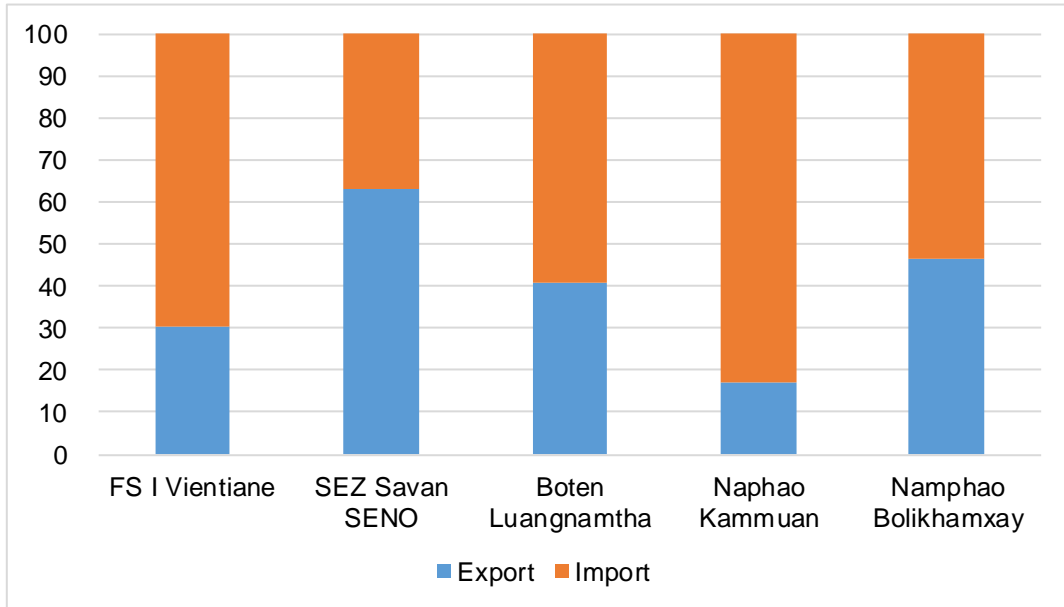


Note: Figures exclude electricity trade.  
 Source: Author, based on data from the custom, Ministry of Finance, 2017.

The VHE passes through two provinces: Vientiane Capital and Bolikhamxay. In 2017, Vientiane Capital had the highest trade volume amongst the provinces, followed by Savannakhet, Luangnamtha, and



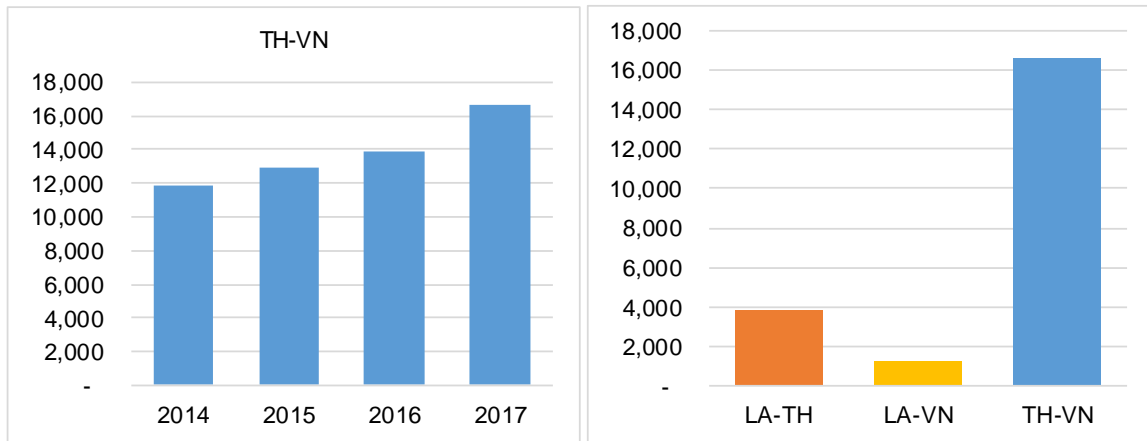
**Figure 4.9: Trade through Major Checkpoints (%)**



FS = friendship bridge, SEZ = special economic zone.  
 Source: Data from the custom, Ministry of Finance, 2017.

Trade between Thailand and Viet Nam has increased steadily and in 2017 was about 4 times that between Lao PDR and Thailand and 14 times that between Lao PDR and Viet Nam (Figure 4.10). Figure 4.11 shows that more than 50% of goods re-exported from Thailand to Viet Nam went through the Namphao checkpoint in Bolikhamxay Province via National Road No. 8. Thai goods re-exported through this checkpoint are mostly consumption goods and some electric products imported via the first and third friendship bridges in Vientiane Capital and Khammuan Province. The second friendship bridge in Savannakhet and National Road No. 9 to Lao Bao checkpoint in Savannakhet Province is an alternative route for the import of goods re-exported from Thailand to Viet Nam. About 90% of the goods moving through this checkpoint are consumption goods and the rest are live animals and electrical products. Thai goods are also re-exported through Asian highway No.131 to Napao traditional checkpoint in Khammuan Province. About 80% of the goods re-exported via this checkpoint are electrical products and the rest are live animals. All of the goods re-exported from Viet Nam to Thailand (most of which are consumption goods) are imported from Viet Nam via the Savan Lao Bao checkpoint, transported through National Road No. 9, and re-exported to Thailand over the second Lao–Thai friendship bridge in Savannakhet.

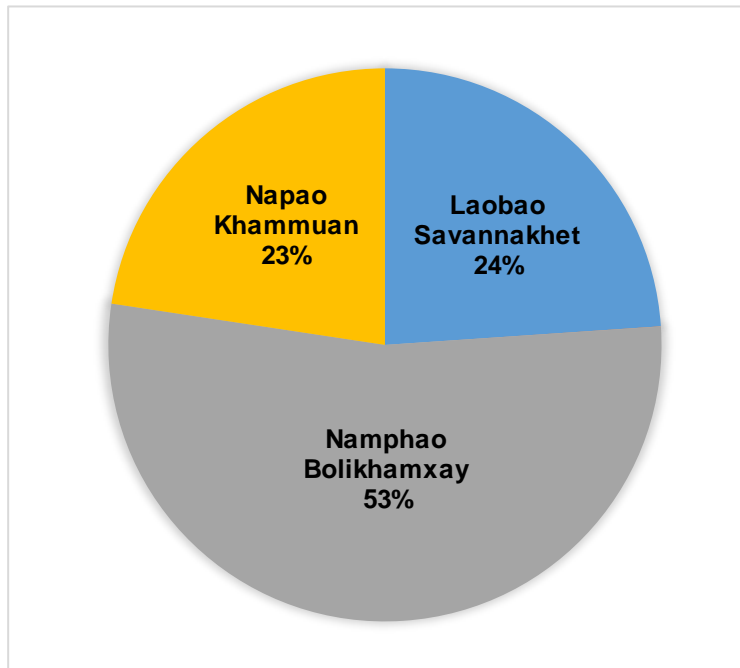
**Figure 4.10: Trade between Thailand, Viet Nam, and Lao PDR, (\$ million)**



LA = Lao PDR, TH = Thailand, VN = Viet Nam.

Source: Association of Southeast Asian Nations Trade Statistics, 2017.

**Figure 4.11: Goods Transit from Thailand to Viet Nam by Checkpoint**



Source: Data from the custom, Ministry of Finance, 2017.

Given that trade on this route is already well established, the development of the VHE is expected to enhance Thailand's exports to Viet Nam. On the other hand, the VHE will provide an alternative route for Vietnamese goods exported to Thailand (in addition to National Road No. 9). While the transit trade between Thailand and Viet Nam is expected to increase (whether directly or indirectly through



the VHE), a better road would increase both exports from and imports to Lao PDR. However, given that Lao PDR will not be able to increase the variety and value of its exports in the very near future, and imports make up more than 70% of Lao PDR trade with Thailand, imports are likely to continue to outweigh exports.

### **3.2 Promoting trade from and investment in industrial estates**

A region's industrial and employment base is closely tied to the quality of the transport system, including its road infrastructure. For a land-linked country, a good road, or at least roads that connect to other export gateways, such as airports or seaports, is not only necessary but crucial for foreign investment decisions in industrial estates. Lao PDR's experience with special economic zones (SEZs) began in 2003 with the establishment of the Savan–Seno SEZ under Decree no. 148/PM. A total of 12 SEZs are now in operation. In 2017, the government decided to further develop the existing SEZs and suspend the establishment of new ones.

The development of the VHE will directly involve at least five SEZs located in Vientiane Capital, all of which operate as trade- and tourism-promoting zones. Two of them – Vientiane Industrial Trade Area (VITA Park)<sup>1</sup> and Saysettha Development Zone<sup>2</sup> – play a particularly important role by serving as industrial parks. These two SEZs benefit from a direct connection to the Thai road network via the Lao PDR–Thai border checkpoints, particularly in Vientiane Capital, and have access to Bangkok harbour via the existing Thai railway from Vientiane Capital. Although there is already an established road connection for goods transport from VITA Park to Viet Nam, the SEZs will benefit from connection to the freight train station of the Lao PDR–China high-speed rail link that will soon to be completed and will provide a direct link to China's railway system to further facilitate passenger and cargo transport. Although most investors in these zones are from China, Denmark, Japan, Malaysia, Taiwan, and Thailand, with their main targeted markets overseas, 40% of the transport was conducted through Viet Nam from Vung Ang Seaport and the rest was through Thailand. All exports from Saysettha

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<sup>1</sup> VITA Park, known as a free-trade industrial economic zone, was established on 30 October 2009. The 110-hectare park is a joint venture between the Government of Lao PDR, holding 30% of the ownership, and Nam Wei Development Co., Ltd., holding 70% ownership. So far, about 35 companies from China, Denmark, Japan, Lao PDR, Malaysia, Taiwan, and Thailand have invested a total of more than \$110 million in the zone.

<sup>2</sup> Saysettha Development Zone was established in 2010, covering 1,000 hectares. It is a joint venture between the Government of Lao PDR and a Lao–Chinese private company. About 36 companies from China, Lao PDR, Thailand, and Malaysia have invested an aggregate of more than \$1,683 million in the zone.

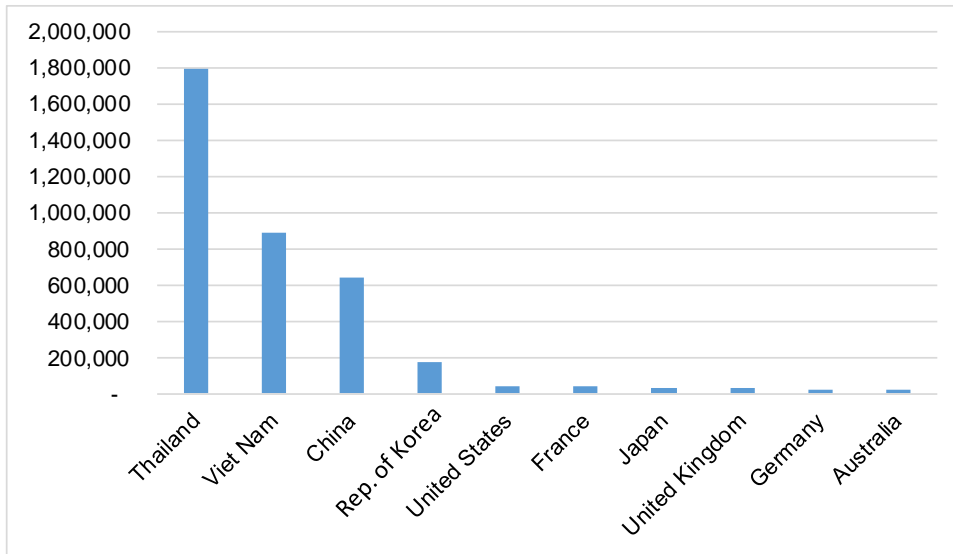
Development Zone target the Thai market or transit through Thailand to destination markets such as Hong Kong. For this zone, the VHE will provide more opportunities for investors interested in Viet Nam, whether for market access or utilisation of Vietnamese seaports.

In addition to the SEZs in Vientiane, other zones in the central part of the country, such as Phoukhyo Specific Economic Zones in Khammuan Province and Savan–Seno SEZ in Savannakhet Province, will also be able to use the VHE as an alternative route to Hanoi in the future, given that the condition of the AH131 road to Napao traditional checkpoint in Khammuan Province is worse than that of the AH15 to Naphao checkpoint in Bolikhamxay Province. Currently, there is no direct trade with Viet Nam from these two zones, although a few companies in Savan–Seno SEZ already use Viet Nam’s Da Nang seaport to export to China.

### **3.3. Increasing the number of tourists**

Long-distance travel by car on normal roads is exhausting and time-consuming. The improved road conditions of the expressway could have a substantial impact on the tourism industry by shortening travel time. Tourist arrivals in Lao PDR have increased steadily to about 4 million in 2017. The largest source market is Thailand, accounting for about 46% of international arrivals, followed by Viet Nam (23%) and China (17%) (Figure 4.12). The Republic of Korea, in fourth position, is the fastest-growing market. Lao PDR’s tourism industry is less developed than that of Thailand and Viet Nam. About half of international visitors combined their visits to Lao PDR with a visit to Thailand.

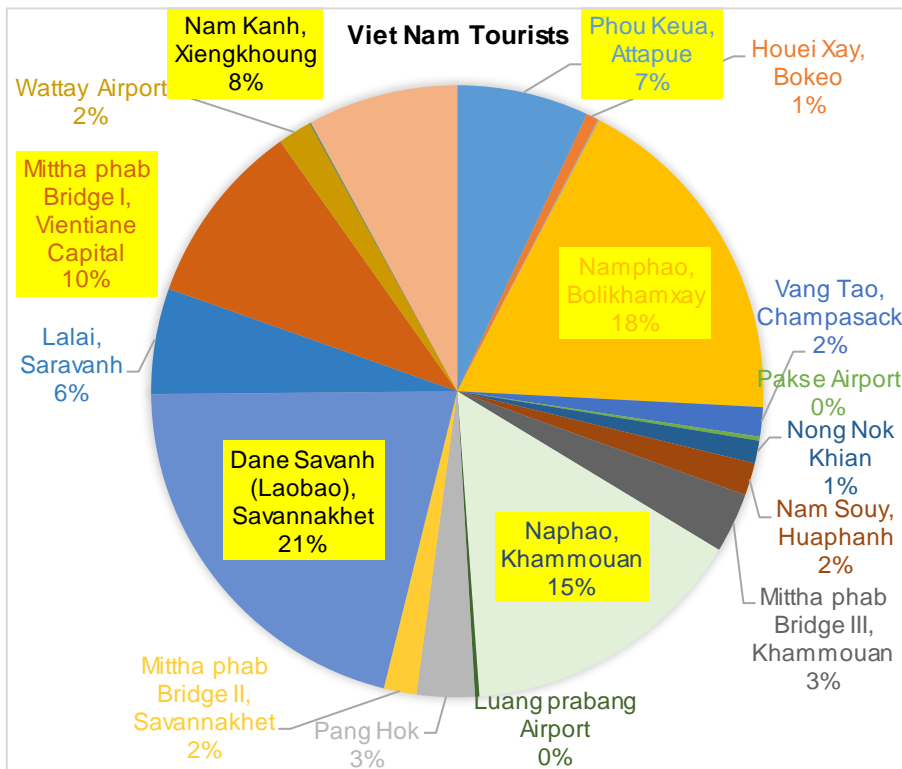
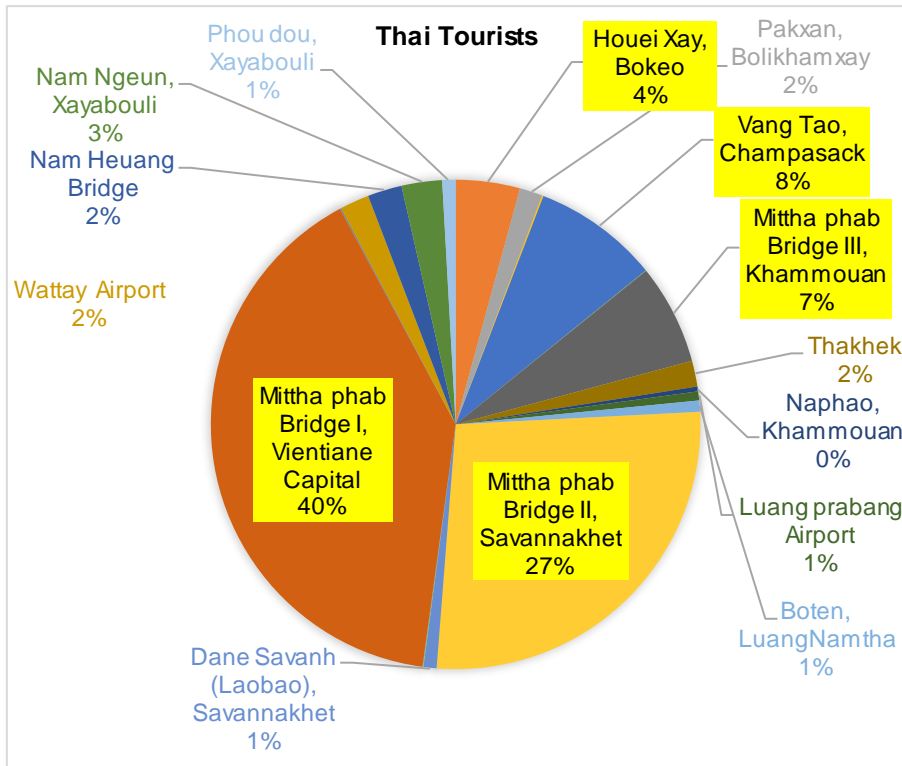
**Figure 4.12: Top 10 Tourist Arrivals in Lao PDR by Source Country**

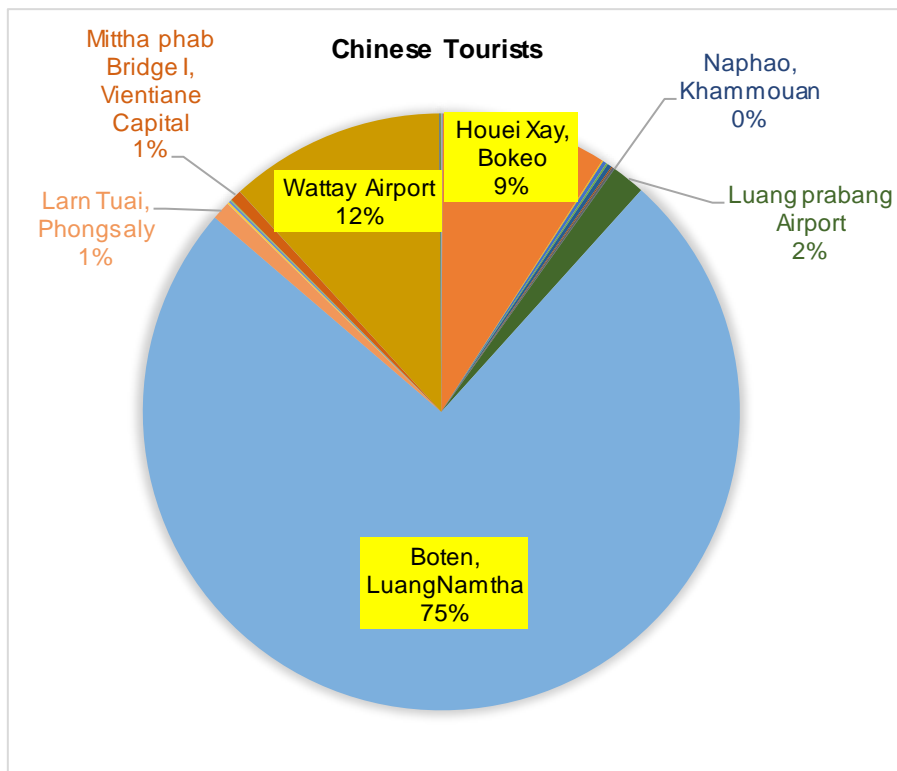


Source: Author, based on data from the Ministry of Information, Culture and Tourism, Lao PDR, 2017.

As most of the well-known tourist sites in Lao PDR are in the central and western parts of the country, road infrastructure that brings tourists from the eastern to the western parts is very important. Figure 4.13 shows the border checkpoints that the tourists from top 3 source markets (Thailand, Viet Nam, and China) used to enter Lao PDR in 2017. Thai tourists entered Lao PDR at friendship bridges I, II, and III along western parts of the border Lao PDR–Thailand border. The destinations of those entering via the first friendship bridge were Vientiane Capital, Vanvieng, and Luangprabang in the northern part of the country, so the VHE would not be so important for direct access. However, for tourists from the northeastern part of Thailand, the VHE would provide access to tourist destinations in Hanoi. For the 75% of Chinese tourists that enter Lao PDR at Boten international checkpoint in Luangnamtha Province, the Lao PDR–China railway would be a very important boost. Vietnamese tourists, on the other hand, enter Lao PDR via the checkpoints along its eastern border with Viet Nam. Namphao checkpoint in Bolikhamxay Province ranked second as a point of entry in 2017. Connecting the VHE to that checkpoint could therefore boost the number of Vietnamese inland travellers to the central and northern parts of Lao PDR.

**Figure 4.13: Share of Tourists Entering Lao PDR by Port of Entry, 2017 (%)**





Source: Author, data from Ministry of Information, Culture and Tourism, Lao PDR, 2017.

Plans for the development of railways and roads, including the VHE, foresee issues with the tourism industry's capacity to reap the benefits from the growing number of tourists. Lao PDR has 2,165 guesthouses and 569 hotels, with 50,600 rooms and 66,246 beds, of which less than 10% have a five-star rating. Although the number of registered tour operators more than doubled to 336 during 2009–2015, there are too few (604) active licensed tour guides to meet demand. Moreover, infrastructure and facilities to enhance access to tourist sites also need to be further developed.

### 3.4. Other potential benefits of the Hanoi–Vientiane Expressway

**Increasing flows of goods, reliable service deliveries, and higher business profits.** Travel time is expected to be shorter and travel cost lower on better roads, allowing companies to reduce their transport costs. As trucks would be able to reach their destinations without major delays, existing firms could ship goods more cheaply and improve their service as delivery schedules become more reliable. More timely and reliable deliveries would enable firms to lower their production costs and enhance productivity and profits. At the national level, the faster and cheaper movement of freight

would help make businesses in the Lao PDR more competitive in the international market. As mentioned earlier, the doubling of trading value as a result of the construction of the R3 road would also imply more profits for existing traders or companies who could ship more goods in the same amount of time.

**Increasing employment and activities in other supporting industries.** The VHE will generate a direct impact on employment during the construction phase. Managers, specialists, and semiskilled and unskilled labourers will also be called upon to construct new roads and resurface existing ones. Indirectly, the construction is also expected to generate jobs in many other industries. For example, highway construction will require more orders for construction materials from local companies, and these companies will then need to hire more labour to process orders and deliver materials to construction sites. Other supporting industries, such as agriculture and food processing, are also expected benefit from supplying food to workers during the construction period. However, experience from the Lao PDR–China railway construction project suggests that domestic companies that are supposed to provide material and related goods for railway construction activities have not yet benefited from the project. Most materials, including steel and cement, are imported from China, because local materials do not meet the construction standards. Chinese companies also provide the catering services, because local companies are not capable of providing services that meet the exacting demands of the project. There is therefore an urgent need to improve the quality of construction materials and the capacity of local companies to meet the demands of large-scale construction projects.

#### **4. Conclusion**

In summary, Lao PDR has a holistic plan for land transport infrastructure development. This includes improving existing ASEAN highway sections in the country, constructing major connecting bridges, building the Lao–Chinese (Boten–Vientiane) railway, and initialising Savannkhet–Lao Bao railway and other planned railways that are currently at the feasibility stage. For the VHE, the most important connecting main roads to undergo upgrading are the AH12 or NR13 South and the AH12 or NR13 North, which connect the expressway to the southern and northern parts of the country. The ongoing construction of the expressway system from Vientiane Capital to Vangvieng – part of the route to

Chinese border – will connect Boten (on the Lao PDR–China border) with Namphao (on the Lao PDR–Viet Nam border) through the VHE.

It is clear that Lao PDR and its neighbours would benefit greatly from the construction of the VHE as a result of trade generated from the use of the road and spillover effects from connection to major cities, industrial estates, and tourist sites along or near the road. However, such benefits also depend on improving the soft infrastructure, or institutional arrangements. There is substantial progress in this regard, including revisions of several legislative and regulatory frameworks, institutional change, the piloting of single-stop inspection in the common control area at Lao Bao–Densavanh International checkpoint. However, these improvements and initiatives need to be further strengthened so that they are more closely aligned with the committed international, regional, and bilateral transport agreements, particularly the GMS Cross-Border Transport Facilitation Agreement. Without such soft infrastructure improvements to reduce the time and cost of custom clearance or quarantine, the benefits from the VHE and other planned expressways will be lost.

All transport infrastructure plans will be equally important and supportive to the planned VHE, but much will depend on whether Lao PDR can source enough financing for all the planned projects. In addition to the new road, many existing roads also need budgets for upgrading if the synergistic effect on the overall transport system is to be achieved. The transport infrastructure planned for 2016–2020 requires almost \$10 billion, nearly four times more than the government could realistically mobilise (MPWT, 2015b). Much of the financing for these infrastructure projects is expected to come from multi- and bilateral development partner assistance. For example, the Asian Development Bank and the governments of China and Thailand funded the upgrading of Route 3 in northwestern Lao PDR, which connects China with Thailand through Luang Namtha and Bokeo provinces; and the Government of Japan funded the upgrading of Route 9 in southern Lao PDR, which connects Thailand and Viet Nam via Savannakhet Province.

The government's limited budget has been used mainly for road maintenance and to construct a few selected strategic roads or road sections. In the coming years, Lao PDR will face the challenge of increasing demands for maintenance of the existing road infrastructure, particularly the greater need for ongoing repairs to ensure the quality of the road network. Climate change will exacerbate these challenges because the network is susceptible to damage from increasingly severe natural disasters.

Reconstruction and repair of damaged roads will consume much of the limited budget for overall infrastructure development. Currently, the road maintenance fund covers only one-third of the budget needed. This poses a big challenge to Lao PDR and calls for prioritisation of the infrastructure projects and continued assistance from development partners. While it will be important to prioritise best practices in road maintenance, Lao PDR should also explore alternative means of financing the construction of new roads, such as public–private partnership (PPP) contract structures as a way of inviting private sector investment to the sector. So far, Lao PDR has only implemented PPPs in 16 energy projects (MPWT, 2014). Careful study and support are needed to expand the positive experience with the PPP model to the road sector.

Experience shows that the capacity of local industry to support major construction projects remains low. This prevents domestic companies from benefitting indirectly from such projects. Improving the quality of construction materials and the capacity of local companies to meet the demands of major construction projects is thus urgently needed.

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