Logistics Cost in Lao PDR

Policy – Oriented Research Project Report

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Contents

Abbreviations

ASEAN	Association of Southeast Asia Nations
cc	cubic centimeter
CNG	compressed natural gas
CY	Container yard
EWEC	East-West Economic Corridor
FCL	Full container load
FDI	Foreign direct investment
FY	Fiscal year
HW	High way
ICD	Inland container depot
IDE	Institute of Developing Economies
IDE-JETRO	Institute of Developing Economies, Japan External Trade Organization
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
km	kilometer
LAK	Lao kip
Lao PDR	Lao People's Democratic Republic
LIFFA	Lao International Freight Forwarders Association
LLSE	Lao Logistics State Enterprise
NEDA	Neighbouring Economic Development Agency
NIER	National Institute for Economic Research
No	Number
ODA	Official Development Assistance
SEZA	Savan-Seno Special Economic Zone Authority
THB	Thai baht
TIFFA	Thai International Freight Forwarders Association
USD	United States dollar
VAT	Value-added tax
VLT	Vientiane Logistics Park

List of Tables

List of Figures

Introduction[1]

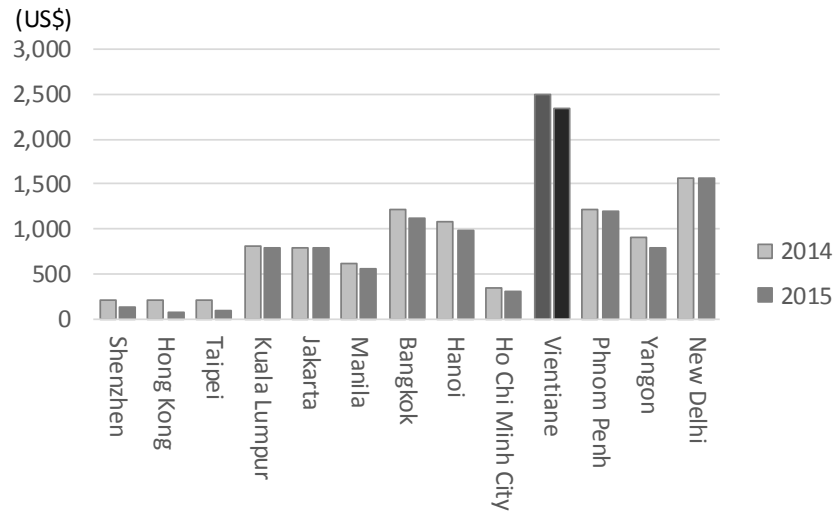
In September 2015, Ministry of Planning and Investment of the Lao People's Democratic Republic, Institute of Developing Economies in Japan External Trade Organization (IDE-JETRO), and Japan External Trade Organization (JETRO) of Japan held a joint policy-oriented seminar in Vientiane, entitled "Enhancing Industry in Lao PDR: Service Liberalization, Simplification of Investment Procedures, and Development of Human Resources". This seminar intended to disseminate the contents of policy recommendation[2], which was delivered to the Prime Minister of the Lao PDR from the Chairman of JETRO in July 2015, and to discuss its effective utilization. In the seminar, the policy recommendation for "reducing the costs (time and money) and simplifying the procedures for transporting freights to and from neighboring countries" drew special attention of the participants. The focus of attention was placed on logistics costs.

Figure 1 shows the costs of shipping a 40-feet container to Yokohama Port, Japan, from major production bases in Asia. The survey was conducted by JETRO from October through December in both 2014 and 2015. The costs for some cities, such as Shenzhen, Taipei, and Yangon, are not exactly comparable, as they do not include land transport and some conditions are not same. The figure shows that the shipping costs

[1] This research project was performed by Masami Ishida, Director General, Development Studies Center, Institute of Developing Economies, Japan External Trade Organization (IDE-JETRO); Ryo Ikebe, Director of Asia and Oceania Division, Overseas Research Department of JETRO; Ryohei Gamada, Research Manager of Asia and Oceania Division; Souknilanh Keola, Research Fellow of Bangkok Research Center, JETRO Bangkok; Tetsuo Shibata, Chief Representative, JETRO Vientiane; and Kenichiro Yamada, Representative, JETRO Vientiane. M. Ishida managed the overall project and wrote the Introduction to Section 4 of this report and R. Gamada contributed to writing Section 5, made appointments for interviews, and took notes for most interviews. R. Ikebe arranged research meetings in Tokyo, and S. Keola made appointments for interviews and translated local languages into Japanese. T. Shibata and K. Yamada made appointments for interviews in Vientiane.

[2] IDE-JETRO ed. "Policy Recommendation on Industrial Location in Lao PDR", Chiba: IDE, July 2015. Downloadable at http://www.ide.go.jp/Japanese/Publish/Download/Seisaku/201507_laos.html.

Figure 1: Cost of shipping a 40-feet container to Yokohama Port, Japan



Source : *JETRO Censor* , May 2015 and 2016.

from Vientiane to Japan are at the highest level in the Asian region.

The costs surveyed in 2014 were broken down into land transportation costs from Vientiane to Bangkok (Klong Toey) Port (USD 1,700) and the shipping costs from Bangkok Port to Yokohama (USD 800). The land transport cost between Laem Chabang Port and Nong Khai, a border city in Thailand en route to Vientiane, was USD 700 as a reference. Considering that the difference in costs to Bangkok Port and to Laem Chabang Port is small, the logistics cost between Vientiane and Nong Khai is estimated to be around USD 1,000.

This raises several questions. Is the transport cost over the distance of 20 km between Vientiane and Nong Khai really as high as USD 1,000, and if so, what are the reasons? Is it because of the logistics costs on the Lao PDR side between Tha Na Laeng and Vientiane, because of the cross-border costs between the Lao PDR and Thailand, or because of the problem of "load on one side" (i.e., so-called "deadheading")? The problem of "load on one side" is that, for instance, trucks transporting goods from Vientiane to Laem Chabang Port or Bangkok Port must travel empty from those ports to

Vientiane.

To answer these questions, we conducted a follow-up research project focusing on logistic costs in the fiscal year of 2016. In the research, we interviewed several logistics firms based in Lao PDR, Thailand, and Japan. We traveled from Savannakhet to Laem Chabang Port and from Vientiane to Klong Toey port to measure the required time and distances. This paper presents the results of the research project. It is composed of five sections. Section 1 describes the design of the survey. Section 2 shows the logistics situation between Lao PDR and Thailand. Section 3 addresses why the logistics costs between Thailand and Lao PDR are so high, taking account of various costs of transportation. Section 4 discusses the domestic logistics costs in Lao PDR. Section 5 discusses the planned Vientiane Logistics Park (VLP), which might be supported by the Japanese government. Concluding remarks summarize the results and present policy recommendations to improve logistics in Lao PDR.

1. Survey Design

1.1 Survey of Firms

In this research project, we aim to clarify why the logistics costs between Lao PDR and Thailand are high. To achieve this aim, a firm-level direct survey is crucial. We visited and interviewed 21 Lao, Thai, and Japanese logistics firms in total. All the interviews were conducted in the period from August to November 2016.

Table 1 shows the composition of 21 interviewed firms by location (Lao PDR, Thailand, and Japan) and by nationality of the firms/parent firms (Lao, Thai, and Japanese-affiliated firms). Some are members of the Lao International Freight Forwarders Association (LIFFA) and the Thai International Freight Forwarders

Table 1: Composition of the logistics firms interviewed in the survey by Location and by nationality

	Number of Samples	Lao PDR		Thailand	
		LIFFA	Census	TIFFA	Yellow Page
1-1 Lao Forwarder in Lao PDR	4	1			
1-2 Thai Forwarder in Lao PDR	1				
1-3 Japanese Forwarder in Lao PDR	3	1	1		
Sub-Total	8				
2-1 Thai Forwerder in Thailand	10			1	2
2-2 Japanese Forwarder in Thailand	1				
Sub-Total	11				
3 Japanese Forwarder in Japan	2	1		1	2
Sub-Total	2				
Total	21				

Lao Forwerder	4
Thai Forwerder	11
Japanese Forwerder[1)]	5
Total	20

	Population
LIFFA	43
Economic Census of Lao PDR	170
TIFFA Member & Service Provider	237
Yellow Page of Thailand	1,291

Note : There is one Japanese forwarder in Lao PDR and in Japan owned by the same holding firm.
Source : Authors.

Association (TIFFA), as shown in the LIFFA and TIFFA columns. The total numbers of member firms of LIFFA and TIFFA (including service providers for TIFFA) are shown at the bottom of the table.

The number of firms registered in the list of freight forwarders and warehouse firms in the Economic Census, which was conducted in 10 provinces in Lao PDR in 2013, is shown in the "Census" column. The number of firms registered as logistics companies in Thailand on the website of the Thailand Yellow Pages is shown in the "Yellow Page" column. For reference, the numbers of firms registered as freight forwarders and logistics firms in the Lao Economic Census and as Thai logistics firms in the Thailand Yellow Pages are shown at the bottom of the table. The number of firms that are LIFFA and TIFFA members and registered in the Economic Census in Lao PDR and in the Thailand Yellow Pages is limited. In case of Lao PDR, a large majority of the firms are

micro-sized firms[3]. It is said that many firms with Lao nationalities do not conduct logistics business and outsource to Thai or Vietnamese firms.[4] The smaller number of the registered firms in the Lao Economic Census among the sample firms of our survey may reflect this situation.

In Lao PDR, no firms with Lao nationality conduct cross-border logistics operations between Lao PDR and Bangkok Port/Laem Chabang Port. This is because it is difficult for freight forwarders registered in Lao PDR to get licenses to enter bonded zones in Thailand. While the rules allow it, nobody is permitted in reality, and foreign forwarders must fulfill many conditions[5]. There are a limited number of firms in Thailand that provide cross-border logistics between Thailand and Lao PDR, whereas there are many freight forwarders in Thailand that provide domestic transportation and international transportation through ports and airports. One Thai firm that focuses only on cross-border logistics between Thailand and Lao PDR said that there are about 10 such firms in Thailand.

Thai freight forwarders and other foreign freight forwarders outsource to Lao freight forwarders for transport inside of Lao PDR. These Thai freight forwarders and other foreign freight forwarders may have representative offices in Lao PDR. Some foreign freight forwarders have opened affiliated firms in both Lao PDR and Thailand and provide cross-border transport between Lao PDR and Thailand, and domestic transport in Lao PDR and Thailand. Other freight forwarders outsource cross-border transport between Lao PDR and Thailand to Thai freight forwarders, and outsource

[3] According to the survey conducted by NIER (2016), 95.0% of transport and storage firms are occupied by small-sized firms with fewer than 10 workers, the share of medium-sized firms with 10–99 workers is 4.7%, and that of large-sized firms with more than 100 workers is only 0.4%.
[4] Based on a comment at the policy dialogue seminar on 24 February 2017 by Dr. Leeber Leebouapao, Vice President of the National Institute for Economic Research (NIER).
[5] Based on an interview with LIFFA on 1 November 2016.

domestic transport in Lao PDR to Lao freight forwarders. Outsourcing typically occurs among Lao, Thai, and other foreign freight forwarders.

Regarding business associations, we interviewed representatives of LIFFA and Thai Logistics for Greater Mekong Subregion Trade Association located at Khon Kaen. One of our sample of the Lao firms in Lao PDR is a member of LIFFA interviewed when we visited LIFFA. We interviewed three firms at the association in Khon Kaen.

We did not interview shipping firms in this project, though we could communicate with a Japanese shipping firm. This is because there is an obvious difference in the role between shipping firms and freight forwarders: the responsibility is taken by freight forwarders, not shipping firms, after the goods leave the container yard, except at dry ports.

1.2 Other Surveys

In addition to logistics firms, we interviewed a truck dealer in Thailand and a construction machine/truck dealer in Lao PDR about the prices and characteristics of trucks.

In the public sector, we interviewed government border officials. However, there is a difference in governing regime between Lao PDR and Thailand. Lao PDR is a decentralized country, whereas Thailand is a centralized country. In Lao PDR, the staff at border gates handle various sections, including immigration, customs, animal quarantine, agriculture, forestry, food and drugs, health, bridge control, and tourism information. These sections are governed by related departments of provincial governments and regional offices of the Ministry of Finance. Heads of the border crossings are appointed by provincial governors. Therefore, we made an appointment with the government officials at a border crossing office so that we could interview the

staff members from various sections in one session. In contrast, in Thailand, quarantine covers plants, wild animals, livestock, fishery products, health, and food and drugs, and each department is independent and controlled by the respective ministries of the central government. Some border crossings have no representative in charge. Therefore, we had to contact each department to make appointments for interviews. Consequently, we interviewed border crossing officials from various sections of the First Mekong Friendship Bridge at Tha Na Laeng and from the Second Mekong Friendship Bridge on the Lao side, and interviewed customs officials of Mukdahan and Nong Khai, and foodstuff quarantine officials at Nong Khai, respectively.

In addition, we interviewed representatives of Tha Na Laeng bonded warehouse and Lat Krabang Inland Container Depot as a relevant example for the Vientiane Logistics Park.

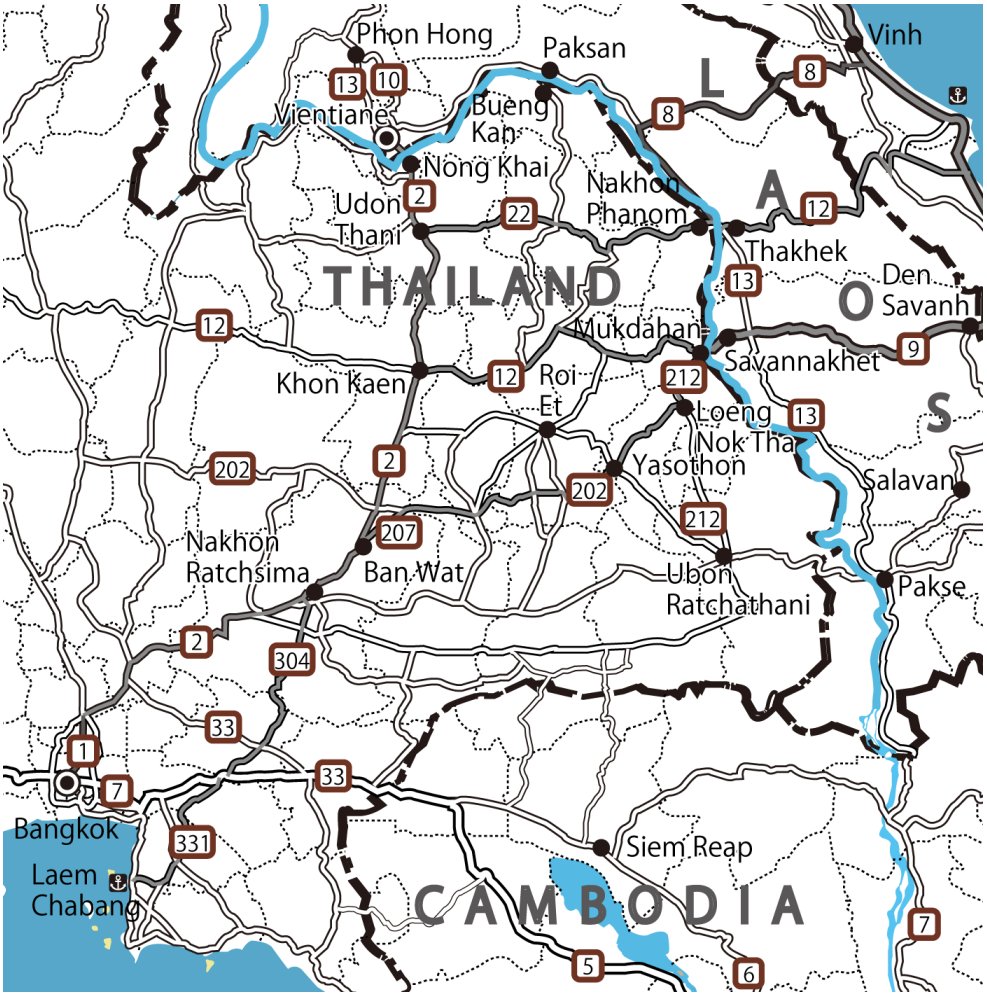
2. Logistics between Lao PDR and Thailand

2.1 Routes between Thailand and Lao PDR

The routes focused on in the survey are Vientiane–Bangkok Port (640 km), and Savannakhet–Laem Chabang Port (716 km). These routes share one node at the T-junction of Highway (HW) No. 2 and HW No. 304 near Nakhon Ratchasima (Figure 2). HW No. 2 connects to Bangkok, whereas HW No. 304 leads to Laem Chabang Port. The details of the following four sections of these routes are shown in Appendix: 1) Vientiane–Nakhon Ratchasima (387 km), 2) Savannakhet–Nakhon Ratchasima (410–451 km), 3) Nakhon Ratchasima–Bangkok Port (253 km), 4) Nakhon Ratchasima–Laem Chabang Port (306 km).[6]

[6] Our team made a survey trip from Mukdahan to Laem Chabang Port on 7 September 2016, and from Vientiane to Bangkok Port on 2 November 2016.

Figure 2: Logistics route between Lao PDR and Thailand



Source : Created by the authors.

2.2 Trucks and Trailers Used in Lao PDR and Thailand

In this sub-section, we describe the types of trucks used in Lao PDR and in Thailand, which are pickup trucks (1,900–3,000 cc), 6-wheel rigid vehicles, 10-wheel rigid vehicles, and articulated vehicles. An articulated vehicle is composed of a tractor with motor and a trailer without motor. A trailer in which the load is supported by the trailer itself with front and rear tires is called a full-trailer, whereas a trailer in which the load is not fully supported by the trailer is called a semi-trailer. A full-trailer is pulled by a rigid vehicle, whereas a semi-trailer is pulled by a tractor head (Figure 3). The word

Figure 3: Wheel structures of various kinds of trucks, semi-trailers and full-trailers

Pick-ups

6-wheel trucks

10-wheel trucks

14-wheel semi-trailers

18-wheel semi-trailers

22-wheel semi-trailers

26-wheel full-trailers

42-wheel full-trailers

Source: Created by the authors.

“trailer,” including full-trailers and semi-trailers, is used for articulated vehicles composed of a tractor or a tractor head and trailer or a semi-trailer. In Thailand, semi-trailers are frequently used, whereas full-trailers are used in Lao PDR.

In many cases, every axle other than the front axle has two wheels on the left and two on the right; the front axle has one on each side. As the number of tires increases, more cargo can be loaded, and less is loaded on each axle. In other words, the burden on the earth or on the road is better dispersed as the number of tires increases. However, articulated vehicles are prohibited from passing through residential areas and through the city during the day, and cannot use narrower roads. Thus, pickup trucks or 6-wheel rigid vehicles are used for distribution in residential areas during the day, although these trucks carry less cargo than articulated vehicles.

Freight forwarders in Thailand mostly have trucks or tractor heads produced by Japanese-affiliated firms. The diesel oil price increased to THB 30 per liter with the increase in petroleum price in 2012, whereas the price of compressed natural gas (CNG) remained stable at THB 8.5 per liter, and CNG tractor heads produced by Chinese manufacturers temporarily sold well in Thailand. The boom in CNG tractor heads was temporary because the maintenance cost is higher and the traction is lower than for a diesel truck, and the number of CNG stations is smaller. In Lao PDR, some freight forwarders own second-hand trucks manufactured by Japanese-affiliated firms and others own new trucks manufactured by Chinese firms, whereas most freight forwarders, including local and foreign ones, use new trucks manufactured by Japanese-affiliated firms in Thailand.

2.3 Logistics in Lao PDR and in Thailand

The types of business of logistics firms in Lao PDR and Thailand cover a broad range.

One Thai logistics firm delivers furniture or refrigerators bought by Lao people in a shopping center in a border area in Thailand to the buyers' houses on the Lao side by using a pickup truck. A Lao owner of 6- or 10-wheel trucks picks up consumer products such as canned fish, instant noodles, sugar, milk, desks, and chairs at Tha Na Laeng bonded warehouse unloaded by a trailer from Thailand and delivers to shops and gas stations in Lao PDR. Some Thai refrigerated trucks also deliver ice cream or pizza pie to shops in Lao PDR using a cold chain. A logistics firm in Lao PDR distributes beer to several cities in Lao PDR. Other than consumer products, construction machinery and equipment are transported to dam construction sites in Lao PDR. They are imported to Lao PDR temporarily and are exported back to Thailand again. Some logistics firms in Thailand or Lao PDR transport fruit produced in Thailand to southern China.

Some Thai logistics firms export garments, coffee, furniture, and white charcoal ("binchotan") from Lao PDR to the third countries via Laem Chabang or Bangkok Port. One Thai cement manufacturer exports cement from Lao PDR to Thailand. However, the amount of cargo transported from Thailand to Lao PDR is said to be 9 times or 12.3 times (see 5.1) greater than that transported from Lao PDR to Thailand.

3. Logistics Costs between Vientiane and Laem Chabang and Bangkok Ports

In this section, first we report the logistics costs between Vientiane and Laem Chabang Port and between Vientiane and Bangkok Port based on the firm surveys. Second, we explain the problem of load on one side. Third, we show miscellaneous cross-border costs. Fourth, we discuss the logistics costs between Vientiane and Laem Chabang Port and between Vientiane and Bangkok Port and break down the logistics costs for the

Table 2: Logistics costs between Vientiane and Laem Chabang and between Vientiane and Bangkok based on interview survey

	Minimum	Maximum	Japanese Average	Thai Average	Overall Average
Vientiane - Laem Chabang	THB 40,000	THB 62,650	THB 56,883	THB 47,000	THB 47,608
	USD 1,333	USD 2,088	USD 1,896	USD 1,567	USD 1,587
Vientiane - Bangkok	THB 37,000	THB 62,650	THB 50,288	THB 44,000	THB 45,300
	USD 1,233	USD 2,088	USD 1,676	USD 1,467	USD 1,510

Notes: 1) Exchange rate is assumed to be THB 30.0 per USD.
2) The costs between Vientiane and Laem Chabang are based on 3 Japanese firms and 2 Thai firms and those between Vientiane and Bangkok are based on 4 Japanese firms and 2 Thai firms.
Source: Created by the authors.

sections into the factors.

3.1 Logistics Costs and Time Based on the Firm Survey

Table 2 shows results of the firm survey on the logistics costs between Vientiane and Laem Chabang Port and between Vientiane and Bangkok Port. The logistics costs between Vientiane and Laem Chabang (693 km) range from USD 1,333 to 2,088; the average costs of Japanese and Thai firms are USD 1,896 and 1,567, respectively. The costs of Japanese firms are 1.2-fold of those of Thai firms, and the overall average cost is USD 1,587.

However, the logistics costs between Vientiane and Bangkok Port (640 km) range from USD 1,233 to 2,088. The average costs of Japanese firms and Thai firms are USD 1,676 and 1,467, respectively. The costs of the Japanese firms were 1.1 times greater than those of the Thai firms and the overall average was USD 1,510.

Therefore, the cost from Vientiane to Laem Chabang Port is 1.05 times, or an additional USD 77 higher than that from Vientiane to Bangkok Port. For transport from Savannakhet by trailer, the cost is about 1.1 times as much or an additional USD 100, and from Pakse it was 1.2 times as much, or an additional USD 133, compared with

transport from Vientiane. The difference in transport cost between a 20-feet container and a 40-feet container depends on firms. Some firms say that the cost is similar because a 20-feet container is likely to be used for heavier goods, whereas a 40-feet container is used for bulky goods. One firm charges an additional USD 66.7 (THB 2,000) in using a 40-feet container to transport between Vientiane and Bangkok Port and USD 133.3 (THB 4,000) to transport between Vientiane and Laem Chabang Port.

Regarding the time from Laem Chabang to Vientiane, it takes at least 4 hours for inspection at Laem Chabang Port including an X-ray inspection, 14 hours for transporting from Laem Chabang to Nong Khai, and 2 to 3 hours for crossing the Nong Khai - Tha Na Laeng border, respectively. It can take 1 hour more between Tha Na Laeng border and the center of Vientiane because of traffic jams or regulations for trailers during the day, whereas it takes 0.5 hour without them. Thus, it takes about 24 hours in total including inspection at Laem Chabang Port.

3.2 Load on One Side

The problem of load on one side is often highlighted as a factor to increase cost for transport between Bangkok and Hanoi and between Vientiane or Savannakhet and Laem Chabang Port. Specifically, on the way from Bangkok to Hanoi or from Laem Chabang Port to Vientiane, the container is fully used, and on the way back it is empty.

The problem differs, however, between Bangkok - Hanoi and Laem Chabang Port - Vientiane because of the ownership of containers. Between Bangkok and Hanoi, on the one hand, only on land transport is required, so a freight forwarder can use their own containers. The cost can be reduced if the freight forwarder finds goods to transport on their way back to Bangkok. In other words, this problem can be solved by addressing the trade imbalance between the destination and the origin, although this is not easy.

On the other hand, the journey between Vientiane and Laem Chabang Port for the freight forwarder is part of the transport between Vientiane and a third destination, such as Japan or Europe, including shipping. In this case, the container is owned by shipping firms. In accordance with the contract between a shipping firm and a freight forwarder, for instance, when a manufacturing firm in Vientiane exports products to a third country via Laem Chabang Port, the freight forwarder must transport an empty container to Vientiane. When a Lao manufacturing firm imports parts and components from the third country via Laem Chabang Port, the freight forwarder must also transport an empty container to Laem Chabang Port. If the forwarder loads goods on both sides, it may break the terms of the contract, even though the forwarder can find goods to transport for export and for import.

The cost caused by the load on one side is smaller in exporting from or importing to factories of the Eastern Seaboard of Thailand or Ayutthaya, because the distance is less than 200 km. Transport with an empty container is much more expensive for transporting between Laem Chabang Port and Vientiane, as the distance is 693 km. A possible solution is to build an inland container depot (ICD) or a dry port at Vientiane. The freight forwarder can rent an empty container from the ICD in Vientiane and transport goods to Laem Chabang Port, or transport goods from Laem Chabang Port to Vientiane and return the empty container to the ICD in Vientiane. This is exactly the idea of Vientiane Logistics Park (VLP), which is now being planned. The details are discussed in Section 5.

We consider the problem caused by using containers owned by shipping firms as an institutional issue of load on one side. In addition to the institutional issue, the section between Vientiane and Laem Chabang also suffers from the trade imbalance between Lao PDR and Thailand, which is discussed in Section 5.1 in detail.

Table 3: Tolls of First and Second Mekong Friendship Bridges by vehicle type

	Tha Na Laeng			Savannakhet		2nd Bridge/
	LAK	USD		LAK	USD	1st Bridge
Trailers	81,000	10.1	Trucks with more than 10 wheels	135,000	16.9	1.7
7- to 10-wheel trucks	54,000	6.8	7- to 10-wheel trucks	94,000	11.8	1.7
6-wheel trucks	41,000	5.1	6-wheel trucks	67,000	8.4	1.6
Tour buses	27,000	3.4	Motor coaches	54,000	6.8	2.0
			Medium-sized coaches	40,000	5.0	
Mini coaches	13,000	1.6	Mini coaches	27,000	3.4	2.1
Pick-ups & Jeeps	8,000	1.0				
Sedans	5,000	0.6	Sedans with less than 7 seats	13,000	1.6	2.6

Notes: 1) The Exchange rate is assumed to be LAK 8,000 per USD.
2) The lengths of First and Second Mekong Friendship Bridges are 1,170m and 1,600m, respectively.
Source: Created by the authors.

3.3 Cross-border Costs

The cross-border costs charged at a border gate are composed of a bridge toll, a temporary import charge on vehicles into Lao PDR, and immigration fees for crossing a border.

Table 3 shows the bridge toll by type of vehicles at the First Lao–Thai Friendship Bridge (Tha Na Laeng) and Second Lao–Thai Friendship Bridge (Savannakhet). The bridge toll is controlled by the Ministry of Public Works and Transport of Lao PDR and the Ministry of Transport in Thailand and the payments are made before crossing the bridge. The bridge tolls are equivalent between the two countries and are adjusted by the exchange rate. The toll is 1.6–2.6 times as much at the Second Friendship Bridge as at the First Friendship Bridge, possibly due to the differences in the lengths and classifications between the bridges.

Table 4 shows the temporary import charge for vehicles into Lao PDR by type of vehicles at First Lao–Thai Friendship Bridge and Second Lao–Thai Friendship Bridge. The classifications are different, but the charges are the same where the classifications are the same.

In Lao PDR, the immigration costs are varied at different time and between Lao

Table 4: Temporary import charges for vehicles into Lao PDR

	Tha Na Laeng			Savannakhet	
	LAK	USD		LAK	USD
Trucks with more than 17 wheels	165,000	20.6	Trucks with more than 17 wheels	165,000	20.6
Buses with more than 25 seats	150,000	18.8			
Buses and trucks with 10-12 wheels	80,000	10.0	Truck with 10-18 wheels	80,000	10.0
Buses with more than 6 seats and 6-wheel trucks	50,000	6.3	Passenger cars with more than 6 seats	50,000	6.3
Pick-ups and jeeps	25,000	3.1	Sedans	25,000	3.1
Sedans	9,000	1.1			

Note: Exchage rate is assumed to be LAK 8000 per USD.
Source: Created by the authors based on an interview at the Second Mekong Friendship Bridge Border Gate on 5 September, 2016 and a sign board at the First Mekong Friendship Bridge.

nationals and foreign nationals (Table 5). Lao nationals have to pay immigration fees irrespective of time, whereas foreign nationals do not have to pay between 8:00 and 16:00 on weekdays. The immigration fees for Lao nationals increase and foreign nationals have to pay overtime fees outside the specified time on weekdays or on Saturdays, Sundays, and holidays. The fees can be paid in Lao kip and Thai baht, although the fee in Lao kip is cheaper based on the US dollar. Inhabitants of the border areas in Lao PDR and Thailand can cross borders with a border pass, although the immigration fees for Lao border pass holders are higher than for Lao passport holders,

Table 5: Immigration fees for crossing the Border at the First Mekong Friendship Bridge

	Lao Nationals		Thai and Foreign Nationals	
	Passport	Border Pass	Passport	Border Pass
Weekdays	LAK 1,000	LAK 11,000	Free	Free
8:00-16:00	USD 0.13	USD 1.38		
	THB 5	THB 50	Free	Free
	USD 0.17	USD 1.67		
Weekdays Overtime	LAK 10,000	LAK 20,000	LAK 11,000	LAK 11,000
6:00- 8:00	USD 1.25	USD 2.50	USD 1.38	USD 1.38
16:00-22:00	THB 45	THB 90	THB 50	THB 50
	USD 1.50	USD 3.00	USD 1.67	USD 1.67
Sat., Sun. and Holidays	LAK 10,000	LAK 20,000	LAK 11,000	LAK 11,000
	USD 1.25	USD 2.50	USD 1.38	USD 1.38
	THB 45	THB 90	THB 50	THB 50
	USD 1.50	USD 3.00	USD 1.67	USD 1.67

Note: Exchage rates are assumed to be LAK 8000 and THB 30.0 per USD.
Source: Created by the authors based on a signboard at the First Mekong Friendship Bridge.

while they are equal for Thai border pass holders and passport holders.

These above-stated fees have a small proportion of the overall logistics costs. The cross-border costs that account for a larger portion are a customs clearance fee for Thai customs and Lao customs, a cross-border transport fee for an empty container for Thai (for exporting from Lao PDR) or Lao customs (for importing to Lao PDR), and documentation costs. Table 6 summarizes the cross-border costs including these miscellaneous costs, based on interviews from logistics firms. The documentation cost can be free if manufacturers can proceed by themselves. The fees related to custom clearance, empty container transport and documentation, which are the dominant costs, are between USD 400 and 633. The overall cross-border costs range from USD 441 to 678.

3.4 Time Required for Cross-border Procedures

Next, we discuss the time required for cross-border procedures between Lao PDR and Thailand. The Nong Khai border gate is opened at 6:00. The trucks that transport goods from Laem Chabang or Bangkok arrive at the border at around 8:00–9:00. For the exporting procedure at the Nong Khai border, including X-ray inspection, it takes 30 minutes; usually trucks have to wait about for 1.5 hours, so the overall time on the Thai side is 2 hours. After crossing the Mekong River, perishable goods and duty-free goods are transported to Dongphosy Container Yard (Dongphosy CY), and other goods must undergo X-ray inspection at Tha Na Laeng bonded warehouse (see Section 5). It takes 3–4 hours before the trucks complete the inspection at around 13:00 or 14:00. In total, it takes around 6 hours to process incoming cross-border procedures to Lao PDR.

In exporting goods from Lao PDR to the third countries, trailers or semi-trailers with empty containers should be usually procured at Laem Chabang Port or Bangkok

Table 6: Cross-border costs for trailers at the First Mekong Friendship Bridge

Official costs	(LAK or THB)	(USD)
Bridge tolls	LAK 162,000.0	USD 20.2
Temporary import charges for vehicles	LAK 165,000.0	USD 20.6
Immigration fees	THB 0 - 100	USD 0.0 - 3.4
Sub-total		USD 40.8 - 44.2

Other costs	(THB)	(USD)
Customs clearance fees in Lao PDR	THB 6,000 - 6,500	USD 200 - 217
Customs Clearance Fees in Thailand	THB 4,000 - 4,500	USD 133 - 150
Empty container transport fees in Lao PDR	THB 1,500	USD 50
Empty container transport fees in Thailand	THB 500	USD 17
Documentation fees (optional)	THB 4,000 - 6,000	USD 133 - 200
Sub-total	THB 16,000 - 19,000	USD 400 - 633

	(USD)
Total	USD 441 - 678

Note: Exchage rates are assumed to be LAK 8,000 and THB 30.0 per USD.
Source: Based on Table 3 - Table 4 and Inteview with logistics firms.

Port two days before departing from Vientiane. The customs clearance procedure for the empty container starts from the morning, finishes in the early afternoon, and the trailer arrives at a factory in Vientiane at around 14:00. It takes 1 hour to load goods at the factory, 1 hour for processing cross-border procedures at Tha Na Laeng and 0.5 – 1 hour at Nong Khai if the cargo is transported to Tha Na Laeng before 18:00[7]. In total, it takes at least 3 days to procure containers and process outgoing cross-border procedures from Lao PDR.

3.5 Estimating Logistics Costs between Lao PDR and Thailand

Logistics operations between Lao PDR and Laem Chabang or Bangkok Ports are conducted by Thai or foreign freight forwarders, not by Lao freight forwarders. Thus,

[7] The border gate is closed at 21:00 and customs can proceed until 20:00 (based on an interview with a logistics firm on 1 November 2016).

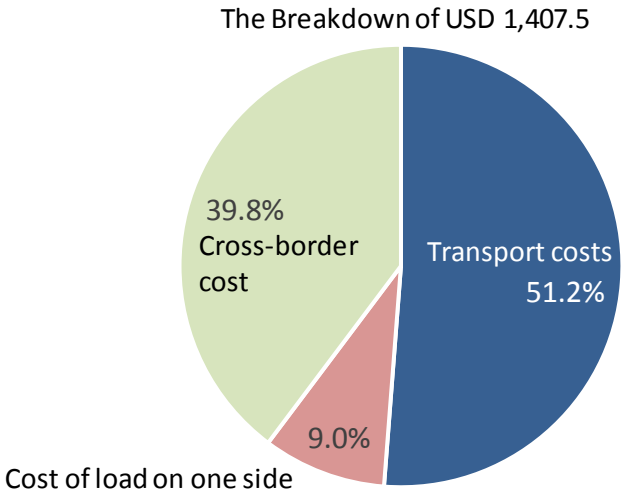
almost all the trailers for such transport are those registered in Thailand. According to data obtained in our survey, the average transport cost per kilometer using a trailer registered in Thailand is USD 1.126 (Table 7). We use this cost per kilometer as a benchmark to estimate the transport cost between Vientiane and Bangkok. USD 1.126 multiplied by 640 km, the distance from Bangkok to Vientiane, gives USD 721. This is the estimated transport cost between Vientiane and Bangkok. However, it assumes load on both sides, and does not consider the cost caused by load on one side.

Let us estimate an additional cost caused by load on one side. According to a Thai logistics firm, the transport price from Bangkok to Vientiane is set higher than the domestic transport price in Thailand, as the former considers the possibility of returning empty on the way back from Vientiane to Bangkok. If load on the way back is secured, however, the price on the way back can be discounted to 70% of that assuming load on one side. When x is the one-way transport cost assuming load on one side, the total cost going and returning with load is expressed by $x + 0.7\,x$. This should be equal to the transport cost of load on both sides. Given that the estimated one-way transport cost between Vientiane and Bangkok with load on both sides is USD 721, the following equation holds:

$$x + 0.7\,x = 721 \times 2$$

Solving the equation gives x = USD 848. The transport cost assuming load on one side is USD 848. The additional cost caused by load on one side can be calculated by USD 848 – USD 721 = USD 127. Regarding the cross-border costs, the average of the minimum and the maximum costs in Table 6 is calculated by [USD 441 + USD 678]/2 = USD 559.5.

Figure 4: Breakdown of logistics costs between Vientiane and Bangkok



Source : Based on the Analysis by the authors.

To sum up, the total logistics cost between Vientiane and Bangkok is estimated to be USD 1,407.5, which is composed of 1) transport cost (USD 721 [51.2%]), 2) cost of load on one side (USD 127 [9.0%]), and 3) cross-border cost (USD 559.5 [39.8%]), as shown in Figure 4.

Let us compare the result of our estimation on the logistics cost between Vientiane and Bangkok, USD 1,407.5, with the results of our interview survey shown in Table 2. USD 1,407.5 falls in the range between the minimum value (USD 1,233) and the maximum value (USD 2,088) in the interview. The estimated cost is approximate to the average cost of Thai freight forwarders (USD 1,467) in the interview, while it is 6.8% lower than the overall average (USD 1,510) in the interview that covers Japanese freight forwarders. Given that our estimation uses Thai firms' transport cost per kilometer as a benchmark, the approximation is reasonable. The estimated value, USD 1,407.5, can be regarded as appropriate in light of the results of our interview survey. Compared to USD 1,700, that is, the logistics cost between Vientiane and Bangkok (Klong Toey) in the 2014 JETRO survey, the results of this research are much lower, while it is close to the

average of Japanese firms, USD 1,676.

In the final part of this section, we should reply to the initial question whether or not USD 1,000 as the logistics cost between Vientiane and Nong Khai is appropriate. According to a firm surveyed in Lao PDR, it costs USD 100 to transport the distance of 18 km between Vientiane and Tha Na Laeng. The cross-border costs are USD 559.5 as stated above. The additional cost of "load on one side" per 20km is estimated to be USD 4, calculated from the estimation that the cost for 640km is USD 127. Then the total logistics cost between Vientiane and Nong Khai is USD 100 + USD 559.5 + USD 4 = USD 663.5. With multiplying this value by 1.1 times, the difference between Thai firms and Japanese firms in accordance with Table 2, the cost for Japanese firms is estimated to be USD 730. Compared to USD 730, USD 1,000 is 1.37 times. So the previously estimated value of USD 1,000 as the logistics cost between Vientiane and Nong Khai is concluded to be higher.

4. Domestic Logistics Costs in Lao PDR

4.1 Higher Domestic Logistics Costs in Lao PDR Compared with Those in Thailand

This section discusses domestic logistics costs in Lao PDR, apart from the cross-border logistics costs between Lao PDR and Thailand. We compare domestic logistics costs in Lao PDR with those in Thailand. The logistics costs must be compared for similar conditions. For example, the logistics costs per kilometer are different for transport over shorter distances and for longer distances, and for mountainous and flat terrain. We compare the logistics costs for Vientiane–Savannakhet (490 km) in Lao PDR and those for Bangkok–Khon Kaen (450 km) in Thailand. These two sections are both relatively

Table 7: Difference in domestic logistics cost between Lao PDR and Thailand

	Minimum	Maximum	Average	Average per km	Scale factor
Vientiane - Savannakhet (Load on One Side)	USD 1,100	USD 1,250	USD 1,208	USD 2.466	2.2
Vientiane - Savannakhet (Load on Both Sides)	USD 735	USD 750	USD 743	USD 1.515	1.4
Bangkok - Khon Kaen	USD 333	USD 667	USD 507	USD 1.126	1.0

Notes : 1) Exchange rates are assumed to be LAK 8,000 and THB 30.0 per USD.
2) The costs between Bangkok and Khon Kaen are based on 5 Thai firms and those between Vientiane and Savannakhet are based on 1 Japanese firm, one Thai firm and one Lao firm.
3) For the section between Bangkok and Khon Kaen, cargoes are loaded on both sides.
4) The answers of the Lao firm are based on the cost per km per ton base. So the cost is calculated with an assumption a 25 ton cargo in 20 feet full container.

Source : Created by the project team.

flat, have similar distances, and connect major cities. One of the differences is that Vientiane–Savannakhet has two lanes, except for the section around Vientiane, whereas Bangkok–Khon Kaen has at least four lanes and it enables truck drivers to drive at higher speeds.

Table 7 shows minimum, maximum, and average costs with a full container load (FCL) based on interviews with firms in Lao PDR and in Thailand. Between Vientiane and Savannakhet, it takes 12 hours, and the costs in average are USD 1,208 for load on one side and USD 743 for load on both sides. The costs per kilometer are USD 2.466 and 1.515, respectively. Between Bangkok and Khon Kaen, it takes 8–10 hours, the cost is between USD 333 and 667, the average cost is USD 506.7, and the average cost per kilometer is USD 1.126. Thus, the average cost per kilometer in Lao PDR is 2.2 times as much with load on one side, and even with load on both sides, 1.4 times as much relative to that in Thailand.

The domestic logistics costs in Lao PDR greatly varies with conditions of terrain, types of transportation equipment, freight forwarder's nationality and so on. For the

mountainous section between Vientiane and Luang Phrabang, the cost is about 1.25 times higher than that between Vientiane and Savannakhet. The cost between Vientiane and Tha Na Laeng with a 6-wheel rigid truck is USD 69, according to a Lao logistics firm, while the cost of the same route with a FCL trailer is USD 100, according to a Japanese freight forwarder.

4.2 Other Logistics Cost Factors

As cost factors other than transport, we discuss prices of trucks, drivers' wages, and fuel prices. We compare prices in Lao PDR with those in Thailand.

The listed prices of a tractor head in Thailand are THB 3.147–3.347 million (USD 104,900–111,567) for Japanese affiliated manufacturers and are similar to those for Chinese manufacturers (THB 3.15–3.25 million, or USD 105,000–108,333). The Chinese tractor heads are discounted to two-thirds of the listed price (USD 70,000–72,222), whereas Japanese tractor heads are only 10% off the listed price (USD 94,410–100,410). Thus, the real prices of Chinese tractor heads are 73% those of Japanese[8].

In Lao PDR, the price of Chinese tractor heads for 30-ton loads is USD 60,000, around half that for Japanese tractor heads (USD 120,000)[9]. Thus, the price of Chinese tractor heads in Lao PDR is just 83–86% of that in Thailand, whereas the price of Japanese tractor heads in Lao PDR is 1.19–1.25 times that in Thailand. However, Chinese tractor heads cannot be sold in the second-hand market after five years, whereas Japanese tractor head can be sold at around half their original price.

[8] The description in this paragraph is based on an interview with a Japanese-affiliated truck sales firm in Thailand on 3 November 2016.

[9] In Lao PDR, the import tariff for a truck is 30%, excise tax is 8%, and VAT is 10%, whereas tractor heads imported from China are free from these taxes due to the ASEAN–China Free Trade Area.

Table 8: Fuel price comparison between Lao PDR and Thailand (Survey on June 7, 2016)

Lao PDR

	Price	Ex. rate	USD	Scale factor
Gasoline	LAK 6,050	8,060	USD 0.75	1.04-1.14
Diesel	LAK 7,370	8,060	USD 0.91	1.27

Thailand

	Price	Ex. rate	USD	Scale factor
20% Ethanol regular	THB 23.09	35	USD 0.66	87.9%
10% Ethanol regular	THB 25.23	35	USD 0.72	96.0%
Diesel	THB 25.14	35	USD 0.72	78.6%

Note : The exchange rate is the rate on the day based on the Bangkok Bank website.
Source : Survey by Mr. Souknilanh Keola for Bangkok and by Kenichiro Yamada for Vientiane.

The monthly wage of a trailer driver in Thailand is between THB 20,000 (USD 667) and THB 30,000 (USD 1,000) and the average of four firms under survey is THB 23,125 (USD 771). In Lao PDR, the monthly wage of a trailer driver is between LAK 1,300,000 and 1,500,000 (USD 162.5 and USD 187.5) and the average of drivers in one firm under survey is LAK 1,400,000 (USD 771). Thus, the wage of a trailer driver in Thailand is 4.4 times higher than that in Lao PDR.

We conducted a fuel price survey, checking the prices at gas stations in Bangkok and in Vientiane on the same day (7 June, 2016). Table 8 summarizes the result. In Thailand, gasoline contains 10% or 20% ethanol, whereas gasoline contains no ethanol in Lao PDR, so strict comparison is difficult. The gasoline price in Lao PDR is 1.04–1.14 times that in Thailand, and the diesel price is 1.27 times as much in Lao PDR as in Thailand. Therefore, the wages of trailer drivers are lower, whereas the fuel prices are higher in Lao PDR.

5. VLP Development Project

5.1. Trade Structure between Lao PDR and Thailand

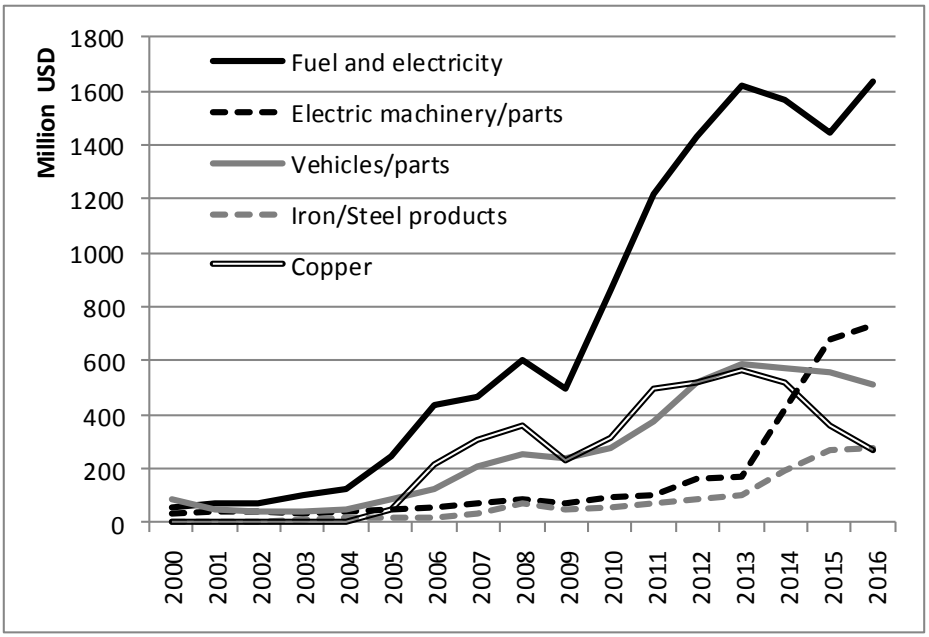
Amid rapid growth of trade between Lao PDR and Thailand, the limited capacity of cargo-handling facilities in Vientiane has been a fundamental bottleneck that has hindered efficient, timely cargo transportation.

Based on Thailand Customs data, the amount of trade between Lao PDR and Thailand has increased to USD 5.9 billion in 2016[10], more than 12-fold the amount in 2000. Because this figure does not include Lao PDR's imports and exports with third countries via Thailand ports, such as Laem Chabang Port and Bangkok Port, the actual total land transport volume between Lao PDR and Thailand is much larger. Although the rapid growth of fuel imports to Lao PDR has greatly affected the total trade amount, the electric machinery and parts trade has also sharply increased since 2013, indicating Lao PDR's participation in the regional supply chain (Figure 5). Thus, a fundamental issue with logistics around Vientiane is how to manage this increasing and diversifying cargo trade effectively.

Another bottleneck is the severe trade imbalance between Lao PDR and Thailand, especially at the Nong Khai - Tha Na Laeng border. According to JETRO (2015), in FY 2013 (October 2012–September 2013), while Thailand exported THB 41.7 billion (approx. USD 1.4 billion) at this border, it imported THB 3.4 billion (approx. USD 0.1 billion). This trade imbalance causes the above-stated problem of load on one side, especially coupled with the institutional issue that arises from using ocean containers which restricts client logistics companies to using containers under lease contracts

[10] This amount includes Thailand's exports to third countries via Lao PDR.

Figure 5: Amount of Trade between Lao PDR and Thailand



Note: Data from Thailand Customs.
Source: JETRO from Global Trade Atlas

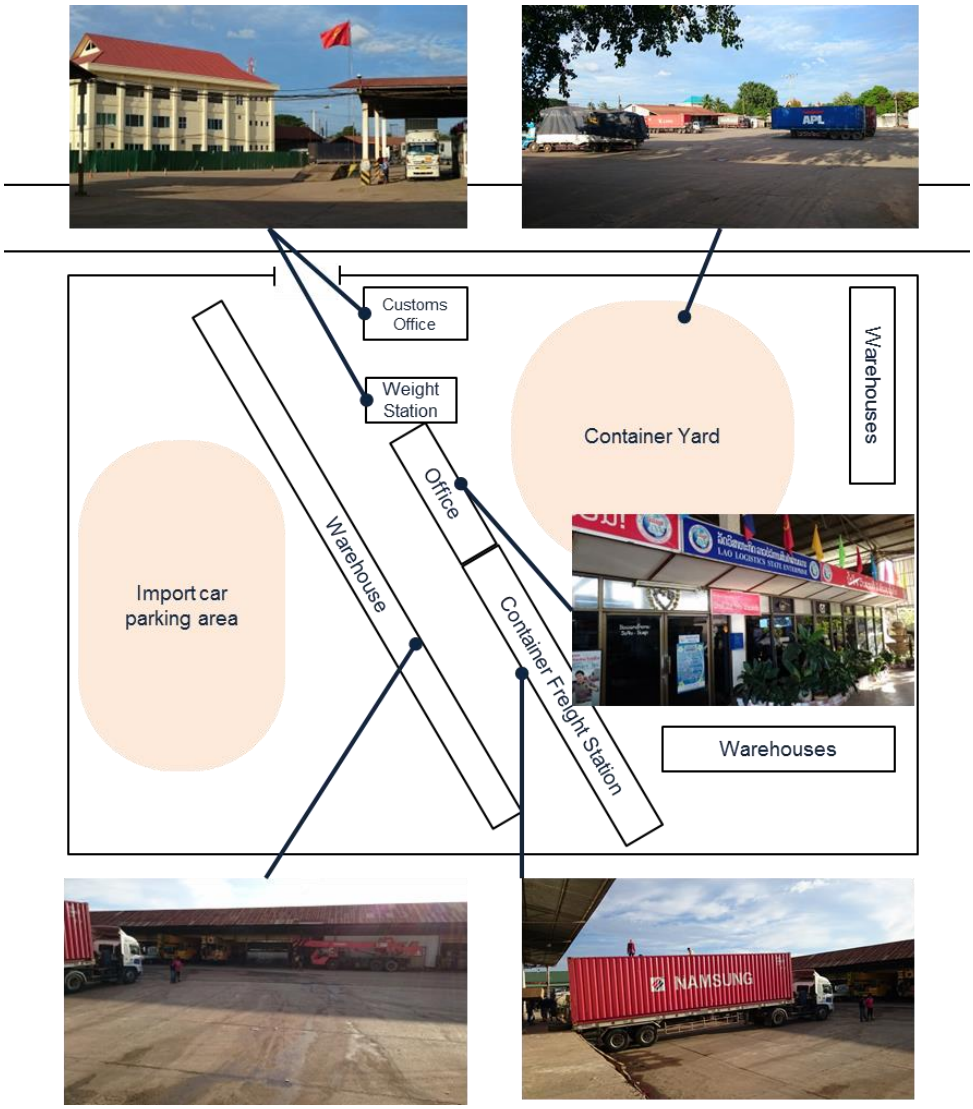
(Section 3.2).

5.2 Existing Logistics Infrastructure in the Vientiane Area

In the Vientiane area, imported goods are inspected in the Tha Na Laeng Bonded Warehouse. According to JICA (2015), the Tha Na Laeng Bonded Warehouse is located 500 m east of the First Friendship Bridge, and covers 6 ha land, of which 3.5 ha are for administration buildings, truck waiting areas, and warehouses, and 2.5 ha are used as parking spaces for trucks and imported vehicles (Figure 6). The warehouses are operated by Laos Logistics State Enterprise (LLSE), which the Ministry of Finance, the Ministry of Industry and Commerce and the Ministry of Public Works and Transport jointly manage.

In our interview with LLSE on 1 November 2016, they stated that the average cargo handling volume is approximately 350 trucks on Tuesday through Thursday, whereas on

Figure 6: Tha Na Laeng Warehouse Location



*Source: J*ICA (2015) and pictures taken by the author on 2 November 2016.

Monday and Friday, the warehouse accommodates up to 500 trucks, because of the operation schedules of factories in the Vientiane area. Based on the figure in JICA (2015), in 2013, the number of incoming trucks to Tha Na Laeng Bonded Warehouse was reported as 37,420. Assuming 240 working days in a year, we estimated that in 2013, around 160 trucks per day used the warehouse, which implies a cargo volume surge in these two years.

Apart from Tha Na Laeng Bonded Warehouse, there is one container yard in the Dongphosy area (Dongphosy CY), which was developed through funding provided by the Neighbouring Countries Economic Development Cooperation Agency (NEDA) of Thailand, and its construction was completed in September 2015[11]. In July 2016, LLSE was also designated as an official operating body. Based on an interview with a Japanese logistics firm, since September 2016, both Tha Na Laeng Bonded Warehouse and Dongphosy CY have been used for imported goods inspections.

5.3 Current Logistical Bottlenecks in the Vientiane area

5.3.1 Short-term Constraints

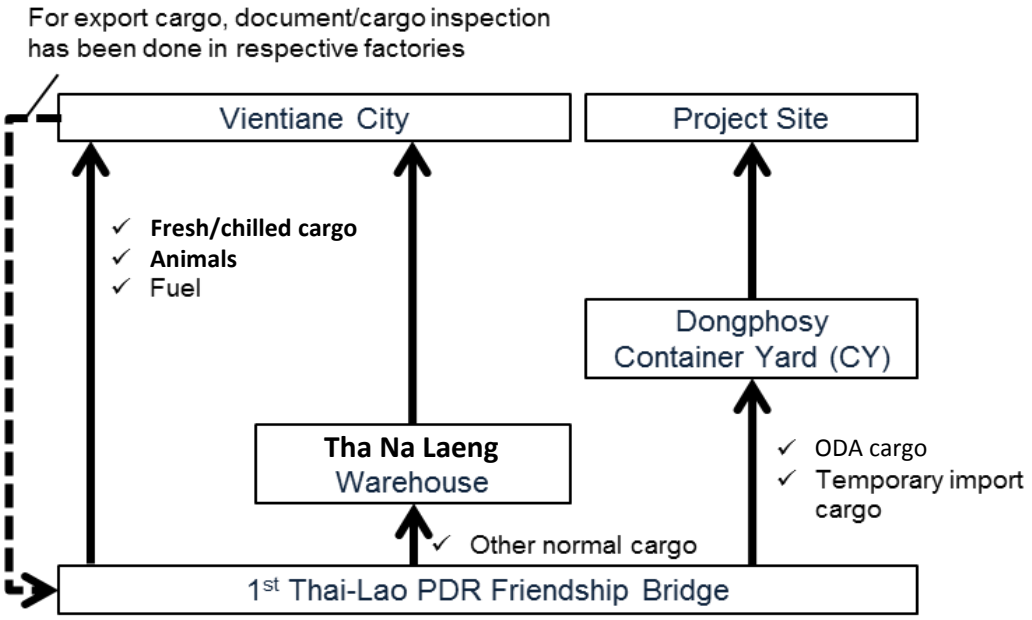
Current constraints on Tha Na Laeng Bonded Warehouse are i) limited cargo handling capacity, and ii) inability to manage emerging logistics needs (e.g., cold chain facilities). To address point i), because of the cargo volume increase, since 2016, Official Development Assistance (ODA) cargo and temporarily imported goods, such as construction machinery, have been inspected at Dongphosy CY instead of Tha Na Laeng Bonded Warehouse. In addition, because of point ii), fresh and frozen goods, animals, and fuels are transferred directly to Vientiane. Therefore, currently there are three routes for importing goods from the First Friendship Bridge: direct to Vientiane, to Tha Na Laeng Bonded Warehouse, and to Dongphosy CY. This makes customs tax collection and cargo tracking complicated and difficult (Figure 7).

5.3.2 Necessary Future Steps

As discussed in Section 5.1, another major logistical bottleneck is the big trade

[11] Based on the NEDA website.

Figure 7: Import procedure in the Vientiane area (current)



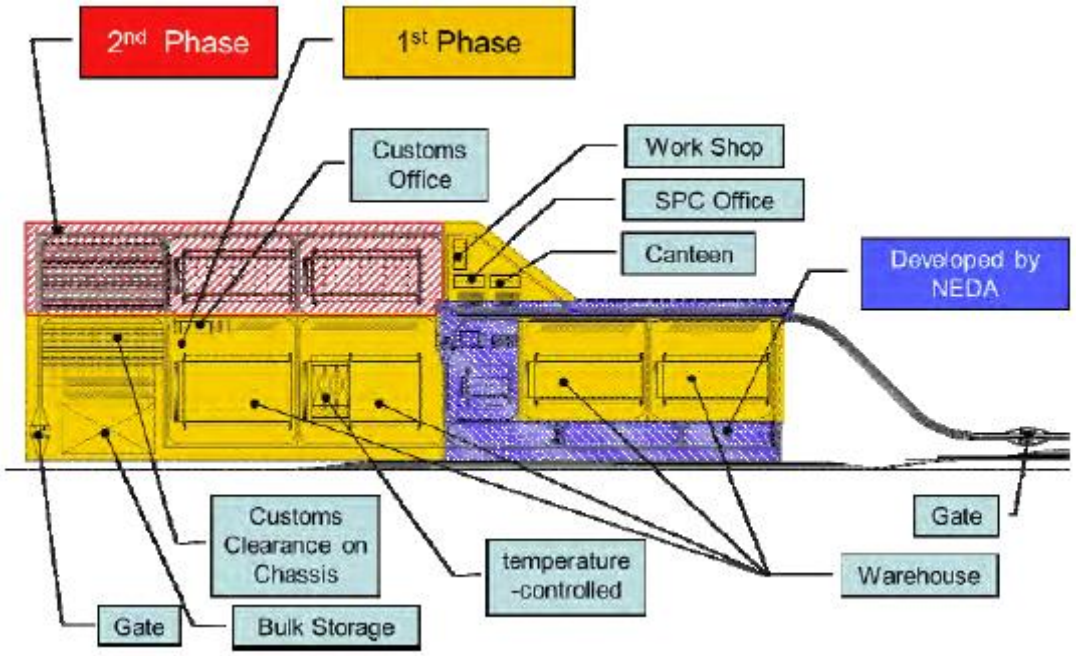
Source: Interview survey from LLSE (1st of November 2016).

imbalance at the Nong Khai – Tha Na Laeng border. Together with the long distance from Laem Chabang Port to Vientiane, this is one of the main reasons for the high logistics cost.

5.4 VLP Development Plan

To tackle the bottlenecks, the Ministry of Public Works and Transport of Lao PDR and JICA of Japan conducted the "Preparatory Survey on Vientiane Logistics Park (VLP) Project in Lao PDR" in July 2015 and drafted a detailed VLP development plan. In its survey, it was recommended that VLP should be located in the Dongphosy area, with the advantage of using existing Dongphosy CY facilities and the potential of creating connections with railway systems. The design of the facility is shown in Figure 8, while such grand design has been modified in line with the business profitability. VLP's services are categorized as follows: 1) existing service expansion (e.g., providing land

Figure 8 : VLP Layout



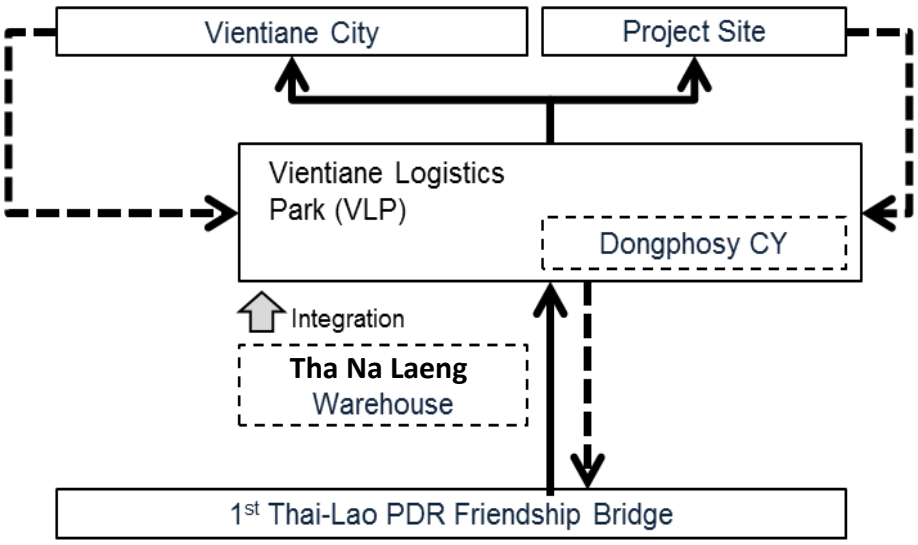
Note : SPC is an abbreviation of "Special-Purpose Company."
Source : JICA (2015).

area for on-chassis customs clearance, public bonded warehouses, and imported automobile inventory), 2) new services (e.g., low-temperature cold storage and tenant services), and 3) future services (e.g., railway cargo, ICD, and export consolidation).

Services 1) and 2) are expected to overcome short-term logistical bottlenecks through streamlining the logistics and customs procedures, as well as adding new cold chain facilities (Figure 9). Service 3) will alleviate the load on one side problem by combining ICDs with railway cargo transportation systems and providing an export consolidation facility.

According to LLSE, 70% of the total finance will be provided by Japan, and Lao PDR will pay 30%, which includes the Dongphosy CY development cost. However, the schedule for opening VLP has been delayed from the original schedule (middle of 2017).

Figure 9: Import procedure at Vientiane area (VLP)



Source : Interview survey from LLSE (1st of November 2016).

5.5 Business Potential of VLP

5.5.1 ICD and Consolidating Export Cargo Formation

The amount of trade in electric machinery and parts between Lao PDR and Thailand has increased sharply (Figure 5), indicating Lao PDR's initial participation in the regional supply chain. However, due to the trade volume imbalance between Lao PDR and Thailand and the small factory size in Lao PDR for these manufacturers, it has been difficult to use empty containers for export effectively, which inevitably increases the export logistics cost. Attracting further direct foreign investment through highlighting Lao PDR's advantages, such as low labor and electricity costs, should allow facilities suitable for consolidating cargo formation to be developed.

However, to realize cargo consolidation, it is vital for the shipping firms that own ocean containers to cooperate. Currently, they want to keep the containers in Lao PDR for only a short time to minimize their risk, and impose expensive container lease deposits with short lease contract periods. This is particularly important if VLP has an

ICD, where container operation risk between VLP and connected sea ports (e.g., Laem Chabang Seaport) is borne by shipping firms. Close discussion among stakeholders should be encouraged.

5.5.2 Cold Chain

Another business opportunity is cold chain facility development. JETRO (2015) illustrated the increasing demand for cold chain logistics from the food and medical industries. A future demand projection by JICA (2015) predicts surging demand in low-temperature cargo, from 3,980 ton in 2018 to 22,577 ton in 2042. Together with the recent boom in cross-border e-commerce from Thailand, a cold chain facility in VLP will be basic infrastructure required to improve quality of life in Lao PDR.

Concluding Remarks and Policy Recommendations

In this paper, we discussed the logistics costs between Vientiane and Laem Chabang and Bangkok Ports, the domestic logistics costs in Lao PDR, and the plan for VLP to reduce the high logistics costs. We estimated the logistics costs between Vientiane and Bangkok as USD 1,407.5, of which the transport cost itself accounted for no more than 51%. What makes the costs high is the cross-border costs and costs caused by “load on one side”, accounting for 40% and 9% respectively. The problem of “load on one side” consists of two sub-problems: the institutional issue that logistics firms cannot own but should lease containers from shipping firms, and the issue of trade imbalance between Lao PDR and Thailand. In regard to the domestic logistics costs in Lao PDR, we estimated the costs 1.4 times for load on both sides and 2.2 times for load on one side higher than the domestic logistics costs in Thailand.

The policy recommendations based on the analysis of this paper are as follows:

(1) Considering that the cross-border costs account for as high as 40% of the overall logistics costs between Vientiane and Bangkok, the Government of Lao PDR should try to reduce the customs clearance fee and empty container transport fee in the side of Lao PDR. Further efforts to reduce the cross-border costs should be made in cooperation with the Thai side.

(2) In the policy dialogue on the draft of this paper[12], there was a comment that the definition of the customs clearance fee is not clear; it sometimes includes various kinds of procedure fee including the documentation fee, and customs procedure itself shall not be the sole element which causes expensive cross-border costs. A Lao logistics firm asked us to further break down such hidden elements of cross-border costs, not only at the land border but also at the airport, through conducting brain-storming session. Considering the difficulty of solving this issue directly by stakeholders (e.g. logistics firms and relevant agencies at the border), the Government of Lao PDR, as a third party, is recommended to take a proactive role for developing such discussion table among logistics firms, related officials and experts, for creating joint efforts to reduce cross-border costs.

(3) The cost of "load on one side" owing to the institutional issue can be alleviated by developing VLP as an ICD, with cargo consolidation facility. In doing so, we must alleviate the burden for shipping firms in the operation of VLP[13] as ICD. Especially

[12] A seminar for the policy dialogue on the draft of this paper was held in Vientiane on 24 February 2017, organized by the National Institute for Economic Research (NIER) of Lao PDR, IDE-JETRO, and the JETRO Vientiane Office.

[13] In this case, the responsibility for the transport between the ICD in Vientiane and Laem Chabang Port belongs to the shipping firms. If any kinds of damage occur to the cargo, for example, the shipping firm must make the payments for the damage.

from its nature of regarding ICD as a relevant facility of mother port (e.g. Laem Chabang port), in transporting empty containers between VLP and its mother port, the occurring cost shall be owed by shipping firms, which is currently paid by either exporter, importer or freight forwarders of the goods. From the viewpoint of service providers, on the one hand, a fundamental solution to reduce such additional burden would be the full use of railway, which enables to deliver empty containers in bulk and simultaneously to the relevant seaports (e.g. Laem Chabang port). However, it shall be strongly reiterated that such railway development requires cost-benefit analysis with accurate cargo demand forecast, and full government support to minimize developer's burden. From the perspective of the service users, on the other hand, full understanding and cooperation of shipping firms, as a provider of sea containers, is vital. In this sense, it shall be the indispensable prerequisite of ICD development to get consensus and commitment of shipping firms that utilize the ICD function. At the initial stage, it would be one considerable path to form an alliance among shipping firms in order to disperse the risk of the ICD operation, which might cause hesitation for any one of the shipping firms to solely utilize the ICD. Considering the current development plan that assumes private firms to operate and manage VLP, a strong leadership of the Government of Lao PDR to share and minimize such operation risk shall come in advance of the actual development. The Government of Lao PDR could provide a platform among shipping firms, freight forwarders and manufacturing firms.

(4) To address the issue of trade imbalance between Lao PDR and Thailand, Lao PDR needs to increase exports by attracting foreign direct investment (FDI). While being a landlocked country, Lao PDR is fortunate to be located in East Asia, where regional production network of manufactured products has been highly developed. In this respect, it is crucial for Lao PDR to reduce the logistics costs, in order to attract more

FDI, as well as to make it easier to procure labor forces (IDE-JETRO 2016). Reduction of the logistics costs would be an important key to turning Lao PDR from a landlocked into land-linked country. To attract more FDI, it might be an effective policy for Lao PDR to give incentives for a certain period of time to investments which contribute to greater exports and smaller trade imbalance.

(5) The development of the railway system can also contribute to reduction of the logistics costs between Vientiane and the two ports in Thailand, as already mentioned in (3). It might be necessary to build another bridge solely for the railway. The railway development policy would need to be developed in close cooperation of Thailand and international donors. Trilateral communication for improving the railway logistics among the Government of Lao PDR, Thailand and Japan is recommended.

(6) As a matter of fact, Lao trucks are not allowed to enter bonded zones in Thailand, while exports and imports by way of Laem Chabang Port and Bangkok Port are convenient for Lao PDR. High dependence on Thailand would make the bargaining power of Lao PDR weaker. To make alternatives, it is recommended for the Government of Lao PDR to make efforts to increase the convenience of exports and imports by way of ports in Vietnam in cooperation with the Vietnamese government.

(7) Most of the policy recommendations enumerated so far are not newly recommended ones, but the ones that have been repeated for a long time. The Government of Lao PDR should take actions in accordance with these recommendations. The important thing is not to intervene into business that can be realized by the private sector, but to facilitate and support what cannot be realized only by the Lao private sector.

Now we enumerate future challenges that have not been addressed in this research project. Although we examined various factors affecting the domestic logistics costs in

Lao PDR including prices of trucks, wages of drivers and fuel prices, deeper investigation would be needed to identify the major reason for the higher domestic logistics costs. At the same time, comparative analysis of the logistics costs in Lao PDR, not only with Thailand, but also with other ASEAN member countries, is also necessary, as requested at the policy dialogue seminar.

Finally, the logistics cost from Vientiane to Yokohama Port is much higher than the cost from other Asian cities (Figure 1). We hope that the Government of Lao PDR notes this difference. The major cause is the cross-border costs and the costs of load on one side, as we analyzed in this research. By decreasing these costs, potential investors are expected to invest in Lao PDR and the lives of the Lao people will be improved by the decrease in the consumer price of goods, including goods imported through Thailand. Lao PDR is expected to be a logistics service hub in the region, as outlined in the Infrastructure Master Plan, by providing efficient logistics with lower costs to firms in the ASEAN region.

References

IDE-JETRO (2016) *Summary of the Seminar on Policy Recommendations and Policy Dialogue with the Lao PDR Government: Enhancing Industry in Lao PDR: Service Liberalization, Simplification of Investment Procedures, and Human Resource Development*, Policy Recommendation Paper Submitted by IDE-JETRO to the Government of Lao PDR.

JETRO (2015). *3rd Survey on Business Needs and Strategies in Mekong sub-region* (in Japanese, *Dai 3 Kai Mekon Bijinesu Niizu Chosa 2015*).

JETRO (2015) JETRO Censor (in Japanese, *Jetoro Sensaa*), May 2015.

JETRO (2016) JETRO Censor (in Japanese, *Jetoro Sensaa*), May 2016.

JICA (2015). *Preparatory Survey on Vientiane Logistics Park (VLP) Project in Lao PDR* (in Japanese, *Raosu Koku Bienchan Rojistiks Paak Jigyo Jumbi Chosa [PPP Infra Jigyo] Hokokusho*).

NIER (2016) Report on Logistics Development in Lao PDR, a report submitted to IDE-JETRO.

Websites

NEDA: http://www.neda.or.th/home/en/download-with-thumb.php?id=95.

Appendix: Details of Major Routes between Lao PDR and Thailand

(1) Vientiane–Nakhon Ratchasima (387 km)

The roads between Vientiane and Nakhon Ratchasima are simple. Thadeua Road runs from Vientiane to Tha Na Laeng Border. After crossing the Mekong River, HW No. 2 in Thailand goes to Nakhon Ratchasima. There are no alternative roads for this section because there are at least four lanes along HW No. 2 so traffic can travel faster.

Vientiane – (Thadeua Road: 18km) – Tha Na Laeng Border – (Friendship Bridge: 2km) – Nong Khai – (HW. No. 2: 54km) – Udon Thani – (HW. No. 2: 118km) – Khon Kaen – (HW. No. 2: 180km) – Entrance to Nakhon Ratchasima – (HW. No. 2: 15km) – T Junction with HW. No. 304

(2) Savannakhet–Nakhon Ratchasima

From the office of the Savan–Seno Special Economic Zone Authority, it is about 1 km to the Savannakhet Border. There are several routes between Mukdahan and Nakhon Ratchasima. The shortest route is

Route A (410km)

SEZA – (HW. No. 13: 1km) Savannakhet Border – (2nd Friendship Bridge: 2km) – Mukdahan Border – (HW. No. 212: 52km) –Loeng Nok Tha – (HW. No. 2169: 64km) – Yasothon (HW. No. 202: 151km) – Mai Chaiyaphot – (HW. No. 207: 31km) – Prathai – (HW. No. 207: 38km) – Ban Wat – (HW. No.2: 51km) – Entrance to Nakhon Ratchasima – (HW. No. 2: 15km) – T Junction with HW. No. 304

Another shortcut using the East‐West Economic Corridor (EWEC, HW No. 12) is

Route B (421km)[14]

SEZA – (HW. No. 13: 1km) Savannakhet Border – (2nd Friendship Bridge: 2km) –Mukdahan Border – (HW. No. 12: 92km) – Kuchinarai – (HW. No. 2046: 28km) – Phon Thong – (HW. No. 2044: 46km) – Roi Et (HW. No. 2045 and HW. No. 2040: No. 83km) – Phayakkhaphum (HW. No. 202: 34km) – Mai Chaiyaphot – (HW No. 207: 31km) – Prathai – (HW. No. 207: 38km) – Ban Wat – (HW. No.2: 51km) – Entrance to Nakhon Ratchasima – (HW No. 2: 15km) – T Junction with HW. No. 304

The simplest route using the EWEC is

Route C (451km)

SEZA – (HW. No. 13: 1km) Savannakhet Border – (2nd Friendship Bridge: 2km) –Mukdahan Border – (HW. No. 12: 92) – Kuchinarai (HW. No. 12: 40km) – Somdet (HW. No. 12: 42km) – Kalasin (HW. No. 12: 82km) – Khon Kaen – (HW. No. 2: 180km) – Entrance to Nakhon Ratchasima – (HW. No. 2: 15km) – T Junction with HW. No. 304

Route C is the simplest, and one logistics operator says that they use Route C because there are fewer narrow and curved sections, so it is suitable for trailers or semi-trailers.

(3) Nakhon Ratchasima–Bangkok Port (253 km)

Between Nakhon Ratchasima and Bangkok Port, the major route is shown below. However, there are various destinations in Bangkok. The section between Nakhon Ratchasima and Sara Buri is mountainous. After passing Sara Buri, many industrial estates and parks are in Ayutthaya and Patum Thani Province.

T Junction at Nakhon Ratchasima – (HW. No. 2: 144km) – Sara Buri – (HW. No. 1: 34km) – Entrance to Ayutthaya – (HW. No. 1: 20km) – Bang Pa-In (Expressway:

[14] Regarding Route B, the distances are based on a trip from Kuchinarai to Mukdahan dated on 29 August 2010 and a trip from Kuchinarai to Bangkok conducted on 11 January 2011.

55km) Bangkok Port

(4) Nakhon Ratchasima-Laem Chabang Port (306 km)

There are no alternative routes between Nakhon Ratchasima and Laem Chabang Port. The route is via HW No. 304 and 331, while the route is experienced as continuous when the driver makes a trip (as well as the route between HW No. 202 and HW No. 207), HW 331 is separated at a T-junction into a road to Laem Chabang and a road to Sattahip. On the route to Laem Chabang, the section between Nakhon Ratchasima and Kabin Buri is mountainous. The road crosses the Southern Economic Corridor (HW No. 33) at Kabin Buri and HW No. 354, which runs to the Aranya Prathet–Poipet Border and Phnom Penh.

T Junction at Nakhon Ratchasima – (HW. No. 304: 137km) – Kabin Buri – (HW. No. 304: 46km) – Plaeng Yao (HW. No. 331: 81km) – T Junction – (HW. No. 331: 42km) – Laem Chabang Port