

Planning Framework for International Freight Transportation Infrastructure: A Case Study on the East-West Economic Corridor in the Greater Mekong Subregion*

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Abstract

Multinational companies have expanded their supply chain across Asia to enjoy the benefits of Free Trade Agreements and Economic Partnership Agreements. They have to manage their upstream and downstream supply chain for procurement and sale, in which various kinds of materials/parts and products are distributed with different requirements transportation costs and lead-time. It is therefore desirable for them to have international land and/or intermodal transportation options in addition to maritime transportation. However, each country whose interests are not always consistent with those of multinational companies has a responsibility to plan and finance international freight transportation infrastructure including land and/or intermodal transportation.

This paper aims to review the planning practices of international freight transportation infrastructure, to identify the gap between the practices and multinational companies' logistics needs, and to propose international cooperative planning framework focusing on the benefits of less developed countries and common infrastructure financing scheme in the region, through a case study on the East-West Economic Corridor in the Greater Mekong Subregion.

Key Words : Planning, international Corridor Greater Mekong Subregion

* This is the recommended paper by the Japan Society of Logistics and Shipping Economics and reviewed and accepted by the Editorial Board

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I. Introduction

Free Trade Agreements and Economic Partnership Agreements are currently being intensified in Asia. First, the Association of South East Asian Nations (ASEAN) is aiming before 2010 to complete liberalization and to organize an economic community among its six original members and before 2015 among the 10 member countries (ASEAN 10). In addition, as China has started to strengthen their bilateral and multilateral liberalization efforts, the momentum towards economic integration in the region has increased even more.

As Japanese companies have increased establishing overseas subsidiaries, several have shifted their strategy from a vertical division of labor to a horizontal division of labor. The vertical one was the dominating system before where main parts were produced in Japan and products were assembled in China or Southeast Asian countries for export to Europe and the United States, while in the horizontal one the process of works is not divided and full-scale production is performed overseas and products are directly sold in the area. The technical capabilities of the local industry have been improved, and the electronics, mechanical and the automobile industries have been aiming to construct a system that can mutually produce and provide parts among the countries.

As horizontal division of labor advances, the management of the entire supply chain spread across Asian countries has become increasingly important to each company. In addition, freight diversity, such as fragile high-value added parts and materials and robust low-value added parts and materials, results in differences in allowable lead-time indicating that the logistics needs of companies have become diverse. Therefore, it is desired that intermodal transport services which can fulfill these different needs are available. However, transportation between major cities relies mainly on maritime

transport, and land-based transport by roads or railroads has not been utilized efficiently due to poor infrastructure, unstandardized transport equipment and complex procedures for import/export and cross-border transport.¹

Regarding infrastructure issues, the UN Economic and Social Commission for Asia and the Pacific (UNESCAP) and the ASEAN have encouraged the development of an international road and railway network in the region. The plan is to place main transport corridors in the concerned countries as part of the international transport network, and to introduce common structural standards and road traffic signs.² However, it is not always the case that countries place a higher priority on this international transport corridor, thereby decreasing the momentum towards cooperative development of the international transport network with the countries concerned. The case of the Asian Highway of ESCAP could not muster full support from the countries so that difficulties even in the updating of data of the existing roads are currently being experienced.

In Europe, thirty projects have been selected as part of the Trans-European Transport Network and have been developed with financial support from the European Union (EU). The 30 projects include several international freight transportation infrastructures that support intermodal transportation such as cross-border railroads and inland water transportation. These international freight transportation infrastructures address the logistics needs of multinational companies that promote relocation of production and logistics facilities in the 27 countries spread across Europe. Although European organizations such as the European Commission and the European Parliament are the ones that make it possible to understand regional transport demand, to make transport network plans and to procure financial resources for development, these kinds of organized efforts are implementable since there are strong logistics needs of multinational companies.

The needs of multinational companies in Asia have also increased so that it becomes

¹ Asia-Pacific Task Force(2007).

² <http://www.unescap.org/ttdw/index.asp?MenuName=AsianHighway>.

important for each country to cooperatively formulate plans and develop the international freight transportation infrastructure. This paper discusses the necessary conditions in making plans and in promoting infrastructure development. It therefore reviews existing planning frameworks for international freight transportation infrastructure. In addition, it will explain the specific benefits of each country, and the importance of common infrastructure financial scheme using a case study on the East-West Economic Corridor in the Greater Mekong Subregion.

The reason why the corridor was chosen is that multinational companies having already established several production and logistics facilities expect the corridor to function as a major land transportation route. The addition of a land transportation route to shorten lead-time to supplement the current maritime transportation services presents a major advantage to the Greater Mekong Subregion. Japanese logistics companies have started logistics services using the East-West Economic Corridor. As will be subsequently discussed, governments and government-affiliated organizations have conducted researches and studies related to the corridor.

II. Planning Framework for International Freight Transportation Infrastructure

Infrastructure for international freight transportation includes international ports, airports, and road and railway network. This section reviews earlier planning frameworks of international freight transportation infrastructure and then proposes a new planning framework to deal with economic globalization.

1. Provision of international freight transportation infrastructure in each country unsuitable for the globalized shippers' needs

The increased export/import values and bigger volumes of international freight in the region serve as driving forces for regional economic development. In many regions, the growth rate of the amount of freight in ton-kilometers has exceeded the economic growth rate. Multinational companies play a major role in this as they tend to relocate production and logistics facilities to seek for cheaper labor and bigger markets and aim to optimize logistics operations under given environmental conditions.

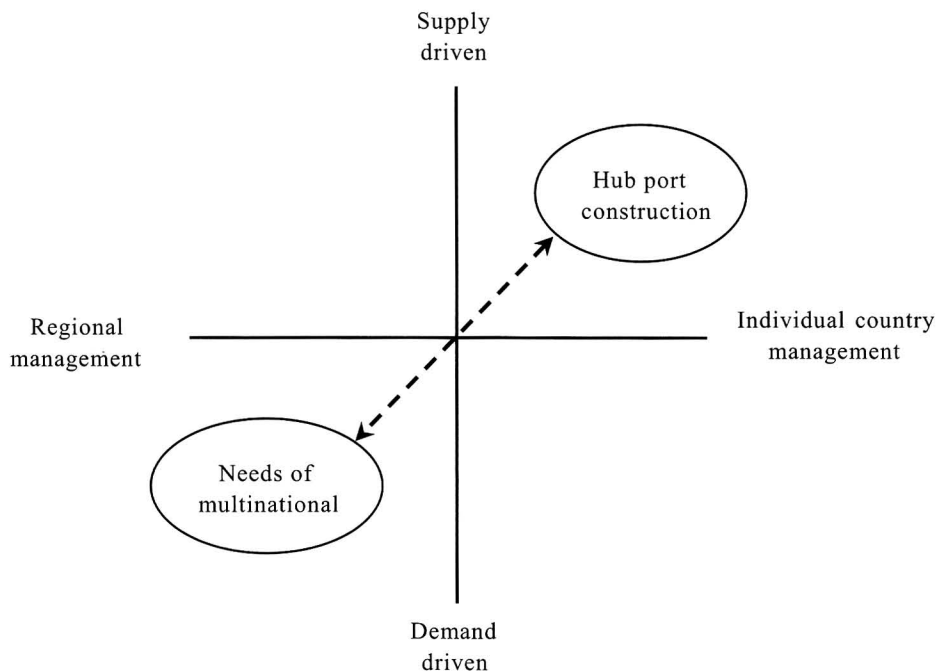
One of these environmental conditions is the international freight transportation infrastructure. The provision of international freight transportation infrastructure is basically the responsibility of each government, and discrepancies between the government priority on infrastructure development and infrastructure needs of multinational companies sometimes occur. The interests of the government do not necessarily correspond to their needs, resulting in several constraints on investment and logistics activities of multinational companies.

However, that is not to say that the Asian countries merely observed. Each country has supported the development of international ports and airports in the midst of increasing volume of exports and imports. The countries have aimed to have high-standard ports and airports which can accommodate modern ships and airplanes that can go directly to Europe and the U.S. without going through ports and airports in the adjacent countries. Furthermore, each country has targeted to become a regional base; i.e. a hub port or a hub airport.

Governments in Asia have relatively shown low interest in international road and railway network that their development has not been promoted. Even in Japan, it is not well known that Tokyo is the starting point of the Asian Highway Route No. 1. There is not even a road sign to indicate this. In contrast, although the UK is separated from the continent by the Straits of Dover, a number of trucks travel back and forth using ferries or through the Eurotunnel using piggyback services. The road map is published there

with legend in four different languages for foreign truck drivers. Moreover, although Turkey has not yet joined the EU, its roads are already numbered using the European Highway system. The international road network is therefore generally recognized and well utilized in Europe.

<Figure 1> Gap between globalized shippers' needs and infrastructure supply of each country



It would appear that support for developing countries implemented under the framework of bilateral aid has an influence on the delay of the development of the international road and railway network. For example, if Japan wanted to support a project concerning cross-border international freight transportation infrastructure, it is required to settle an agreement between the two cross-bordering countries. In the case of two countries with different economic strengths, a problem arises on how to resolve

or adjust the financing scheme. This kind of problem on adjustment does not occur in financial assistance for ports and airports.

Because the economy has been globalized, the country's authority on the planning of international freight transportation infrastructure can be reduced, and instead, this authority can be transferred to international associations comprising the countries. This is the reform that has been promoted by the EU. In Asia, it might be an alternative in the future to establish an authoritative association. However, if the association has too much authority, the governments relatively lose their domestic and international influences.

And if the governments cannot protect their people's lives and the interests of the business community by their policies, they will have difficulties in maintaining approval ratings even though they are democratically elected.³ Hence, it is difficult to find an appropriate answer as to what kind of authority an association should possess and the extent of this authority.

This paper will not aim to put a discussion on what would be a desirable economic integration in the future but will reflect on the planning framework for international freight transportation infrastructure taking account of each country's cooperation.

2. Planning framework for international freight transportation infrastructure by international cooperation

There is a gap between the two planning frameworks for international freight transportation infrastructure; i.e. "infrastructure for globalized freight transportation demand" and "current infrastructure supply for international freight transportation by individual country". The two planning frameworks have differences in terms of planning approach and evaluation.

In the former case, from a standpoint where the logistics needs of multinational companies are given importance, international freight transportation infrastructure should be

³ W.H. Reinicke(1998), pp.52-74.

supplied depending on the demand of the entire region. Since demand entails benefit and supply implies cost, it is best to choose international freight transportation infrastructure with maximum cost-benefit ratio. As for the cost-benefit analysis, it is usual not to ask who bears the costs and who can enjoy the benefits. This is because of the “compensation principle” which assumes that if net benefit can be maximized, subsequent distribution can be adjusted through taxation. However, if there are stakeholders that cross over multiple countries, it is impossible to adjust income distribution through taxation.

In the latter case, there is a theory in planning that an efficient freight transportation system will ultimately be established because of the dynamics of international competition, even if freight transport infrastructures are individually supplied by a country. Competition between hub ports and airports in Asia has been certainly conducted under such implicit rule. The respective countries have taken actions independently, and there have not been any problems yet relating to international relations, with the help of recent demand increase. However, there is a feeling of anxiety on whether an efficient freight transportation system has been designed for the entire region. Based on current assessment in which governments are subsidizing infrastructure development or are trying to attract users to their own hub ports by charging low user fees, it is likely that resource allocation may be distorted and efficiency may be reduced. Furthermore, as long as this planning theory continues to hold, it will be difficult to develop international road and railway networks.

Figure 2 tries to present the issues on planning for international freight transportation infrastructure by international cooperation. First, the limitation of the cost-benefit analysis is recognized, and the benefit in each country is clarified. Countries that provide infrastructures such as international roads and railroads might be disappointed as they gain no advantage if traffic just passes through them. They might become

disadvantaged due to pollution brought about by new traffic. Therefore 'benefit visualization by country' in planning international freight transportation infrastructure is needed. Information on these benefits is important for concerned governments in the region. If the concerned governments show great efforts to increase benefit to their citizens and the economic communities, the development of international freight transportation infrastructure will lead to the strengthening of the foundation of their governments.

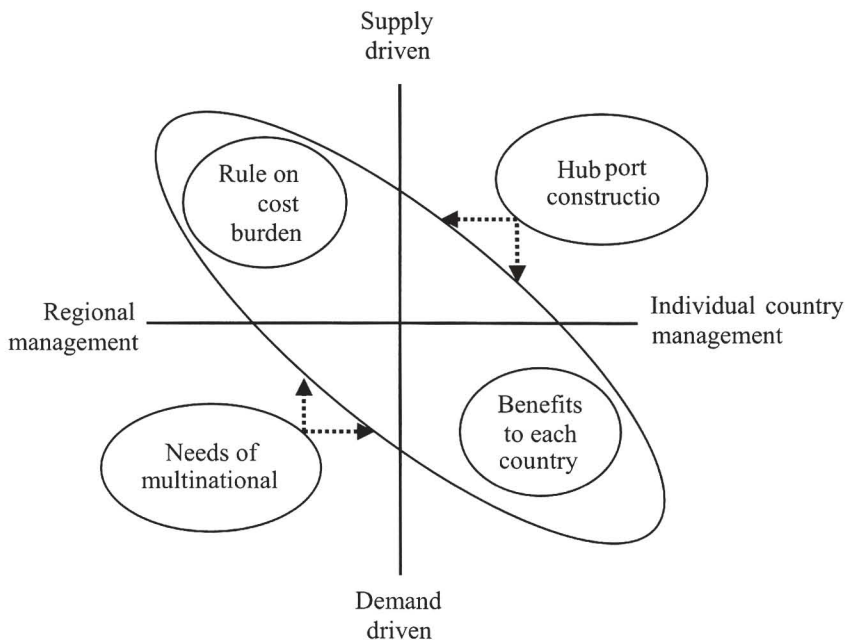
In addition, even in the supply side, it is desirable to create common rules on financing international freight transportation infrastructure in cooperation with concerned countries and organizations. There is a need to establish consensus on who should bear responsibility to develop, maintain, and restore the international freight transportation infrastructure. Foreign vehicles passing through the international road network should bear the proper charge that is not too small and not too excessive either.

In Europe, in order to deal with the increasing international truck traffic, a couple of countries have started collecting distance-based charges, that is, charges corresponding to social cost per kilometer depending on time and location. After 2001, distance-based charges were introduced in Switzerland, Germany and Austria. Sweden, UK and the Netherlands are also planning to introduce these charges. There were differing vehicle-related taxes including fuel tax and toll systems in Europe before. The European Commission proposes to abolish the existing vehicle acquisition tax and ownership tax, and advocates distance-based charges to internalize infrastructure costs and environmental costs. From the standpoint of equity, it is rational that each truck pays charges to the concerned countries depending on the distance traveled. In addition, the European Commission has been developing a model to calculate all the external costs of all modes in order to determine the standard charges for distance-based charging.⁴

⁴ CE Delft(2007), pp.7-42.

Meanwhile, Switzerland, which is located in key transportation junctions connecting from north to south in Europe, succeeded in introducing distance-based charges for trucks after long negotiations with EU. Two-third of this revenue is allotted for the construction of a railway tunnel adjacent to which international freight transportation by truck is expected to shift. In the negotiations the EU's request is also accepted, and the gross truck weight that can travel has been deregulated from 28 tons to 40 tons.⁵ The Swiss government, which won public support by preserving the environment and promoting the tourism industry, had agreed with the EU on the rules of charging through their strong bargaining power. Switzerland has not joined the EU yet, implying that country associations are not always needed in the decision for planning of international freight transportation infrastructure.

<Figure 2> Planning framework for international freight transportation infrastructure by international cooperation



⁵ Federal Department of the Environment, Transport, Energy and Communications (Switzerland) (2003), pp.10-11.

III. Case study on the East-West Economic Corridor in the Greater Mekong Subregion

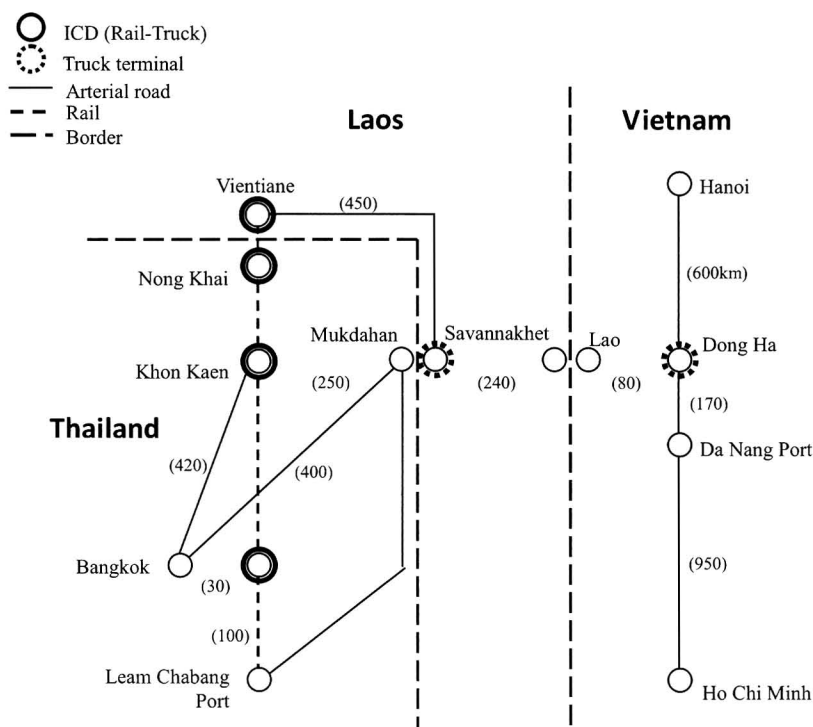
This section reviews the required conditions for planning an international freight transportation infrastructure using a case study of the East-West Economic Corridor in the Greater Mekong Subregion. It hence introduces the current state of development in this corridor, and considers the benefits to Laos which has the weakest economy in the subregion, and how the East-West Economic Corridor can be well maintained and restored in Laos.

1. Current conditions of the East-West Economic Corridor in the Greater Mekong Subregion

The East-West Economic Corridor in the Greater Mekong Subregion is an international arterial highway with a length of 1,450 kilometers connected from Da-nang, Vietnam to Mawlamyine, Myanmar through Savannakhet in central Laos, and Mukdahan and Khon Kaen in Thailand. This corridor together with the other two major logistics route; i.e. the South-North Economic Corridor from Guangzhou to Hanoi and from Kunming to Bangkok through Laos, and the Southern Economic Corridor from Bangkok to Ho Chi Minh City through Phnom Penh; forms an international road network in the Greater Mekong Subregion. The distance between capitals where industries concentrate ranges from 500 to 2,000 kilometers only so that intermodal transportation composed of roads or combined roads and railroads can provide an efficient transport means (Figure 3). Incidentally, the volume of exports of ASEAN10 to its member countries and China has greatly increased that the importance of an international road network in the Greater Mekong Subregion cannot be undermined (Table 1).

The economic cooperation program started by the Asian Development Bank (ADB) in 1992 has contributed greatly to the development of the Greater Mekong Subregion. The program attempts to facilitate economic cooperation not only through hard infrastructure development but also through soft measures such as cross-border transportation agreements among countries. The program regularly holds a ministerial summit and a conference among the countries concerned. As for the East-West Economic Corridor, Thailand, Laos and Vietnam concluded an ADB-led trilateral agreement for the Facilitation of Cross-border Transport of Goods and People in 1999.⁶ The content of the agreement was amended in 2007 to allow the same vehicle to travel in the three countries, although it has not been implemented yet as of 2009.

<Figure 3> Intermodal freight transportation network in the East-West Economic Corridor



⁶ The Lao PDR, Thailand, and Viet Nam (1999), pp.1-20.

As for the logistics route in the Greater Mekong Subregion, rising demands of Japanese multinational companies have encouraged the Japanese government and affiliated institutions to conduct further studies and field experiments. For example, Japan External Trade Organization (JETRO) has analyzed cost and lead-time required for a typical international logistics route by conducting questionnaire surveys to Japanese subsidiaries overseas.⁷ In addition, the Ministry of Economy, Trade and Industry (METI) has conducted research experiments among major cities in the ASEAN in cooperation with Japanese shippers and logistics firms. Moreover, as a result of the Cross-border Transportation Infrastructure Study, Japan International Cooperation Agency (JICA) has clarified the necessity for soft infrastructures such as improvement of cross-border procedures.⁸

What was clarified through these surveys is that lead-time is long, because transportation among the major cities in the region has basically relied on marine transportation. For example, transportation between Hanoi and Bangkok (through Ho Chi Minh City) takes about 7 days for port-to-port transportation and 10 days for door-to-door transportation. The practical implication of the abovementioned result is that both cities can be linked by land transportation with a lead-time of only about 3 days (2 nights). The time required for border crossing is about 2 to 3 hours, which is within the tolerable allowance.

There is an inland container depot (ICD) in Lat Krabang district located 30-kilometer away to the east from Bangkok. Some containers that go out of Bangkok are collected in this ICD, undergo customs procedures, and transported to Leam Chabang Port by railroad. This ICD also has a bonded warehouse, and a container freight station (CFS) to consolidate small-lot cargoes. It is possible to enhance this system and to set up a small-scale ICD in Khon Kaen on the East-West Economic Corridor and Vientiane⁹ in order to enjoy benefit of intermodal transportation.

7 JETRO(2008), pp.1-225.

8 JICA and ALMEC(2007), pp.1-150.

9 In 2009 railway track was extended into Lao PDR across the Mekong River, and passenger transport service started from Vientiane to Bangkok.

<Table 1> ASEAN10 Exports (million US dollars)

	2001	2006	2006/2001 ratio
to the World	386,261	779,421	2.0
to Japan	53,306	85,552	1.6
to China	16,704	66,080	4.0
to ASEAN10	86,331	194,321	2.3

Source: JETRO

2. Impact of the East-West Economic Corridor on Lao Economy

1) Alternative Export/Import Route

Laos has only one tenth of the population and about one fifth of the per capita gross national income (GNI) of Thailand, and currently has a nominal amount of inbound and outbound cargos. However, if Laos is continuously considered as merely a transit country, it is expected that no cooperation will be extended by Laos and the corridor will never be developed.

Thailand is the biggest trading partner not only for export but also for import of Laos.

Trading from other countries, however, has increased in terms of value, and as a result, it is important to ensure routes for export and import to other countries that do not have any border with Laos. The amounts of export and import in Laos from 2005 to 2006 have increased by 52% and 29%, respectively.

In Laos people and industries have concentrated in Vientiane. There has been an assessment that Vientiane could provide inexpensive but competent human resources for factory works, and the city has in fact started to play a role in complementing the production base of Thailand and Vietnam. If Vientiane has alternative export and import routes using the East-West Economic Corridor, the city would enhance itself as an investment destination.

Because Laos does not border any ocean, it has used Leam Chabang Port in Thailand as a designated port for its export and import. However, qualified logistics services have not been necessarily provided for Laos. For example, it has been said that import cargoes transported in bonded trucks from Leam Chabang Port to Laos takes time, even though they are transit cargoes, due to complex customs procedures.

An alternative route is developed this time which serves as access from Vientiane going south on the national roads and traveling all the way to Da-Nang Port through the East-West Economic Corridor. For this case, there is no need for transshipment at the border because of the bilateral agreement with Vietnam. In the future, it may also be possible for Da-Nang Port to become another designated port for export and import of Laos.

The ASEAN Secretariat had in fact conducted the ASEAN Maritime Transport Study¹⁰ under JICA support in 2002. An assessment was made then on the route going through the East-West Economic Corridor and Da-Nang Port, as compared with the alternative route between Vientiane and Singapore. Results have shown that this route would have higher cost and longer lead-time under the conditions at that time. However, conditions have greatly changed with the upgrading of infrastructure and improvement of cross-border procedures, and hence, this route can be regarded as an alternative route now.

Finally, the extensive utilization of railway and ICD remains to be a future issue for the development of export and import routes from Laos. As previously mentioned, if an ICD is established in Vientiane, it will be more efficient to transport cargo from Laos to Leam Chabang. Because the travel distance by train is more than 500 kilometers within the intermodal transportation, it is expected that transportation cost will be cheaper than truck transportation only. In addition, if truck terminals can be established in Savanna-khet and Dong-Ha, an efficient intermodal freight transportation network can be created in the Greater Mekong Subregion.

¹⁰ ASEAN(2002), Appendix.

2) Establishment of road maintenance and restoration system in the East-West Economic Corridor

For Thailand-Laos and Laos-Vietnam border crossings, registered trucks of each country are allowed entry and operation in the partner country because of the respective bilateral agreements in place. It is therefore possible to transport from Vietnam to Thailand by transferring containers only once from a Thai-registered truck to a Vietnamese-registered truck in a terminal inside Laos. However, there is a possibility that the Thai-registered truck and the Vietnamese-registered truck do not bear the cost of maintenance and restoration of the roads when they pass through Laos. This section will therefore be concerned about costs and cost burdens for road transportation, and will consider appropriate schemes for adequate maintenance and restoration of roads in Laos.

The road section from Savannakhet to Lao Bao in the East-West Economic Corridor in Laos was constructed with assistance from Japan and ADB. Although the road was just opened in 2001, as of the end of 2007, there have been around five to six places where road surfaces have been damaged resulting in careful passing with much reduced speed. Such road condition has not occurred yet in the East-West Economic Corridor of Thailand and Vietnam. It is urgent that a system of road maintenance is established in Laos.

In 2002, JICA proposed to establish Route 9 Agency as the organization tasked to maintain this same road section.¹¹ The proposal also recommended the establishment of a toll gate to collect charges from the road users. The revenue from the toll road intends to cover the cost of maintenance and restoration of the corridor.

Comparing vehicle-related taxes and tolls in Thailand, Laos and Vietnam, trucks in Thailand are estimated to bear 1.3 cents/kilometer of vehicle acquisition tax and vehicle ownership tax and 6.3 cents/kilometer of fuel tax, for a total of 7.6 cents/kilometer.

¹¹ JICA, Committee for Planning and Cooperation, Lao People's Democratic Republic, and Office of the National Economic and Social Development Board, The Kingdom of Thailand(2001).

On the other hand, trucks in Laos and Vietnam are estimated to shoulder only a negligible amount of vehicle acquisition tax and vehicle ownership tax, and pay only 0.8 cents/kilometer and 5.0 cents/kilometer, respectively, in tolls.

Although Thailand had toll gates in the past, these have been removed now. In Laos, toll charges have been collected for about two years now. In Vietnam, toll gates are established every 150 kilometers every time a provincial border is crossed. Based on what have been seen in the past, if the road maintenance organization is improved and if the road taxation system centering on fuel tax can be arranged, it is likely that toll collection can be eliminated.

However, in the case of rising international truck traffic like in Europe, procuring financial resources not by fuel taxes but by distance-based charges is more efficient and fairer. Although distance-based charges have a disadvantage of higher collection costs than fuel taxes, the application of information and communication technology (ICT) and intelligent transport system (ITS) make it possible to cheaply identify the location of trucks and to effectively determine the route and distance travelled by trucks. It would therefore be reasonable to jointly develop a common in-vehicle equipment, communication system and method of payment in the Greater Mekong Subregion.

IV. Conclusion

In this paper, while investigating actual performance of planning for international freight transportation infrastructure, it was pointed out that international freight transportation infrastructure that is individually supplied by a country does not necessarily correspond to the logistics needs of multinational companies, and has caused delayed development of the international road and railway network. In order to encourage the development of the international road and railways networks in cooperation with

concerned countries, after careful examination of a case study on the East-West Economic Corridor in the Greater Mekong Subregion, the paper suggested that it is important to explain their benefits to countries with weak economies and also to establish rules on cost burdens for the maintenance and restoration of the international freight transportation infrastructure.

As a future task, it is necessary to consider in detail the regional development policies that would give benefits to Laos. Specifically, if the South-North Economic Corridor and the Southern Economic Corridor becomes fully available, the regional development potential including service industries related to logistics in the areas along the East West Economic Corridor is envisioned to further increase. Moreover, a lot of issues remain to be resolved on the supply of international freight transportation infrastructure. Although this paper only took into account the issue of securing financial resources for infrastructure, other systems have to be considered as well such as harmonization and standardization. It is necessary to pursue the principles and criteria that would execute common regional logistics policies by referring to experiences of other regions including Europe. It is essential that the objectives follow these principles and criteria to get proposals from countries of weak economies.*

* Date of Contribution: Oct. 7, 2009
Date of Acceptance: Nov. 30, 2009

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