

FY 2020 Feasibility Study Project for Overseas Development of High-Quality Infrastructure

Feasibility Study on Building/Operating the Platform for Sharing the Information for Managing Travels of International Freight Trucks

Summary Report

1. Background

In the Greater Mekong Sub-region (GMS), which includes Laos, the reduction in distribution barriers, which was facilitated by the development of Vietnam's ports and the highway networks of countries in the region and the elimination of tariffs in the region through the ASEAN Free Trade Agreement (AFTA), has led to an increase in the overland transportation of international cargo. With the completion of the Second Mekong Friendship Bridge in 2006, land transportation between Bangkok and Hanoi via the East-West Corridor, which straddles Thailand, Laos, and Vietnam, was also realized. Japanese carriers are among the operators of cargo transportation services along this route. In addition, a new route via the Third Mekong Friendship Bridge, which was completed in 2011, is being further developed.

The land transportation of international cargo has been discussed in the Cross Border Transportation Agreement (CBTA) as one of the issues to be resolved throughout the GMS. The most important theme is the simplification of procedures at the border, which includes the measures such as the Single Window (integration of the following procedures for people, vehicles, and cargo) and Single Stop (integration of outbound and inbound procedures). For example, while in the past, cargo had to be transshipped at the border, in recent years, the CBTA's new cross-border transit permit has made it possible for transport cargo to cross the border without transshipment, although there remain restrictions such as the number of trucks that can be used and the routes that can be traveled.

Different customs clearance systems, including ASYCUDA, V-NACCS and E-Custom, have been introduced in Laos, Vietnam, and Thailand, and the data entry forms are also different. Other initiatives are under way such as the introduction of e-Form D for Laos in 2019, which will complete the standardization of input forms for all ASEAN member countries; digitization of the ASEAN Customs Declaration Document (ACDD); and the Plant Quarantine Certificate, which are expected to be introduced gradually. However, it still takes time to realize the Single Window, and, meanwhile, there is an urgent need to improve the efficiency of customs clearance and reduce transportation time loss.

Moreover, the main road in the inland area of the GMS is frequently being overloaded by large cargo vehicles, which create large ruts on the road surface. Rutting has also occurred on the pavement of the bridge, whose damage has also spread to the bridge itself. Rutting has increased the road and bridge maintenance costs, which exacerbate the country's problems regarding road operation and management. In particular, Laos has not yet established an effective method for controlling overloading, especially by international cargo vehicles coming from neighboring countries such as Vietnam.

To address the above challenges, the e-Government Committee in Laos was established in 2019, which is chaired by the Minister of the Prime Minister's Office (PMO) and is overseen by a

multisectoral ministries and agencies. The e-Government Committee has just begun to use ICT technology to solve a variety of problems, including international cargo transport and overloading control.

2. Key Issues

In light of the above, this Project aims to address the following issues:

- To improve the efficiency of customs clearance for international cargo vehicles passing through Laos, reduce transportation time loss, and promote the realization of ASEAN Single Window;
- To achieve efficient cross-border traffic route management and overloading enforcement, and to reduce the damage suffered by the road infrastructure in Laos; and
- To support the Lao government's efforts to utilize ICT technology to solve various problems.

3. Objective

The Project aims to establish an information-sharing platform across transporters and government agencies in the GMS countries, including Laos, in cooperation with the Lao government's efforts to utilize ICT technology. The information-sharing platform is envisaged to improve the efficiency of customs clearance of international cargo vehicles, reduce transport time loss and transport costs, improve readiness to respond to disasters and emergencies, improve services for shippers, improve the efficiency of cross-border traffic route management and overload control, and reduce road maintenance and management costs. The Project is expected to promote diversification of supply chains that support industries and economies in the ASEAN region, and create services that contribute to the development of a high-quality and robust infrastructure system that will strengthen connectivity. At the same time, the Project aims to improve the competitiveness of Japanese carriers, which have always been highly law-abiding, by cracking down on local carriers that illegally lower costs through overloading and other means.

4. Scope

In this Project, Laos will be the main study area. In addition, the international cargo transportation route connecting Hanoi and Bangkok will also be included in the scope of information collection and study for this project.



Figure 1 Target Area and Route

5. Proposed Business

(1) Business Outline

This study explored the potential for establishing an international cargo vehicle traffic management information sharing platform for GMS countries by utilizing ICT technology, enabling the centralization of data entry related to customs clearance and cargo transportation, multiplexing of data storage, and ensuring high security of data access. It also explored the feasibility of

establishing a new organization to operate the platform and provide information services, aiming to realize efficient and flexible international cargo transportation in times of disaster and emergency.

(2) Proposed User Services

The information-sharing platform is expected to provide its users access to customs clearance application data, timely information on disasters and traffic accidents, data on the current location, information regarding delays, and other driving conditions of cargo vehicles between the sales offices of carriers. Access to the above information can contribute to improving the efficiency of international cargo transportation operations. In addition, the data will be shared with customs offices, road managers, and other transporters in each country to improve the efficiency, responsiveness, and overall sustainability of international cargo transport. In addition, the Study Team will promote the development of new services that are aligned with the current trend of DX (Digital Transformation) in society by utilizing the accumulated data and know-how.

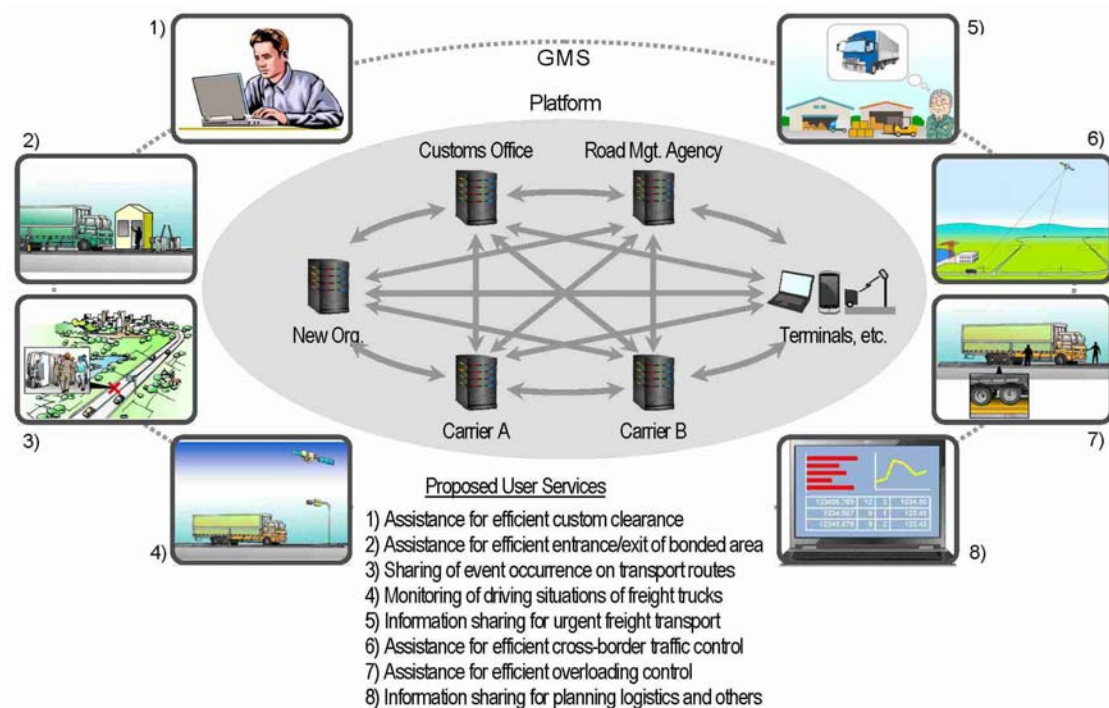


Figure 2 Total Picture of Proposed Platform for Information Sharing and Services

Figure 2 shows the flow of the proposed platform for information sharing services. The contents of individual user services in 1) - 8) and the goals to be achieved in each Stage are as follows.

◆ Goal of Stage-1: Improve the efficiency of freight transport by data sharing

1) Assistance for efficient custom clearance:

To allow the carriers to lower manpower cost of preparing customs declaration for getting the issues of export/import permit, bonded transport approval and cross-border contract document, by actualizing the unification of inputs (invoice, packing list, vehicle data, driver data, etc.) for the

freight, which is to be carried through the different countries across their borders, among their customs clearance systems and the sharing of input data.

2) Assistance for efficient entrance/exit of bonded area:

To prevent the customs officers from intruding with suspicious vehicles and illegally carrying in/out of freights at the checking gate installed at the entrance/exit of the bonded area in a port area or SEZ, by actualizing automatic search on the data such as the invoices, packing lists and vehicle registrations prepared for the freight trucks passing by the gate.

3) Sharing of event occurrence on transport routes:

To allow the carriers to operate their freight trucks with high degrees of flexibility, by actualizing prompt sharing of the information graded by credibility on the occurrences of bad weather, disasters, accidents, traffic restrictions and congestions on the transport network over different countries.

4) Monitoring of driving situations of freight trucks:

To allow the carriers to perform strict vehicle operation management and to provide flexible transport services, by actualizing real-time monitoring of the driving situations, such as the present location and delay, of their specified freight truck on the road.

◆ **Goal of Stage-2: Enhance event readiness and sustainability of freight transport by system cooperation**

5) Information sharing for urgent freight transport:

To allow the carriers to provide freight transport and relevant services for the merchants with high degree of flexibility in the event of a disaster or emergency, by actualizing information sharing on the conditions of the transport network, driving situations of freight trucks, and loading status and requests for freights/trucks among the different carriers and concerned parties.

6) Assistance for efficient cross-border traffic control:

To allow the road management agency to check the freight trucks passing along the border without having to request permission and, along the roads unpermitted, to introduce road maintenance tax in the future, by actualizing tracking location of the trucks and automatic search on the data stored for cross-border contracts and bonded transport approvals of them.

7) Assistance for efficient overloading control:

To allow the road management agency to implement efficient overloading control typified by a penalty to the carriers, by actualizing automatic search on the data such as invoices and vehicle registrations prepared for the control officer's specified freight truck on the road.

◆ **Goal of Stage-3: Promote DX (Digital Transformation) in society by data utilization**

8) Information sharing for planning logistics and others:

To allow the concerned parties to utilize the accumulated data (of the international freights and their transportation records, the freight trucks and their passage records, and the occurrences of events on the transport network) and the experience on sharing data for compilation, analysis or planning on logistics and others.

If the goals of the three Stages and the eight user services as proposed above are sensitized, it is clear that they encompass responses to the issues to be resolved in the three projects mentioned above.

(3) Tentative Schedule of Developing the Business

The development of the proposed business will proceed with the following goals for Stages 1 to 3.

◆ Goal of Stage-1: Improve efficiency of freight transport by data sharing

The system enables the sharing of the following data: customs clearance application, occurrence of disasters and traffic accidents, current location, delays, and other driving conditions of cargo vehicles between the sales offices of carriers, which are expected to improve the efficiency of international cargo transportation operations. In addition, the data will be shared with customs offices in each country and other transporters and use the accumulated data to forecast the impact of accidents on a trial basis, aiming to improve the efficiency of international cargo transportation as a whole.

◆ Goal of Stage-2: Enhance event readiness and sustainability of freight transport by system cooperation

Better collaboration with regard to data-sharing among customs offices, road managers, and other transporters is expected to improve the efficiency, responsiveness, and sustainability of international cargo transport as a whole.

◆ Goal of Stage-3: Promote DX (Digital Transformation) in society by data utilization

The Study Team will develop new services that take advantage of the accumulated data and know-how to ride the DX trend in society.

	Stage-0	Stage-1	Stage-2	Stage-3
1) Assistance for efficient custom clearance		—————→		
2) Assistance for efficient entrance/exit of bonded area		—————→		
3) Sharing of event occurrence on transport routes		—————→		
4) Monitoring of driving situations of freight trucks		—————→		
5) Information sharing for urgent freight transport			—————→	
6) Assistance for efficient cross-border traffic control			—————→	
7) Assistance for efficient overloading control			—————→	
8) Information sharing for planning logistics and others				—————→

..... (Trials and demonstrations)

Figure 3 Rough Schedule of Developing the Business

(4) Outlined Framework for the Business

In the proposed business, a framework will be built to realize international cargo vehicle traffic management information sharing using blockchain and other technologies (Figure 4). The carriers are expected to provide inputs to the shared data while the international cargo shippers and enforcement officers are expected to be the main data users. The Trust Service Provider (TSP) operating company, which is the business implementation organization, will conduct the

operations related to the platform.

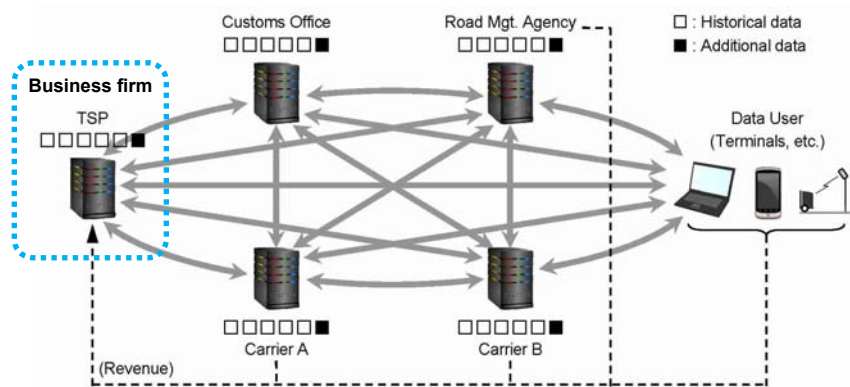


Figure 4 Outlined Framework for the Business

6. Preliminary Survey

GMS encompasses Laos and its neighboring countries of Vietnam, Cambodia, Thailand, Myanmar, and China's Yunnan Province. This Project focused on these five countries except for China's Yunnan Province. In each of these five countries, more than half of the borders are connected by land. In Laos, all of its borders are connected by land. In this regard, land transportation by international cargo vehicles is highly critical in this region. In this Project, information was collected from the following perspectives:

- Overview of GMS countries and current status of cargo transportation
- Current status of customs clearance procedures in the region
- Current status of natural disasters and COVID-19 in the region
- Current status of overloading control and traffic management for heavy duty vehicles in the region
- Intra-regional freight transport issues to be resolved

Based on the above studies, the issues and measures to promote the use of land freight transport in a sustainable manner from a long-term perspective are summarized as follows:

Table 1 Problems and Solutions for Promoting the Use of Land Freight Transports

Challenges in Promoting the Use of Ground Freight Transport in a Sustainable Way	Measures through infrastructure development	Measures through the use of ICT technology
Expansion of transportation needs	Construction of inland manufacturing bases such as SEZ	
Shorter transport times	Road maintenance	- Assistance for efficient custom clearance
Reduction of transportation costs	Construction of inland manufacturing bases such as SEZ	- Assistance for efficient entrance/exit of bonded area
Reduction in the number of transshipment	(Permission for Cross-border Traffic of Cargo Vehicles)	
Improve the timeliness, responsiveness, and convenience of transportation	Improvement of roads (multiple routes) Providing a variety of services in the SEZ	- Sharing of event occurrence on transport routes - Monitoring of driving situations of freight trucks - Information sharing for urgent freight transport
Reduction of road infrastructure maintenance and management costs	Management of cross-border traffic routes Control of overloading	- Assistance for efficient cross-border traffic control - Assistance for efficient overloading control
Optimization of various plans and promotion of DX		- Information sharing for planning logistics and others

The studies highlighted the important role of ICT technology to address the issues related to freight transportation in the region. The proposed measures are summarized as follows:

- Streamlining customs clearance procedures and management of entry and exit from bonded areas to shorten transportation times, which can vary widely depending on the route selected, and lower transportation costs;
- Enabling the sharing of information on the occurrence of accidents and other incidents along the transportation route as well as information for emergency cargo transportation to improve the responsiveness and timeliness of transportation;
- Enabling the monitoring of the driving status of cargo vehicles to enhance the benefits of door-to-door transportation and improve the convenience of transportation services; and
- Streamlining the management of cross-border traffic routes and the control of overloading and by enabling the sharing of information for logistics-related planning to reduce the maintenance and management costs of road infrastructure.

The results of these studies are reflected in advance in the setting of goals for each Stage, as shown in the section on the business development schedule above.

7. Interview Research

In this Project, the Study Team conducted interviews with Japanese and local transporters as well as government organizations in Laos, Vietnam, and Thailand. The findings from the interviews identified the current status, issues, and expected measures regarding the following matters, and confirmed the appropriateness of the services to be provided on the proposed platform and the needs to be addressed:

- General international land cargo transportation
- Transshipment of International Ground Cargo
- General information on customs clearance applications
- Paperless Customs Clearance
- About the use of ASYCUDA
- About the use of e-FormD
- Use of the CBTA License
- E-commerce and Cross-border Consolidation Cargo
- About SEZ and bonded area
- Accident and Disaster Occurrence and Response
- About road and traffic information
- Cargo vehicle tracking by GPS
- About overloading control
- Financial Resources for Road Maintenance and Management
- The impact of the new corona epidemic
- About the needs for information sharing
- About Information Security

This interview study confirmed the effectiveness of information sharing and service provision by the proposal platform as a feasible solution to the challenges of the aforementioned projects.

8. Site Survey

Building on the results of preliminary information gathering and interview surveys, the Study Team conducted a video recording from Thai Customs to Vietnamese Customs that covered the model route of Bangkok - Second Mekong Friendship Bridge - Hanoi to understand the current situation of customs clearance at the border, cross-border traffic of trucks, entry and exit of bonded areas, and overloading control. The Study Team also took videos around the 3rd Mekong Friendship Bridge, which is a key point of the detour route, to understand the status of road maintenance and traffic. For the implementation of the Project, the Study Team sought the permission of the transporters using this route to accurately capture the situation such as customs clearance procedures.

The itinerary for the video recording included four days. On the first day, after surveying the data entry work at the transporters' office in Vientiane, the Study Team went south on National Highway 13, entered National Highway 9 at Savannakhet, and surveyed the current status of various facilities and procedures at the bonded area in Savan Seno SEZ, Thai Customs in Mukdahan, Lao Customs in Savannakhet, and Lao-Vietnamese Customs in Laobao. In addition, traffic conditions on the 3rd and 2nd Mekong Friendship Bridges, maintenance conditions of small and medium bridges and paved surfaces, measurements at way stations, and mobile phone signal conditions were also surveyed.

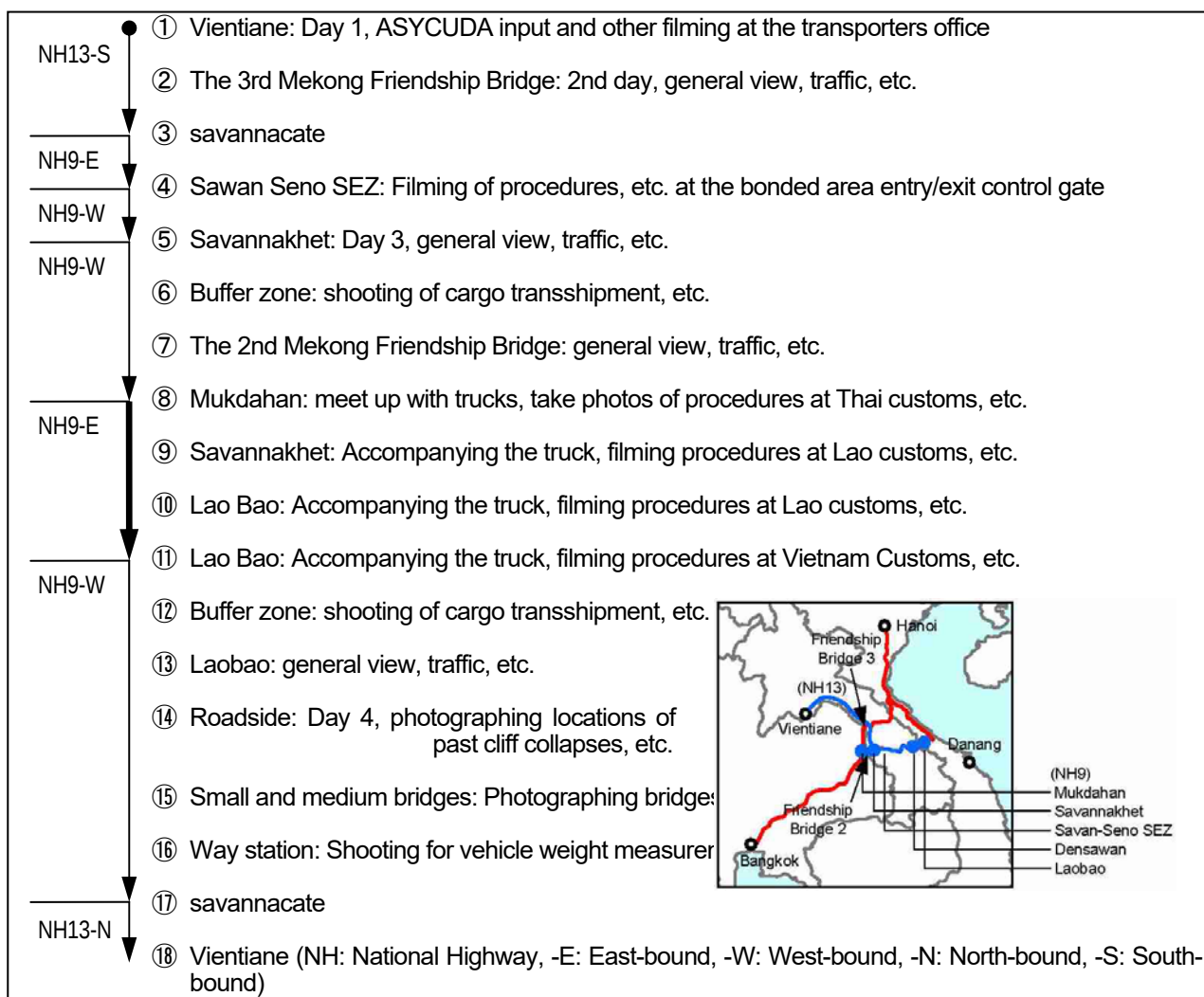


Figure 5 Rough Schedule of Site Survey

9. System Planning

The Study Team analyzed and designed the following system fundamentals necessary to realize the proposed platform:

- Basic system configuration;
- Basic requirements for main functions;
- Main processing sequence;
- Basic specifications of main data; and
- System operation and management.

International cargo vehicle traffic management has several issues that can be addressed by better collaboration between governmental agencies and private companies, such as the incompatibility in systems introduced by different government agencies, lack of cooperation between government agencies and private companies despite the systemization, and potential for future systemization and cooperation such as GPS and license plate number reading. Moreover, the introducing IoT devices to the system configuration can also be effective in addressing the above issues.

Based on the design of the proposed platform, it is feasible to control access from each organization (node) to the shared data on the platform and to appropriately realize the user services envisioned in this Project. This can be done by utilizing blockchain-related technologies such as smart contracts and channel settings, where conventional technologies are less capable as they require a massive amount of time and effort to build and adjust the platform. Moreover, the composition of the hardware and software components that form the basis for calculating the project cost was deemed reasonable.

10. Operation Framework

The Study Team examined the framework necessary for each of the eight user services to be provided in the proposed business, and proposed a framework for platform operation and service provision, and another framework for the establishment and operation of business companies.

11. Costs/Profits Analysis

Assumptions were set based on the results of the basic system design and the project implementation system, project costs and project revenues were calculated, and the estimated results of project profitability, including the timing of single-year and cumulative profitability, were presented, and it was confirmed that project profitability could be expected.

12. Meetings for Reporting and Exchanging Opinions

The Study Team conducted a consultation meeting with the counterpart agency, which is the Ministry of Public Works and Transport (MPWT), and prepared a report based on the discussions during the meeting, which became the basis for subsequent consultative meetings with other relevant ministries and agencies.

Source of Figures and Tables

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3	Figure 2 Total Picture of Proposed Platform for Information Sharing and Services	Prepared by the Study Team with images copyrighted by Oriental Consultants Global Co., Ltd. and copyright-free images.
5	Figure 3 Rough Schedule of Developing the Business	Prepared by the Study Team
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