Chapter 4

Improvements and Challenges Associated with the Facilitation of Road Transport in Lao PDR

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February 2019

This chapter should be cited as

Nolintha, V. (2019), 'Improvements and Challenges Associated with the Facilitation of Road Transport in Lao PDR', in Ishida, M. (ed.), *Cross-border Transport Facilitation in Inland ASEAN and the ASEAN Economic Community*, ERIA Research Project Report FY2017 no.18, Jakarta: ERIA and IDE-JETRO, pp.90-127.

Chapter 4

Improvements and Challenges Associated with the Facilitation of Road Transport in Lao PDR

Vanthana Nolintha

The government of Lao PDR has made significant improvements in its hard transport infrastructure in support of its road connectivity-related policies. Investments focus on enhancing sections of the Association of Southeast Asian Nations Highway and strategic roads that can improve domestic and regional connectivity. There has also been a gradual improvement in the soft transport infrastructure, particularly the implementation of the Greater Mekong Subregion Cross-Border Transport Agreement. However, major challenges persist in terms of the financing of infrastructure projects and mechanisms for road maintenance. In addition, domestic transport regulations need further revisions to be in accordance with international and regional transport agreements.

Introduction

To take advantage of its strategic geographical location and to transition from being a land-locked country to one that is 'land linked', Lao PDR has been prioritising and strengthening its efforts in road transport facilitation. Improving its connectivity within the country and throughout the region is crucial for this transformation. Therefore, the Lao government is cooperating closely with neighbouring countries and development partners under the Association of Southeast Asian Nations (ASEAN) and Greater Mekong Subregion (GMS) Framework Agreements to facilitate road transport as well as regional cross-border transport.

Amongst Lao PDR's investments in hard infrastructure, the transport infrastructure has always been the top priority. Investments in the transport infrastructure account for between 35% and

50% of total government investment (MPWT, 2010). Considering the large number of competing development objectives in the country, this level of investment is substantial. The total length of the road network increased from 39,585 km in 2010 to 51,597 km in 2014.

Road transport is the most important mode of transportation in the country, accounting for almost 80% of the total transport. This is followed by river transport (18%) and air transport (2%). The volume of road transport increased from 4.43 million tons in 2010 to 4.78 million tons in 2014.

In addition to hard infrastructure, the government has invested in improving its soft infrastructure, including the revision of existing legislations and the enhancement of institutional and technical capabilities.

Despite these outstanding achievements, the facilitation of road transport in the country still faces several challenges, including limited financial and human resources, deficiencies in the existing regulatory framework, inconsistencies between domestic transport regulations and regional and bilateral agreements, and the difficulty in enforcing rules and regulations.

Against this backdrop, this chapter aims to examine recent developments in the facilitation of road transport in Lao PDR. In Section 2, recent updates as well as improvement plans for sections of the ASEAN Highway in the country are discussed. Major improvements in the soft infrastructure of road transport in Lao PDR are then summarised in Section 3. Finally, the conclusion and policy recommendations are provided.

1. Improvements in Hard Transport Infrastructure in Light of Increasing Regional Integration

1.1 Progress and Challenges in Projects on Sections of the ASEAN Highway in Lao PDR[1]

Amongst the major aims of Lao PDR's Ministry of Public Works and Transport (MPWT) is to improve national roads that serve as regional highways. From 2011 to 2015, almost 2,200 km of national roads and sections of the ASEAN Highway have been repaired or improved (Table

[1] In addition to the official report from the MPWT, recent updates regarding sections of the ASEAN Highway in Lao PDR are based on interviews with relevant government officials from the MPWT and selected provincial planning and investment departments from December 2015 to February 2016.

Table 4.1. Current Situation of the ASEAN Highway Network in Lao PDR

AH No.	National Road	Section	Distance	Road Class (2012)	Road Class (2015 update)
AH11	NR13S	Vientiane–Nong	861 km	III (100%)	III (100%)
AH12	NR13N	Thanaleng–Nateuy	682 km	III (100%)	III (100%)
AH15	NR8	Banlao–Nam Phao	132 km	III (65%	III (100%)
AH3	NR3	Houayxay–Boten	251 km	III (65%	II (98.7%), below III
AH16	NR9	Lao–Thai border in Kaysone Phomvihane–Dansavanh	241 km	III (completed)	III (97.2%), II (2.8%)
AH13	NR2E, NR2W	Ngeun District (Sayaboury, border with Thailand)–Tay Trang (border with Viet Nam)	363 km	Need funding	III (47.2%, Tai Chang–Xai District), III and below (52,8%, Xai District–Nguen District)

AH = ASEAN Highway; NR = national road.
Source: MPWT (2015a).

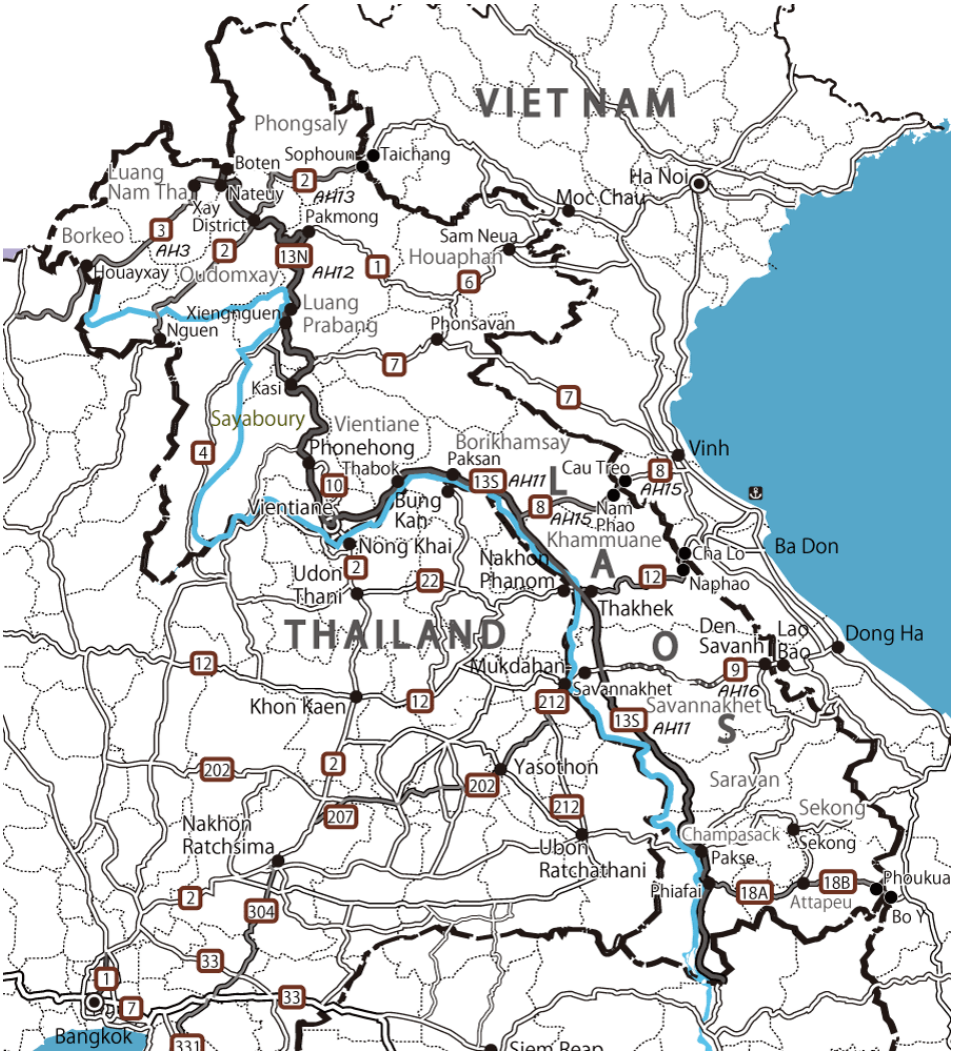
There are six sections of the ASEAN Highway in Lao PDR: AH11, AH12, AH15, AH3, and AH16. The total length of its ASEAN Highway is 2,530 km. In 2015, 82.4% of Lao PDR roads in the ASEAN Highway Network were designated as Class III, 10.2% as Class II, and the remaining 7.6% as Class III and below, based on the ASEAN standards. These are a marked improvement over the 2012 status, when 70% of the roads in its ASEAN Highway Network were classified as Class III or below (of which 30% were below Class III). More details on the improvements made to each section of the ASEAN Highway are provided in the following section.

1.1.1 AH11 (NR13S)

The national road NR13S, which also serves as an ASEAN Highway (AH11), runs from the Vientiane Capital all the way to the Lao–Cambodian border in the far south (Figure 4.1). The NR13S is the longest ASEAN Highway in Lao PDR at 861 km long and passes through the following six provinces: Vientiane Capital, Bolikhamxay, Khammouane, Savannakhet, Salavan, and Champasak. It serves as the only north–south transport route for goods and passengers amongst Vientiane Capital, the central region, and the southern region. Because the central and southern regions (especially in the western part of the country) are mostly flat, NR13S is a popular route, not only of motor carriers of goods, but also of tourists and local travellers.

Although NR13S is one of the most important highways in Lao PDR, the condition of the road has remained poor (i.e., classified as Class III) and in need of upgrades. Some parts of the road are at risk of flooding during the rainy season. Many small sections also have to be repaired or maintained several times a year. Therefore, the maintenance of NR13S alone represents a substantial financial burden to the government.

Figure 4.1. Map of Major Highways in Lao PDR



Note: numbers in the red box indicate the national road number used in each country, the dark connecting line is Lao PDR's main national road, the dark dash line is Lao PDR's national border.
Source: Created by the author and the project leader.

To upgrade the state of this important road, the government has begun to explore the possibility of using public–private partnership (PPP) mechanisms as a means to mobilise financial resources. The MPWT has been working with the World Bank Group to implement a pilot PPP project that aims to select a private concessionaire that will operate, improve, and maintain parts of NR13S from Vientiane Capital to Thabok Village in Bolikhamxay Province (Figure 4.1).

The World Bank Group consists of the World Bank, the Public–Private Infrastructure Advisory Facility, and the International Finance Corporation. These three agencies are responsible for providing comprehensive and sufficient support to the pilot PPP project. The World Bank and the Public–Private Infrastructure Advisory Facility support the development of a PPP regulatory framework, capacity building, and strengthening of the MPWT's institutional capabilities. In addition, the World Bank provides technical assistance in the supervision and management of concession projects and funds a detailed feasibility study for the project. The International Finance Corporation, meanwhile, is responsible for providing technical support to the MPWT on the commercial, environmental, social and legal aspects of the project.

An earlier feasibility study by the World Bank Group recommended decreasing the scale of the PPP project mainly because Lao PDR lacks the needed experience (PPIAF, 2013). The original idea was to upgrade NR13S from Vientiane to the Paksane District in Bolikhamxay and NR13N from Vientiane to the Vang Vieng District. Another feasibility study is currently being conducted.

There is also some interest from a Chinese investor to build a toll expressway on NR13S and NR13N (Southern and Northern section of NR13, respectively). The MPWT, however, had proposed that the investor conduct a survey and feasibility study on the construction of a new toll expressway as opposed to an expansion or upgrade of the existing road.

1.1.2 AH12 (NR13N)

The AH12, locally known as NR13N, is another major highway in Lao PDR. This national highway has a total length of 682 km, running from Vientiane Capital to the Lao–Chinese border in the northern region of the country. It crosses five provinces: Vientiane Capital, Vientiane Province, Luang Prabang, Oudomxay, and Luang Namtha. Similar to NR13S, NR13N is

a north–south transport corridor connecting the capital with the northern region of Lao PDR. The northern region of Lao PDR is mostly mountainous; thus, a large part of the NR13N has a high incline grade, subjecting it to numerous challenges such as landslides and road collapse due to a washout. Such difficult terrain makes NR13N hard and costly to maintain.

Some improvements were made to NR13N between 2011 and 2015, especially between Luang Prabang, Oudomxay, and Luang Namtha (Figure 4.1). In particular:

- The section between Xay district of Oudomxay and Pakmong of Luang Prabang (80 km) was due to upgrade its surface from one with bituminous surface treatment to asphalt concrete via a loan of more than US$80 million from China. The improvement was expected to be completed in early 2016.
- The section between Xay district and Nateuy has been improved since 2011 through a grant from China.
- Routine maintenance and repair of the remaining section of NR13N is being carried out from Luang Prabang to Pakmong.

Prior to these improvements, these sections of NR13N had amongst the worst road conditions. Today, these improvements will provide numerous benefits to Luang Prabang, Oudomxay, and Luang Namtha, especially in reducing transport time and cost between these important provinces and in promoting business opportunities along the road. Road signs have also been installed along NR13N through a funding assistance from the World Bank. More road signs are planned to be installed in other sections of the ASEAN Highway.

Finally, there is an ongoing feasibility study on the upgrade of the section of NR13N that runs from Vientiane Capital to Phone Hong (Figure 4.1) under the same pilot PPP project as NR13S. This section has one of the heaviest traffic congestion in the country, and an upgrade will therefore provide significant benefits, especially in reducing transport time and costs as well as in driving more tourists to Thalat and Vang Vieng, the major tourist destinations in Vientiane Province.

1.1.3 AH15 (NR8)

The AH15 (or NR8) in Bolikhamxay Province, is the shortest ASEAN Highway in Lao PDR. With a total length of 132 km, NR8 begins in Banlao (connecting with NR13S) and ends at the Namphao–Cau Treo border. The NR8 is a paved road in good condition and meets the criteria of a Class III road. However, most of the terrains through which NR8 runs are either hilly or mountainous, with an average slope of 10 to 12 degrees. Such challenging terrain limits the speed of heavy trucks.

The NR8 is one of the alternative shortcuts for road transport from the central region of Lao PDR to Viet Nam, as well as between Thailand and Viet Nam. The distance from Vientiane Capital to Cua Lo, a seaport in Viet Nam, via NR8 is 326 km, and the estimated travel time is about six and a half hours (Nolintha, 2012). Similarly, for the same destination, the distance from the Third Lao–Thai Friendship Bridge in Khammouane to Cua Lo is only 350 km, with an estimated travel time of slightly over three hours.

Some minor improvements have been made to the NR8 in recent years. Four concrete bridges were constructed along NR8 in 2014 using government funds. The total construction cost was nearly ₭N25 billion – or more than US$3 million. These concrete bridges can support heavier traffic. In addition, the South Korean government has provided financial and technical support to the conduct of a detailed feasibility study on the upgrade of the NR8. Finally, the government of Thailand, through the Neighbouring Countries Economic Development Cooperation Agency, has expressed continued support in the upgrade of NR8 because of this road's potential to improve the connectivity between Northeastern Thailand and Viet Nam via Lao PDR. The role of NR8 will increase significantly once the newly constructed Thai–Lao Bridge connecting Paksane (Bolikhamxay) and Bungkan Province of Thailand is constructed as planned (Figure 4.1). The bridge will make AH15 a complete East–West transport corridor similar to how NR12 is to Khammouane and NR9, to Savannakhet.

1.1.4 AH3 (NR3)

The AH3 is one of the most important regional economic corridors in Lao PDR. It measures 251 km long, extending from the Lao–Chinese border to Nateuy along NR13 and then from Nateuy to Luang Namtha and the Thai–Lao border in Houayxay, Bokeo, along NR3 (Figure 4.1).

The AH3 serves as the North–South Economic Corridor connecting Thailand and China via Lao PDR. The completion of the Fourth Thai–Lao Friendship Bridge in late 2013 helped AH3 achieve its full potential in boosting trade, investment, and tourism in Lao PDR, and in promoting more cross-border transport of goods and passengers. Therefore, this route has been used heavily for cross-border traffic. After the completion of the Fourth Thai–Lao Friendship Bridge, more investors, especially those from China, began showing some interest in investing in transport, tourism, trade, and manufacturing in Luang Namtha, while locals who live along AH3 became more active in producing handicrafts and agricultural goods, as well as in opening small shops to gain from the increase in traffic.[2]

In terms of road condition, 98.7% of AH3 is classified as a Class II road. Overall, the condition of AH3 is fair; however, as the terrain is mostly mountainous, the road condition deteriorates during the rainy season. As the road can become slippery, trucks have to reduce their speed. During heavy downpour, mudslide and landslides can block traffic for hours, causing a problem to both domestic and cross-border transport. In addition, some large sections of the road can collapse due to washout.

According to the MPWT, no major improvements are planned for this route; only regular maintenance will be done to sustain the current quality. Two Chinese investors have expressed their interest in constructing a toll highway in the area and are now conducting a preliminary survey. Note that if this pushes through, the toll highway would have to be newly constructed, and AH3 would still need to be maintained to service the transport of public goods in the region.

1.1.5 AH 16 (NR9)

The NR9 (or AH16) starts at the Lao–Thai border in Kaysone Phomvihane District (Savannakhet in Figure 4.1) and ends at the Lao–Viet Nam border in Den Savanh Village Figure 4.1), Sepone District, in Savannakhet. It has a total length of 241 km, with 97% classified as Class III. Its remaining section that lies between the centre of Savannakhet and the Lao–Thai border is classified as Class II. The terrain is mostly flat (80%) with some hilly sections (20%) between Phin District and the Lao–Vietnamese border.

[2] Interview with Luang Namtha's Department of Planning and Investment on 25 January 2016.

This section of the ASEAN Highway aims to function as an East–West economic corridor connecting Thailand and Viet Nam through Lao PDR. The NR9 has helped increase the inflow of foreign direct investment to Lao PDR and promote more cross-border trade and transport in the region.

To maximise the benefits from the ASEAN Highway, the Savan–Seno Special Economic Zone was developed along this route. The highway has been heavily used, especially between Sepone and Savannakhet, due to the heavy volume of copper transport from the mine located in Sepone.

Some major improvements have been made to AH16. Japan is the primary donor that supports the rehabilitation of this road. From 2012 to 2015, Japan financed the repair of a severely damaged 58-km stretch of AH16 via a grant worth ¥3.3 billion (about US$28 million). This improvement has helped the economic development of Savannakhet Province and enhanced connectivity between Lao PDR and the GMS.

Recently, there has been a foreign direct investment boom in the manufacturing sector in the Savan–Seno Special Economic Zone associated with the regional production network (Umezaki et al., 2014). Such boom takes advantage of the strategic location of Savannakhet, which has ease of access to the regional market via AH16. Improvement of this road will reduce the required time and cost for cross-border transport along the route, and promote more trade, investment, and tourism to the area. Finally, an increase in such business activity will generate more income and job opportunities for the poorer eastern part of Savannakhet Province.

The Japanese government also supported further improvements of NR9 by replacing two bridges built in the 1980s: the Xe Kumkam Bridge and Xe Thamouak Bridge. These bridges have severe structural problems and do not meet ASEAN Highway standards. Detailed planning for the repair of these bridges commenced in late 2015.

Finally, an investor from the Republic of Korea expressed an interest in constructing a new highway to connect the Lao–Vietnamese border in Dansavanh and the Lao–Thai border in Savannakhet using the build-operate-transfer model. Details about this road, including the directions of the route and road specifications, are currently unavailable.

1.1.6 AH13 (NR2)

The NR2 (or AH13) is the most recently developed ASEAN Highway in Lao PDR. It begins at the Lao–Vietnamese border (Sophoun–Tay Trang checkpoint) and passes through the Khua District of Phongsaly and then Oudomxay Province before ending at the Lao–Thai border in the Nguen District of Sayaboury Province. It could serve as an East–West transport corridor for the northern region to link Viet Nam and Thailand via Lao PDR. Measuring 363 km long, AH13 has nearly half of its road classified as Class III and the remaining as below Class III. It runs through hilly (68%) and mountainous (32%) terrains.

The most recent improvement on this ASEAN Highway was on the section between the Lao–Viet Nam border and Khua District in Phongsaly (67 km). Construction began in 2009 and was completed in 2012. The construction cost ₭N370 billion (almost US$46 million), 93% of which was financed by a loan from Viet Nam. Other improvements have been made to the section between Xay District and Pakbeng (145 km) since 2003 with support from the World Bank; and to the section between Pakbeng and Nguen District (46 km) from 2006 to 2009, with funding from the government of Thailand.

1.2 Improvements of Other Important Roads for Regional Connectivity

In addition to the ASEAN Highways, the government has also invested in several roads to improve domestic and regional connectivity. Some of the major improvements are detailed below.

1.2.1 The development of NR12 as a new regional transport route

The NR12 (or AH131) runs from Thakhek in Khammouane to Naphao (at the border with Viet Nam). It is counted as a new ASEAN Highway although not yet included in the official list. It has a total length of 138 km and is currently classified as a Class III road.

Also, NR12 is Khammouane's most strategic road: It allows access to Viet Nam and could serve as another competitive corridor to facilitate regional trade from east to west, much like NR9 is in Savannakhet.

The route was developed under a bilateral agreement between Lao PDR and Viet Nam in 1996. The Thai government decided to participate by constructing the Third Lao–Thai Friendship Bridge. Via NR12, the distance from Thakhek (Khammouane) and the Vung Ang Port in Viet

Nam is just over 300 km – much shorter than the route to Danang via R9 (Nolintha, 2012). This could be an important transport corridor for access from the northeastern region of Thailand to Viet Nam and the Vietnamese Sea. The Neighbouring Countries Economic Development Cooperation Agency of Thailand has been approached to support a detailed study on the upgrade of NR12 to ASEAN standards.

The NR12, therefore, has the potential to be another important transport corridor for ASEAN countries.

1.2.2 The upgrade of NR18

National road NR18 (or AH132) begins at the intersection of NR18 and NR13S in Phiafai (Champasak) and travels through the centre of Attapeu Province before ending at the Lao–Viet Nam border (Phoukeau–Bo Y checkpoint). This route connects with Ubon Ratchathani in Thailand via NR13S and NR16 and is 231 km long.

Recently, NR18's quality has been improved. The section between Attapeu and the Lao–Viet Nam border (NR18B) was upgraded through the assistance of the Asian Development Bank, while the section between Attapeu and NR13S (NR18A) was improved by a foreign concessionaire of a mining project in Attapeu. These improvements help connect several important tourist destinations in the southern region of Lao PDR.

The NR18 is designated as one of the three East–West economic corridors for the Development Triangle Area, the sub-regional cooperation framework between Lao PDR, Viet Nam, and Cambodia. It could serve as an alternative transport route connecting the lower northeastern region of Thailand with Viet Nam. The distance between Ubon Ratchathani and Danang Port is slightly more than 600 km via NR18 (Nolintha, 2012).

1.2.3 Developing a new shortcut for the Vientiane Capital–Luang Prabang Route

The mountainous route between Vientiane Capital and Luang Prabang is the most heavily used section of NR13N. Land transport for passenger cars between Vientiane Capital and Luang Prabang, which is only about 360 km, takes around eight to nine hours. In addition, the section between Vientiane Capital and Phone Hong (70 km) has been congested in the last few years because of the increasing number of vehicles and traffic between the outskirts of the capital

and the inner-city area. The government has developed a few major pieces of road infrastructure to reduce congestion along NR13N and provide more options for road users:

- A new two-lane road was developed in Vientiane Province as a shortcut for NR13N (marked '1' in Figure 4.1) using government funds. This new road has a length of 70 km. It runs from the intersection of NR13N in Kasi District (Vientiane Province) to the intersection with NR4. It then continues on NR4 in Nan District and meets with NR13N again in Xiengnguen District in Luang Prabang. It has a small section (about 9 km) of steep terrain, but the rest of the route is much less mountainous than the old route. Although this shortcut only saves 40 km between Vientiane Capital and Luang Prabang, it saves about 1.5 to two hours of travel time because of the difference in terrain conditions. After the completion of this shortcut route, traffic – as did the amount of business activity – along the old route declined.[3]

  In addition, the new route helps connect Vang Vieng, a popular tourist destination, with Nan Province in Thailand. Tourists from Thailand can visit Vang Vieng directly without having to pass through Luang Prabang. The distance from the Lao–Thai border (Muang Nguen–Huay Kon international checkpoint) to Vang Vieng is 291 km via this new shortcut.

- A new bridge was constructed across Nam Ngum that connects Meung Kao and Pakkayung in Vientiane Province (marked '2' in Figure 4.1). The completion of this bridge represents a new alternative route for the section between Vientiane Capital and Phone Hong along NR13N. As mentioned previously, this section of NR13N is extremely congested, and the road quality is quite severe. With the new bridge, road users, especially passenger cars, can travel to Phone Hong via NR10.

- Two major sections of NR10 have also been improved. Funded by the government's budget, the section between the intersection of NR10 and NR13S and Tha Ngon has been upgraded from two lanes to four lanes of concrete road. The second section between the new bridge and Phone Hong has also been upgraded to two and four lanes of asphalt concrete as part of the relocation of the municipality of Vientiane province from Phonehong District along NR13N to Viengkham District near the new bridge. Although the distance between Vientiane to Phone Hong via the new bridge is slightly longer than the

[3] Interviews with local businesses along the old route during a field expedition in December 2015.

old route along NR13N and the travel time is almost the same, road users can now enjoy a road that is wider and of better quality.

1.3 Major Plans for the Development of Hard Infrastructure for the Facilitation of Road Transport over the Next Five Years

The Lao government will continue to improve the hard and soft infrastructure to strengthen competitiveness and enhance connectivity within the regional economy (MPWT, 2015b and 2015c). Details on selected hard infrastructure projects are shown in Appendix 1.

The planned infrastructure development projects can be summarised as follows:

First, the top priority is to improve the quality of existing ASEAN Highway sections in Lao PDR. Roads considered as part of regional corridors such as NR2, NR3, NR8, NR9, NR12, NR13, and NR18 will be upgraded to meet regionally acceptable standards. These are part of the existing regional highways AH3, AH11, AH12, AH13, AH15, AH16, AH131, and AH132.

Second, other national roads that have the potential to be important routes for regional connectivity will also be in the pipeline for upgrade. These include NR4, an important road between Sayaboury and Luang Prabang connecting Sayaboury with the Thai border that recently served as an important shortcut between Vientiane Capital and Luang Prabang. Other routes planned for upgrade are NR6 (Luang Prabang–Houaphan–Viet Nam), NR15 (Salavan–Viet Nam), NR16 (Sekong–Viet Nam), and NR17 (connecting Luang Namtha with Myanmar through the new Lao–Myanmar Friendship Bridge).

Third, a few major connecting bridges are planned for construction. These include two Lao–Thai bridges over the Mekong River: namely, the Bolikhamxay–Bungkan Bridge in the Paksane District of Bolikhamxay Province, and the Salavan–Ubon Ratchathani Bridge near the Paktaphan checkpoint in Salavan Province. Two domestic bridges crossing the Mekong River, Luang Prabang–Chomphet Bridge in Luang Prabang Province, and another bridge in the Paktha District of Bokeo Province, will also be constructed.

Apart from roads and bridges, other important infrastructure development projects include the construction of the Boten–Vientiane Railway and the Savannakhet–Lao Bao Railway. The government will conduct a feasibility study as well as design the new Nongkhai–Vientiane Bridge specifically for railways – namely, the section between Vientiane Capital, Thakhek

District (Khammouane Province), and Naphao (border checkpoint with Viet Nam), and between Pakse District (Champasak Province) and Vang Tao (border checkpoint with Thailand).

Finally, to better utilise these improvements, logistics parks and/or dry ports for international and regional logistics services are also planned in Thanaleng (Vientiane Capital), Nateuy (Luang Namtha), Seno (Savannakhet), and Vang Tao (Champasak).

Given such ambitious plans to develop hard and soft infrastructure, the main challenge remains to be in financing. Lao PDR's MPWT estimates that the total investment in hard and soft infrastructure in this sector will be as high as ₭N73,000 billion – or almost US$10 billion – for the years between 2016 and 2020, of which 18% of the required investment is allocated to the improvement and maintenance of existing infrastructure; 6.5% is to continue uncompleted projects under the previous 5-year plan; and almost 70% is for new infrastructure. The required investment is almost four times higher than the amount that could be realistically mobilised. Therefore, it is important to prioritise infrastructure projects and promote private investment and PPP mechanisms.

2. Improvements in Soft Infrastructure for Road Transportation

Along with developing hard infrastructure, the Lao government has also directed its efforts into improving the soft infrastructure. Between 2011 and 2015, several important pieces of legislation were revised and made consistent with regional and international agreements. These include the revision of road transport laws, road traffic laws, and multimodal transport laws, and the setting of maximum permissible gross weight limits for trucks. In addition, two long-term transport-related strategies – a logistics strategy and an environmentally sustainable transport strategy – have been drafted for the government's consideration.

The Department of Legislation was recently established under the MPWT. This type of institutional change reflects how legislation in the area of transport and public works is being prioritised.

In addition, Lao PDR and Viet Nam have been operating a pilot single-stop inspection programme in the Lao Bao–Dansavanh international checkpoint in Savannakhet Province in Lao PDR and Quang Tri Province in Viet Nam since December 2015. This initiative, together with

the e-customs system, helps simplify cross-border administrative procedures by reducing the amount of documents, time, and personnel involved. It is carried out under the GMS Cross-Border Transport Agreement (CBTA). A similar model will soon be applied at the Savannakhet–Mukdahan international checkpoint at the Second Lao–Thai Friendship Bridge at the other end of AH16[4] and, subsequently, to other important international border checkpoints.

2.1 Regulations and Technical Requirements

Technical requirements for vehicles in Lao PDR have been gradually revised to facilitate cross-border transportation with neighbouring countries. The latest technical requirements for trucks are governed by the 2013 regulation on the maximum permissible gross weight for trucks (No. 13848/MPWT, dated 26 September 2013). This regulation replaces previous rules (No. 849/MPWT and No. 2205/MPWT).

Compared with its predecessors, the current regulation in Lao PDR permits higher maximum gross weights for all types and sizes of trucks. Another difference pertains to the regulation on maximum axle loads. In contrast to the previous regulations, which placed specific restrictions on the maximum front and rear axle loads for all types and sizes of vehicles, the current regulation does not have any restrictions on maximum axle loads; it only has a regulation on the gross weight of the vehicle. To better facilitate cross-border transport in the ASEAN region, member countries' regulations on weight limits need to be harmonised.

In addition, trucks have been known to travel with overloaded goods to gain more profit.[5] This is one of the major causes of road damage in Lao PDR. Therefore, weight stations, which have been closed since 2011, are reopening to enforce regulations on weight limits.

A comparison of technical requirements for vehicles between Lao PDR's regulations and those of the ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT) is provided in Table 4.2. Note that the maximum length and width set for rigid motor vehicles are consistent between the domestic regulations and those of the AFAFGIT. However, local requirements permit higher maximum lengths and heights for articulated vehicles.

[4] Article published in *Bangkok Post* on 26 January 2016 and *Vientiane Times* on 28 January 2016.
[5] Interview with officials from the Ministry of Public Works and Transport on 26 January 2016.

Meanwhile, there are some variations between ASEAN and domestic regulations' maximum permissible gross vehicle weight. The maximum permissible weights for three- and four-axle rigid vehicles in Lao PDR are generally within the range of ASEAN requirements. For instance, AFAFGIT allows a three-axle rigid vehicle to have a maximum weight of 21 tons, while domestic regulations allow from 13.5 tons (for three-axle, six-wheel rigid vehicles) to 25 tons (three-axle, 10-wheel rigid vehicles).

Local technical requirements provide more details on regulations for specific types of vehicles in that they take into consideration the number of both axles and wheels. The maximum permissible weights for articulated vehicles are slightly higher in the local regulations.

It is also important to note that the maximum gross weights of vehicles are set differently between national roads that serve as regional corridors (such as NR9, NR3, and NR4) and other roads. Vehicles traveling on NR9, NR3, and NR4 have higher maximum permissible weights than vehicles traveling on other roads. Again, the purpose of such policy is to facilitate cross-border transportation.

Table 4.2. Technical Requirements for Vehicles in AFAFGIT and Local Regulations

	AFAFGIT	**Types of Vehicles Specified in Domestic Regulations**	**Lao PDR (NR3, NR4, NR9)**	**Lao PDR (Other Roads)**
Maximum Length (Rigid Motor Vehicle)	12.2 m		12.2 m	12.2 m
(Articulated Vehicle)	16.0 m		19.0 m	19.0 m
Maximum Width	2.5 m		2.5 m	2.5 m
Maximum Height	4.2 m		4.5 m	4.5 m
Maximum Number of Axels			6 axle	6 axle
Maximum Axle Load			No restrictions	No restrictions
Maximum Rear Axle Load	ROH < 60% of WB		No restrictions	No restrictions
Maximum Permissible Gross Vehicle Weight for:				
3-Axle Rigid Vehicle	21.0 ton	3-axle 6-wheel	13.5 ton	13.5 ton

		(2 front, 2 middle and 2 back)		
		3-axle 6- wheel (2 front and 4 back)	17.0 ton	16.0 ton
		3-axle 8-wheel	17.5 ton	17.5 ton
		3-axle 10-wheel (2 front and 8 back)	25.0 ton	23.2 ton
4-Axle Rigid Vehicle	25.0 ton	4-axle 8-wheel	22.5 ton	20.0 ton
		4-axle 12-wheel	29.5 ton	27.2 ton
4-Axle Articulated Vehicle	32.0 ton	4-axle 14-wheel (2 front, 4 middle and 8 back)	36.0 ton	32.3 ton
		4-axle 14-wheel (2 front, 8 middle and 4 back)	35.0 ton	
5-Axle Articulated Vehicle	36.0 ton	5-axle 18-wheel	45.0 ton	41.4 ton
6-Axle Articulated Vehicle	38.0 ton	6-axle 22-wheel	49.6 ton	49.6 ton

Source: ASEAN standards are from Protocol 4 of the ASEAN Framework Agreement on the Facilitation of Goods in Transit, and domestic regulations are from Ministry of Public Works and Transport (2013).

Finally, during the rainy season (from 1 June to 30 November), the maximum gross weight for all types and sizes of trucks traveling on earth roads or natural roads must be 20% lower than the normal limit.

2.2 Road Traffic Signs in Lao PDR

Road traffic signs in Lao PDR are governed by the Law on Land Traffic (No. 23/NA, dated 12 December 2012). There are seven types of road signs in Lao PDR: warning signs; priority signs; prohibitory or restrictive signs; mandatory signs; special regulation signs; direction, position, or indication signs; information, facilities, or services sign; and signs with additional panels.

The shapes of different types of road signs are shown in Table 4.3. Road traffic signs in Lao PDR are consistent with those standardised by the Vienna Convention, even though Lao PDR is not a signatory. A comparison of selected road signs in Lao PDR with the Vienna Convention-compliant signs is provided in Appendix 2.

Table 4.3. Common Road Signage in Lao PDR

Shape of Road Sign	Meaning	Shape of Road Sign	Meaning
(Triangle)	Warning	(Circle)	Restrictive, end of restriction or mandatory
(Diamond)	Priority sign	(Horizontal rectangle)	Warning, special regulation, direction, position, or additional panels
(Octagon)	Stop	(Vertical rectangle)	Warning, special regulation, direction, position, or additional panels
(Inverted triangle)	Yield	Square)	Priority, special regulation, mandatory, direction, or additional panels

Source: Department of Transport (2015).

In Lao PDR, some road signs are still in the local language, posing some problems to foreign drivers (Table 4.4). For instance, some important signs (such as indication signs for police stations and vehicle checkpoints), and temporary signs for road blocks or temporary bypass roads, are shown in the local language. Lao PDR, however, has begun to install ASEAN Highway road signs along the main highways, starting with AH11 in 2015. This work will expand to other ASEAN Highways in the near future.

Table 4.4. Road Signage in or with Lao Language

Meaning	Road Sign
Stop	
Direction of bypass road for temporary roadblock	
Traffic policy station	
Vehicle checkpoint	

Source: Department of Transport (2015).

2.3 Outline of the Road Transportation Law

Road transportation in Lao PDR is governed by two main laws; namely, the Land Traffic Law and the Land Transport Law. The Land Traffic Law (No. 23/NA, dated 12 December 2012) aims to define principles, regulations, and measures on the establishment, activities, and management of land traffic to facilitate and control the movement of human beings and the use of various vehicles on the roads.

The Land Traffic Law focuses on the safety and control of land traffic, including regulations on driving licenses, road signs, traffic lights, and technical standards for vehicles. The Land Traffic Law is composed of the following 11 chapters:

- General provisions
- Land traffic
- Technical standards and vehicle management
- Business activities related to land traffic
- Associations and foundations related to land traffic
- Prohibitions
- Conflict resolution
- Committee on Road Safety
- Land traffic management and inspection
- National Road Safety Week, uniforms, and signs
- Policies towards persons with outstanding achievements and measures against violators

On the other hand, the Land Transport Law (No. 24/NA, dated 12 November 2012)[6] deals with the administration, management, and monitoring of the domestic and cross-border transport of goods and passengers. Interestingly, because logistics services are important to the Lao economy, the Land Transport Law broadly defines the role and responsibility of the logistics park/zone (Chapter 4, Articles 51 and 52).

On cross-border transport (Chapter 12), the Land Transport Law allows the implementation of country-specific bilateral, regional, or international transport agreements; does not decide upon the place of trans-shipment, but stipulates that this must be agreed upon by governments; allows vehicles to have right-side steering wheels when engaging in cross-border transport activities in countries that utilise left-side traffic systems (Article 15); and stipulates that foreign vehicles must follow local traffic and other related regulations.

[6] Interview with officials from MPWT on 26 January 2016.

The Land Transport Law is composed of the following 11 chapters.

- General provisions
- Transport operations
- Land transport enterprises
- Land transport business operations
- Vehicle transporter unions
- Prohibitions
- Conflict resolution
- Transportation committee
- Work management and inspection
- Policies towards persons with outstanding achievements and measures against violators
- Final provisions

A full outline of the Land Transport Law is provided in Appendix 3.

2.4 Further Planned Improvements for Soft Road Transport Infrastructure in Lao PDR

Soft infrastructure should be given the same importance as hard infrastructure. For one, there is a need to align domestic transport regulatory frameworks with existing international, regional, and bilateral transport agreements. Thus, Lao PDR plans to see that the GMS CBTA is implemented more effectively, and its stipulations further integrated in domestic transport regulations.

In addition, the information system behind vehicle registration and drivers' licenses will also be modernised, and public works as well as transport institutes and training centres will be strengthened. Other areas of soft infrastructure that future initiatives aim to improve are in road safety management and promotion; road traffic legislation; and translation of international, regional, and bilateral transport agreements.

3. Conclusion

The facilitation of road transport in Lao PDR has been significantly improved to support the road connectivity-related policies of the government. Lao PDR has strengthened its cooperation with other countries in the region as well as with development partners to

promote investment in hard transport infrastructure, particularly improvements of regional and national highways.

Aside from the hard infrastructure initiatives, the soft infrastructure has been strengthened through revisions of several legislative and regulatory frameworks, institutional changes, and progress in implementing the GMS CBTA.

However, there remain challenges in improving hard transport infrastructure. A significant part of the funds for hard infrastructure projects comes from bilateral assistance and development partners. Because the government's budget is limited, its fund has been used primarily to maintain the quality of existing roads or to construct a few strategic roads or road sections.

Still, road maintenance remains a major concern in terms of sustaining the quality of both regional and national highways. Currently, the road maintenance budget covers only about one-third of the need.[7] Difficult terrains and the associated problems (landslides, washouts, etc.) and overloaded trucks adversely affect the quality and durability of roads.

In addition, several projects in the past have relied on advance investments by the private sector – funds that often have high implied interest rates for repayment. Therefore, PPP mechanisms, especially those under the build-operate-transfer model, could play an increasingly important role in financing large infrastructure projects, especially those with a high rate of traffic.

The PPP mechanisms require a good regulatory framework and a rigorous system of checks and balances to monitor the terms of the agreement and the implementation of the project. Although Lao PDR has constantly amended domestic laws and regulations on transportation to keep them more consistent with regional and international frameworks, more revisions are needed in terms of the permissible weight limits of vehicles and trucks.

Road signs in Lao PDR are already consistent with international regulations, but more road signs need to be installed, with their visibility enhanced. Old or broken road signs must be replaced, and English translations ought to be provided for those road signs that are currently written in the local language only.

[7] Interview with Mr. Chanthaphone Phanvisouk, Department of Planning and Cooperation, Ministry of Public Works and Transport in January 2016.

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Appendix 1. Proposed Hard Infrastructure Projects 2016–2025

No	Name, Location	Distance (Km)	Present Status	Estimated Project Value (₭N Million)	Source of Financing	Priority of Project for GMS Framework ('1' being the highest)
A	**Construction or Upgrade of Road**					
1.1	**Section of Highway**					
1	Upgrading of NR8 (AH15, Ban Lao–Nam Phao)	132	KOICA support in feasibility study study	640,000	Financing is needed	
2	NR17 (Lao–Myanmar bridge to Luang Namtha District)	180	Pre-feasibility study is complete	2,160,000	Financing is needed	**6**
3	NR13S (AH11,Vientiane–Veunkham)	861	Plan	13,776,000	Financing is needed	
4	NR13N (AH12, Vientiane–Nateuy)	650	Plan	10,400,000	Financing is needed	
5	NR2 (AH13, Nguen District–Panghok Border)	362	Plan	5,792,000	Financing is needed	
6	NR8, (AH15, Ban Nalao–Namphao Border)	131	Plan	2,096,000	Financing is needed	**4**
7	NR18, (AH 132, Thakhek District–Namphao	126	Plan	2,016,000	Financing is needed	
8	Rehabilitation of NR9	180.5	Plan	182,000	Financing is needed	
1.2	**Construction of Bridges Across the Mekong River**					
1	Paksane (Bolikhamxay, Lao PDR)–Bungkan (Thailand) Bridge	1.6	Feasibility study is ongoing	400,000	Request for assistance from NEDA	**2**
2	Salavan–Ubon Ratchathani Bridge	2	Plan	400,000	Request for assistance from NEDA	
3	Koneteun Bokeo Province Mekong Bridge			400,000	Financing support is needed	

Appendix 1. Selected Proposed Hard Infrastructure Projects 2016–2025 (Continuation)

No	Name, Location	Present Status	Estimated Project Value (₭N Million)	Sources Of Financing	Priority of project for GMS framework ('1' being the highest)
1.3	**Construction of Domestic Connecting Roads**		6,166,000		
1	Nguen District (Sayaboury)–Chomphet district (Luang Prabang)	Detailed design is complete	720,000	Request for assistance from NEDA	**3**
1.4	**Expressway Construction**		**2,240,000**		
1	Upgrading NR13N (Vientiane–Phone Hong) and NR13S (Vientiane–Thabok) Section of AH11	Feasibility study ongoing	2,240,000	Possible PPP investment, with World Bank support	**2**
B	**Facilitation of Transport Infrastructure**				
1	Construction of the logistics park in Thanaleng, Vientiane	Discussion with PPP partner	520,000	Financing support is needed	
2	Construction of the logistics park in Seno, Savanhnakhet	Pre-feasibility study	240,000	Financing support is needed	
3	Construction of the logistics park in Nateuy, Leuangnamtha	Feasibility study	240,000	Financing support is needed	
4	Construction of the logistics park in Vang Tao, Champasak	Feasibility study	120,000	Financing support is needed	
5	Thanaleng border-crossing infrastructure improvement		200,000	Financing support is needed	**3**
6	Xiengkok River Port		120,000	Financing support is needed	**4**
7	Ban Mom River Port		96,000	Financing support is needed	**5**
8	Building transport facilities along R3	Plan	TBD		
9	Building transport facilities along NR13N and 13 S	Plan	TBD		

Appendix 1. Selected Proposed Hard Infrastructure Projects 2016–2025 (Continuation)

No	Name, Location	Present Status	Estimated Project Value (₭N Million)	Sources of Financing	Priority of project for GMS framework ('1' being the highest)
10	Building transport facilities along NR 9	Pre-implementation	18,400		
11	Upgrading Vang Tao border-crossing point	Plan	120,000	Private sector financing being sought	**1**
12	Upgrade of the international checkpoint and facilities in Namphao checkpoint (R8)	Plan	40,000	Financing support is needed	**6**
13	Upgrade of the international checkpoint and facilities in Naphao checkpoint (R12)	Plan	40,000	Financing support is needed	**6**
14	Upgrade of the international checkpoint and facilities in Lalai checkpoint (R15)	Feasibility study completed in 2013	40,000	Private sector financing being sought	**5**
15	Upgrade of the international checkpoint and facilities in Dak Chung checkpoint (R16)		24,000	Private sector financing being sought	**7**

NEDA = Neighbouring Countries Economic Development Cooperation Agency; PPP = public–private partnership; KOICA =Korea International Cooperation Agency.
Source: Details of investment projects from Ministry of Public Works and Transport (2015c) and priority ranking is derived from Ministry of Public Works and Transport (2014).

Appendix 2. Comparison of Select Road Signs in Lao PDR and of the Vienna Convention

Meaning	Vienna Convention	Lao PDR	Examples
Warning Signs			
Road narrows right			
Road narrows left			
Slippery			
Falling rocks			
Pedestrian crossing			 Child crossing in school area, 30 km/h speed limit
Bicycle crossing			

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Warning Signs			
Road work			
Railway crossing		 (Railway crossing ahead with no barrier)	
		 (Railway crossing ahead with a barrier)	
Railway crossing approx. 240 m ahead	 	 Railway crossing approx. 300 m ahead	
Railway crossing approx. 160 m ahead	 	 Railway crossing approx. 200 m ahead	

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Warning Signs			
Railway crossing approx. 80 m ahead	 	 Railway crossing approx. 100 m ahead	
Sharp curve ahead			
Steep climb			
Steep descent			 

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Priority Signs			
Stop			
Yield			 Yield in the roundabout
Prohibitory or Restrictive Signs			
No entry			
No automobiles			
No motorcycles			
No bicycles			

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Prohibitory or Restrictive Signs			
No large trucks			
		No trucks larger than the stated weight limit (e.g. 8 tons)	
Horizontal clearance			
Vertical clearance			
Weight limit			
No U-turn			
No overtaking			

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Prohibitory or Restrictive Signs			
No overtaking (Japan)			
No passing for heavy trucks			
End of speed limit			
Mandatory Signs			
Mandatory direction of travel (Go straight or turn right)			
Roundabout			
Minimum speed limit			

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Direction, Position or Indication Signs			
Directions to major destinations ahead			
Major destinations ahead			
Direction and distance to major landmarks		 	
Indicating dangerous road areas ahead			   

Appendix 2. Select Road Signs in Lao PDR and of the Vienna Convention (Continuation)

Meaning	Vienna Convention	Lao PDR	Examples
Information, Facilities or Service Signs			
Clinic		 Hospital, clinic, or other smaller type of health centres	
Gas station		 Distance to nearest gas station ahead	
Restaurant			

Source: Road signs in Lao PDR are derived from Department of Transport (2015). All photographs taken by the author during field research.

Appendix 3. Outline of the Land Transport Law (No. 24/NA, dated 12 November 2012)

1) General Provision
    - Objectives
    - Meaning of Land Transport
    - Definitions
    - State Policy on Land Transport Performance
    - Land Transport Principles
    - Obligations of Land Transport Operators
    - Scope of Application of the Law
    - International Cooperation
2) Land Transport Operation
    - ❖ Type and Scope of Land Transport
        - Types of Land Transport
        - Scope of Land Transport
        - Domestic Transport
        - International or Cross-Border Transport
    - ❖ Transport Vehicles
        - Size of Transport Vehicles
        - Requirements for Land Transport Drivers
        - Requirements for Vehicles Used in Transport Enterprises and Specialised Transport
        - Conditions for Private Cars
        - Used Vehicle Permits
        - Technical and Health Inspections for Drivers
        - Insurance for Transport Vehicles
3) Land Transportation Enterprises
    - Business Activities of Land Transport Enterprises
    - Application for Establishment of Land Transport Enterprises
    - Application for Establishment of Branches of Land Transport Enterprises
4) Land Transport Business Operations
    - ❖ Passenger Transport
        - Passenger Transport
        - Scheduled Passenger Transport
        - (Transport with predetermined route including beginning station, final destination, ticket sale)
        - Non-Scheduled Passenger Transport
        - (Transport without predetermined route, but based on specific transport contract/agreement. Two types: private charter transport and specialised transport)
        - Rights, Obligations, and Responsibilities of Transport Operators
        - Rights, Obligations, and Responsibilities of Passengers
    - ❖ Section 2. Transport of Goods
        - Contracts for the Transport of Goods
        - Primary Content of Contracts for the Transport of Goods
        - Bill of Lading
        - Rights, Obligations, and Responsibilities of Goods Transport Operators

- Rights and Obligations of Goods Transporters
- Rights and Obligations of Goods Receivers
- Compensation for Damaged Goods
- Transport of Perishable Goods
- Transport of Food and Plants
- Transport of Animals
- Transport of Dangerous Materials
- Special Transportation

❖ Freight Forwarding
- Article 40: Freight Forwarding
- Rights and Obligations of Freight Forwarders
- Responsibilities of Freight Forwarders

❖ Stations for Transport Vehicles
- Types of Transport Vehicles
- Size of Stations for Transport Vehicles
- Stations for Goods or Animals Transport Vehicles

❖ Vehicle Rentals
- Vehicle Rental Operators
- Rights, Obligations, and Responsibilities of Vehicle Rental Operators
- Rights, Obligations, and Responsibilities of Vehicle Renters

❖ Goods Distribution Centre
- Goods Distribution Centre
- Rights, Obligations, and Responsibilities of Goods Distribution Centres

❖ Logistics Zones
- Logistics Zones
- Rights, Obligations, and Responsibilities in Logistics Zones

❖ Rest Areas or Parking Areas
- Rest Areas or Parking Areas
- Rights, Obligations, and Responsibilities in Rest Areas or Parking Areas

❖ Bus Ticket Counters
- Bus Ticket Counters
- Rights, Obligations, and Responsibilities of Bus Ticket Counters

5) Transporters Association
- Transporters Association
- Role of Transporters Association
- Rights, Obligations, and Responsibilities of Transporters Association

6) Prohibitions
- General Prohibitions
- Prohibitions for Drivers of Transport Vehicles
- Prohibitions for Authorities and Related State Officials
- Prohibitions for Transport Enterprise Operators

7) Conflict Resolution
- Function of Conflict Resolution
- Compromise
- Administrative Resolution
- Resolution by Economic Dispute Resolution Agency
- Court Decisions
- International Resolution

8) National Transport Committee
    - Establishment of the National Transport Committee
    - Structure of the National Transport Committee
    - Rights and Duties of the National Transport Committee
9) Administration and Inspection of Land Transport Performance
    - ❖ Administration of Land Transport
        - Rights and Duties of the Ministry of Communication, Transportation, Post and Construction
        - Rights and Duties of the Ministry of Communication, Transportation, Post and Construction Division in Each Province, Vientiane
        - Rights and Duties of the Communication, Transportation, Post and Construction Office in Each District
        - Rights and Duties of Prefecture Zones
    - ❖ Inspection of Land Transport Performance
        - Inspected Organisation of Land Transport Performance
        - Right and Duties of the Inspected Organisation of Land Transport Performance
        - Contents of Land Transport Performance Inspection
        - Function of Land Transport Inspection
10) Policies on Persons with Exemplary Records and Measures against Violators
    - Policies on Persons with Exemplary Records
    - Measures against Violators
    - Re-Education Measures
    - Disciplinary Measures
    - Fines
    - Civil Measures
    - Criminal Measures
11) Final Provisions
    - Implementation
    - Effectiveness