

FROM LANDLOCKED TO LAND-LINKED

UNLOCKING THE POTENTIAL
OF LAO-CHINA RAIL
CONNECTIVITY



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Advisory Services and Analytics (P168595)
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East Asia and Pacific

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ABBREVIATIONS

ADB	Asian Development Bank	LIFFA	Lao International Freight Forwarder Association
ASEAN	Association of Southeast Asian Nations	LNSW	Lao PDR National Single Window
BOL	Business Operating License	LPI	Logistics Performance Index
BOT	Build-operate-transfer	MPWT	Ministry of Public Works and Transport
BRI	Belt and Road Initiative	NII	Non-intrusive inspection
CBTA	Cross-Border Transport Facilitation Agreement	NSEC	North-South Economic Corridor
CCC	Customs Coordinating Committee	NTFC	National trade facilitation committee
CCS	Coordinating Committee on Services	NTM	Non-tariff measure
CICPEC	China-Indochina Peninsula Economic Corridor	ODA	Official development assistance
CTS	Customs Transit System	OECD	Organisation for Economic Co-operation and Development
DPC	Department of Planning and Cooperation	PPP	Public-private-partnership
DPWT	Department of Public Works and Transport	RKC	Revised Kyoto Convention
EPZs	Export processing zones	SEZ	Special economic zone
EWEC	East-West Economic Corridor	SMEs	Small and medium-sized enterprises
FCL	Full container load	SPS	Sanitary and phytosanitary
FDI	Foreign direct investment	STOM	Senior Transport Officials Meeting
GMS	Greater Mekong Subregion	TFA	Trade Facilitation Agreement
ICD	Inland clearance depot	TFI	Trade Facilitation Indicator
ICT	Information and communication technologies	UNCTAD	United Nations Conference on Trade and Development
IT	Information technology	UNESCAPE	United Nations Economic and Social Commission for Asia Pacific
Lao PDR	Lao People's Democratic Republic	VOCs	Vehicle operation costs
LCL	Less than container load	WTO	World Trade Organization
LCRC	Lao-China Railway Company		

EXECUTIVE SUMMARY

The Lao-China Railway, which will connect Lao People's Democratic Republic (Lao PDR) to the entire network of the Belt and Road Initiative (BRI), has the potential to transform Lao PDR from a landlocked to a land-linked economy. The 414-km railway will connect the country's capital of Vientiane with the city of Boten at the northern border with China. At Boten, the railway will connect with the BRI network at Kunming, China, through another 595-km railway link. The railway journey between Vientiane and Boten is expected to take less than four hours, significantly less than fifteen hours by car. Without considering border clearance times, it will take approximately another four hours from Boten to Kunming. The railway will also make it possible to travel between Vientiane and Vang Vieng in about an hour, less than the current four hours by car. Assuming an efficient border process for passengers and cargo, the Vientiane-Boten Railway could provide Lao PDR with a land link to global and regional supply chains, which could make the country more attractive to investors, create new jobs, and accelerate economic growth. However, this would require policymakers to implement reforms to improve the country's business and trade environment and facilitate well-targeted complementary infrastructure investments.

While a recent 2019 World Bank study shows that the overall economic impact of the BRI could be significant for beneficiary countries, including Lao PDR, it also stresses the need for countries to undertake complementary policy reforms. With the right reforms in place, the railway, along with associated reductions in trade costs within the broader BRI network, has the potential to improve the comparative advantage of Lao PDR. The railway could make the country more attractive as an investment destination and link it to major production and consumption areas in China and the Association of Southeast Asian Nations (ASEAN), allowing firms to access global value chains. A number of planned export processing zones around train stations could serve as attractive investment locations as long as they are properly equipped and effectively managed. With efficient logistics services, Lao PDR could develop into a logistics hub, while targeted investments in agriculture and tourism could result in new export opportunities.

The country's investments in the Vientiane-Boten Railway also pose considerable risks. The estimated cost for the railway section within Lao PDR is US\$5.9 billion—nearly one-third of the country's GDP in 2017. While the railway corridor is expected to support trade between China and ASEAN as a part of China's BRI, Lao PDR will only fully benefit if it undertakes significant complementary policy reforms and improves the quality of connecting road infrastructure. The country also needs to adopt efficiency-enhancing reforms to attract some of the trade flows between China and ASEAN that are currently using maritime routes, which could increase trade

volumes and reduce average costs. Improving the general business and investment environment, and ensuring new special economic zones are well-managed, will also be key to attract new investments, as lower transport costs alone might not be sufficient to compensate for the existing complex and burdensome enabling environment. The railway also poses risks to groups that will not be able to benefit from the new opportunities, and increased transit trade could increase the risk of gender-based violence.

The success of the railway corridor will depend on its ability to increase trade flows between China and Lao PDR and China and ASEAN (which is important for the viability of the railway), reduce transport costs, and achieve economies of scale in the logistics sector. Overall trade between China and Thailand, Malaysia, and Singapore totaled 40.4 million tonnes in 2016, of which a mere 2 million tonnes, or 5 percent, were transported on land via Lao PDR as transit trade (the remaining 95 percent of trade was transported by sea). By contrast, bilateral trade between China and Lao PDR totaled 3.25 million tonnes in the same year, of which 1.2 million tonnes, or 37 percent, were transported by land (the remaining 63 percent were transported by sea). The railway presents a significant opportunity for Lao PDR to capture both the remaining share of the bilateral trade between China and Lao PDR and a small portion of maritime trade between China and these three ASEAN countries. The transit trade through Lao PDR along the railway corridor could reach an estimated 3.9 million tonnes per year by 2030, which would include a shift of an estimated 1.5 million tonnes of trade from maritime transport to the railway. Moreover, the Vientiane-Boten Railway could increase trade flows between China and Lao PDR from 1.2 million tonnes in 2016 to 3.7 million tonnes by 2030, of which 2 million tonnes would shift from maritime transport to the railway. Efforts to attract additional transit trade to the railway would have a strong impact on the railway's operations and sustainability, and increased transit trade would create an opportunity for Lao PDR to improve its logistics services industry and adopt modern and integrated logistics methods.

With complementary policies in place, the railway could lower land transport costs and attract traffic that is currently using maritime and air transport routes. These policies should (i) address transport connectivity gaps to ensure open access to railway and logistics infrastructure and efficient road linkages to production and consumption centers; (ii) reform the regulatory framework to foster an efficient logistics sector that can link the railway to road transport; and (iii) continue the implementation of trade facilitation reforms to reduce and clarify trade costs and minimize delays. These reforms are important to complement ongoing efforts to improve the investment environment and allow the country to attract new investments to areas along the railway. Assuming efficient cross-border processes, the Lao-China Railway could reduce

transport costs between Kunming and Vientiane by 40-50 percent, a reduction of about US\$30 per tonne.¹ Moreover, the railway is expected to reduce transport costs between Kunming and the Port of Laem Chabang in Thailand by 32 percent if efficient Thai trucks are used; by more than 40 percent if cargo is transshipped to the Thai meter gauge rail tracks once cargo reaches Vientiane;² and more than 50 percent if cargo continues on the new standard gauge railway in Thailand all the way to the port.³ Finally, the railway is expected to reduce transport costs by 20-40 percent for trade within Lao PDR, depending on the location of production facilities and goods.

Lao PDR's tourism industry could benefit greatly from an increase in demand for passenger rail traffic. According to official statistics, 385,300 tourists arrived by road at Boten in 2016. While passenger traffic is expected to account for the majority of train traffic by 2030, it is hard to estimate the ridership. Government agencies concerned should, therefore, focus on how to ensure the railway is attractive for passengers, which would require: (a) swift and simple border clearance procedures to minimize delays; (b) adequate roads and public transport facilities and interconnections at rail stations; and (c) attractive local infrastructure, including hotels and restaurants around tourist attractions.

TRANSPORT CONNECTIVITY

The railway will shift the government's priorities in managing and planning the country's road network. To fully leverage the benefits of the railway network, rail infrastructure needs to include cargo handling equipment at railway stations, and there needs to be sufficient road connectivity between stations and centers of production and consumption. In terms of road connectivity, MPWT and DPWT should prioritize areas around stations, followed by the main road corridors such as NR2W, NR2E, NR13, and NR3 that connect Lao PDR with China, Thailand, and Vietnam. Additionally, good connectivity between the railway and airports is needed to facilitate transit and bilateral trade and ensure easy access for passengers to and from stations. MPWT also need to implement a plan to more effectively maintain and fund the road network, and the government needs to integrate climate resilience into its investment plans for road infrastructure.

To close transport infrastructure gaps, authorities need to prioritize the facilitation of intermodal transport and the development of roads and accessible supporting rail facilities. In the near term, the country needs to improve the roads that connect the railway with various trade corridors. It also needs to ensure open access to railheads and that

stations are equipped with facilities that can handle containers and facilitate multimodal transport. Logistics facilities such as inland container depots should be managed by private operators, and the regulatory framework needs to ensure that private operators can operate competitively and at scale. Efficient transshipment between standard gauge cargo trains on Lao PDR's railway network and meter gauge cargo trains on Thailand's cargo network is needed to make the rail corridor between Thailand and China attractive. Better public transport options around stations are also needed to grow the tourism industry.

LOGISTICS INDUSTRY DEVELOPMENT

The country's value-added logistics services industry is underdeveloped, and logistics transport prices are significantly higher in Lao PDR than in neighboring countries. There is currently no operator in Lao PDR that can offer integrated multimodal transport services, as the logistics market is dominated by local providers that mainly offer traditional logistics services. There is limited, if any, availability of value-added services such as integrated door-to-door multimodal transport, container leasing, inventory management, order fulfillment, purchase order management, or cold chain services. A 2017 study by the Japan External Trade Organization's Institute of Developing Economies shows that transport costs along key trade corridors are between 1.4 and 2.2 times higher in Lao PDR than in Thailand, depending on whether backload cargo is secured. The study also shows that prices paid by users of transport services are, on average, much higher than the average cost per tonne-km borne by operators. While prices for full container loads were around 11 cents per tonne-km, they were 37 cents per tonne-km for partial loads. Yet, the profitability of transport enterprises is low because of the limited distance trucks are driven each year.

The underdeveloped logistics services industry is due to limited competition in the domestic logistics market, which is partly the result of restrictive, complex, and unevenly applied regulations. For example, restrictions on entry and ownership and lack of regulatory clarity make it challenging for new operators to enter the market. Instead of one integrated market for transport services, geographical factors and the distribution of the population and agricultural production result in a segmented market. There are also challenges associated with operators' inability or unwillingness to compete for work on new routes. Restrictions on ownership, minimum capital requirements, and a complex operating environment (e.g., overregulation and inconsistently applied regulations) have especially limited entry into the international freight transport

1. This also assumes that the railway section within China is also completed.

2. Assuming the railway is completed to Vientiane.

3. This is currently not expected.

sector. Moreover, domestic operations are usually outsourced to already dominant domestic operators, limiting effective competition and innovation.

To effectively utilize the railway for domestic and international freight transport, the government needs to implement regulatory reforms to simplify market entry and remove operational barriers in the logistics sector.

Given limited expertise among domestic operators, the skills and know-how of foreign firms are needed to improve the country's logistics industry. To address current barriers to entry, the government should simplify existing regulations and ensure they are applied consistently. For example, the government should remove the need for a business proposal to obtain an operating license, and it should review ownership restrictions for international transport operators. In addition, authorities need to ensure open access to railheads and a transparent and competitive process for determining the management of logistics facilities. To allow inland clearance, the government needs to clarify the customs status of dry ports and establish a legal regime for the movement of containers within Lao PDR. The newly established competition authority could perform an evaluation of whether the anti-competitive behavior of existing operators has a negative impact on competition.

TRADE FACILITATION

An efficient railway needs procedures to easily transport goods and passengers across borders, but Lao PDR performs poorly relative to other countries on various trade facilitation indicators. The country remains the weakest link along the Kunming-Singapore trade corridor in terms of trade facilitation performance. The country's performance in customs (as measured by the World Bank's Logistics Performance Index), border administration (as measured by the World Economic Forum), and overall trade facilitation (as measured by the Organization for Economic Co-operation and Development) is worse than that of all countries along the corridor, with the exception of Cambodia. Lao PDR's poor performance weakens the overall performance and attractiveness of the trade corridor.

The operational practices of all trade-related agencies in Lao PDR remain focused on control rather than facilitation.

The country lacks a coherent risk management strategy, there are various burdensome non-tariff measures (NTMs), the integration of border management practices is limited, and there is no efficient or appropriate international transit management and guarantee system. There also needs to be better coordination between border control agencies (i.e., Lao Customs Department, the Department of Immigration, the Quarantine Division, and the Food and Drugs Department), especially in terms of creating risk profiles and management procedures. Since there is no integrated risk management system for border procedures in Lao PDR, around 60 percent of all shipments were inspected in 2016. Moreover, complex product regulations lead to complicated NTMs and long clearance times at the border.

The government needs to implement comprehensive reforms to effectively address the country's trade facilitation challenges while establishing an effective transit management regime.

To reduce delays at border crossings, the customs system needs to allow imports and exports to be cleared at inland ports. Lao Customs and other border agencies also need to radically change their methods and operating procedures to meet government mandates. There needs to be careful planning and coordination across government agencies, both in terms of border clearance procedures and the overall regulatory framework. To facilitate trade and improve the ability of public agencies to achieve policy objectives with limited resources, authorities need to establish an integrated risk management system; simplify procedures for NTMs and border clearance; and fully utilize the automatic customs system by removing the need for paper-based customs declarations. Additionally, the government should establish an efficient transit regime (e.g., by not requiring control standards for goods in transit if there is no contamination risk, or streamlining guarantee mechanisms for transit trade), which is needed to improve the competitiveness of the trade corridor.

SUMMARY OF RECOMMENDATIONS

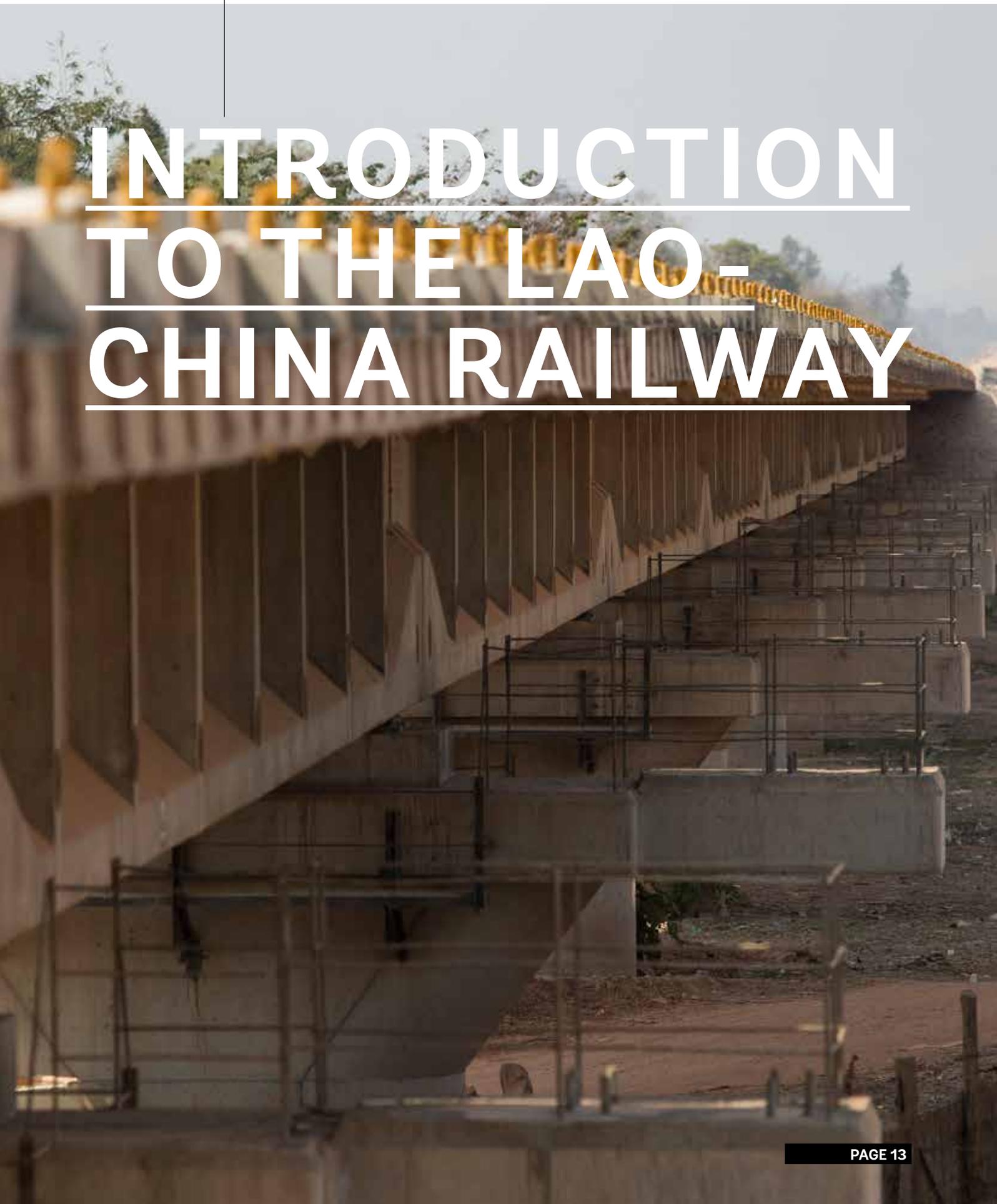
Recommendation	Critical Now	Near Term	Med/Long Term
Improve infrastructure connectivity		✓	
Adopt an integrated transport asset management approach			✓
Implement plans and regulations for the railway		✓	
Encourage effective competition in the logistics sector		✓	
Ensure public access to railheads and other rail infrastructure		✓	
Regulate the use of containers	✓		
Develop a trade facilitation reform plan and improve coordination and collaboration	✓		
Determine the locations and staff levels of border control stations		✓	
Reform and modernize operational practices, including the use of ICT and electronic declarations		✓	
Increase the transparency and predictability of regulations	✓		
Increase the use ICT and automation			✓
Reform the regulatory practices of all relevant public agencies		✓	
Establish an effective transit regime	✓		

Note:

Critical Now = Essential to railway operations from the start.

Near Term = Directly impact the railway's operational effectiveness.

Med/Long Term = Important to the railway's efficiency going forward.

A long concrete railway bridge under construction, featuring scaffolding and rebar structures. The bridge spans across a valley with trees in the background.

INTRODUCTION TO THE LAO- CHINA RAILWAY

1.1 BACKGROUND AND OBJECTIVES

1. **The Lao-China Railway (also known as the Boten-Vientiane Railway) is part of six international economic corridors under China’s Belt and Road Initiative (BRI).** It runs from Lao People’s Democratic Republic’s (Lao PDR) capital of Vientiane to the town of Boten on the border with China. The railway is a segment of the China-Indochina Peninsula Economic Corridor (CICPEC), and it would expand the trade network from Kunming in China to Singapore via Lao PDR, Thailand, and Malaysia.⁴ The single-track rail line, with a designed speed of 160 km/hour, will be built in standard gauge and owned and operated by the Lao-China Railway Company (LCRC)—a joint venture between three Chinese and one Lao state-owned enterprises (SOEs). The railway is expected to improve the connectivity between the mainland countries of the Association of Southeast Asian Nations (ASEAN) and the southern part of China (Figure 1).

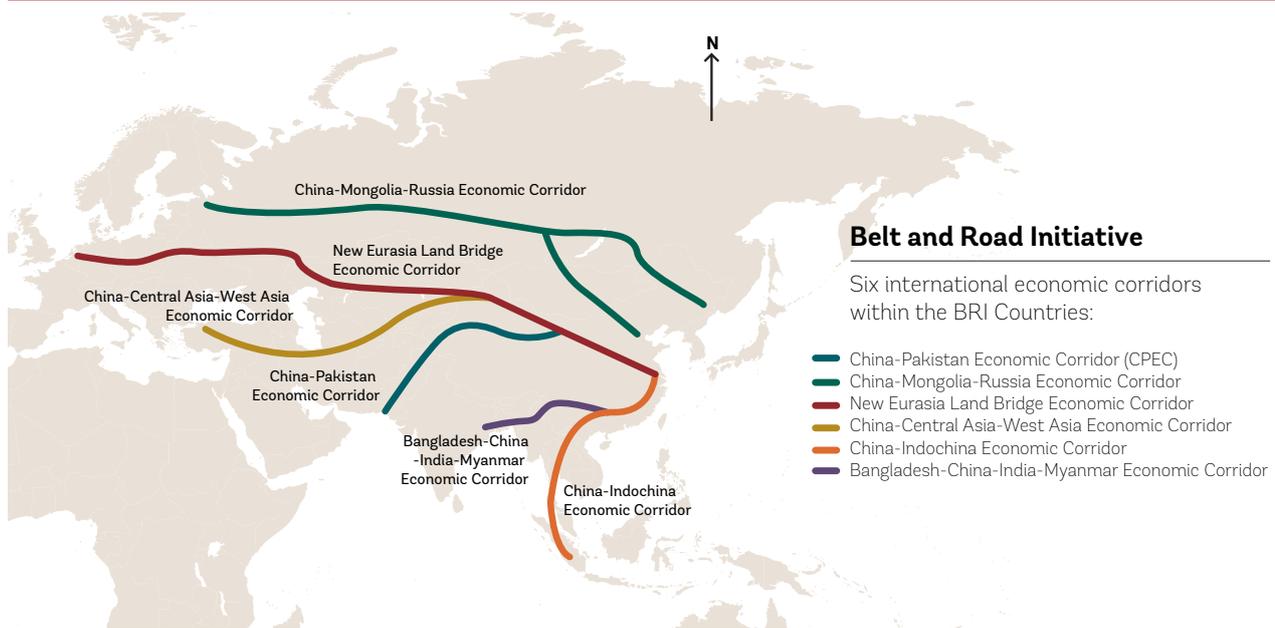
2. **As part of the BRI, the Vientiane-Boten Railway connects Lao PDR with not only China (and eventually Singapore) but also the entire BRI network.** The BRI aims to develop a global transport network connecting Europe, Africa, Central Asia, and the rest of Asia to China. The corridor will, therefore, benefit Lao PDR through spillover effects from

investments in all other connected BRI corridors. While a 2019 World Bank study shows that the overall economic impact of the BRI can be significant for beneficiary countries, including Lao PDR, it also stresses the need for all countries to undertake complementary policy reforms to maximize the potential economic benefits.

3. **The railway section that connects Kunming in China with Vientiane in Lao PDR is under construction, with plans to build a railway terminal close to export processing zones (EPZs) and the logistics park in Vientiane.** Commercial land is expected to be made available around stations along the railway to the LCRC under one or multiple concession agreements, allowing for new investments along the corridor. The construction of the Thai portion of the railway has been approved, although issues remain, including the connection between Lao PDR and Thailand.

4. **The Thai railway section is designed to carry passenger trains on a new high-speed network while moving cargo traffic to the old meter-gauge network, creating potential challenges for transloading goods and passengers.** Civil works for the Bangkok-Nakorn Ratchasima section has started. It consists of a standard-gauge double track designed to carry passenger trains from Kunming to Vientiane, although additional analysis is needed to clarify if the same passenger trains can run from Kunming to Bangkok, as

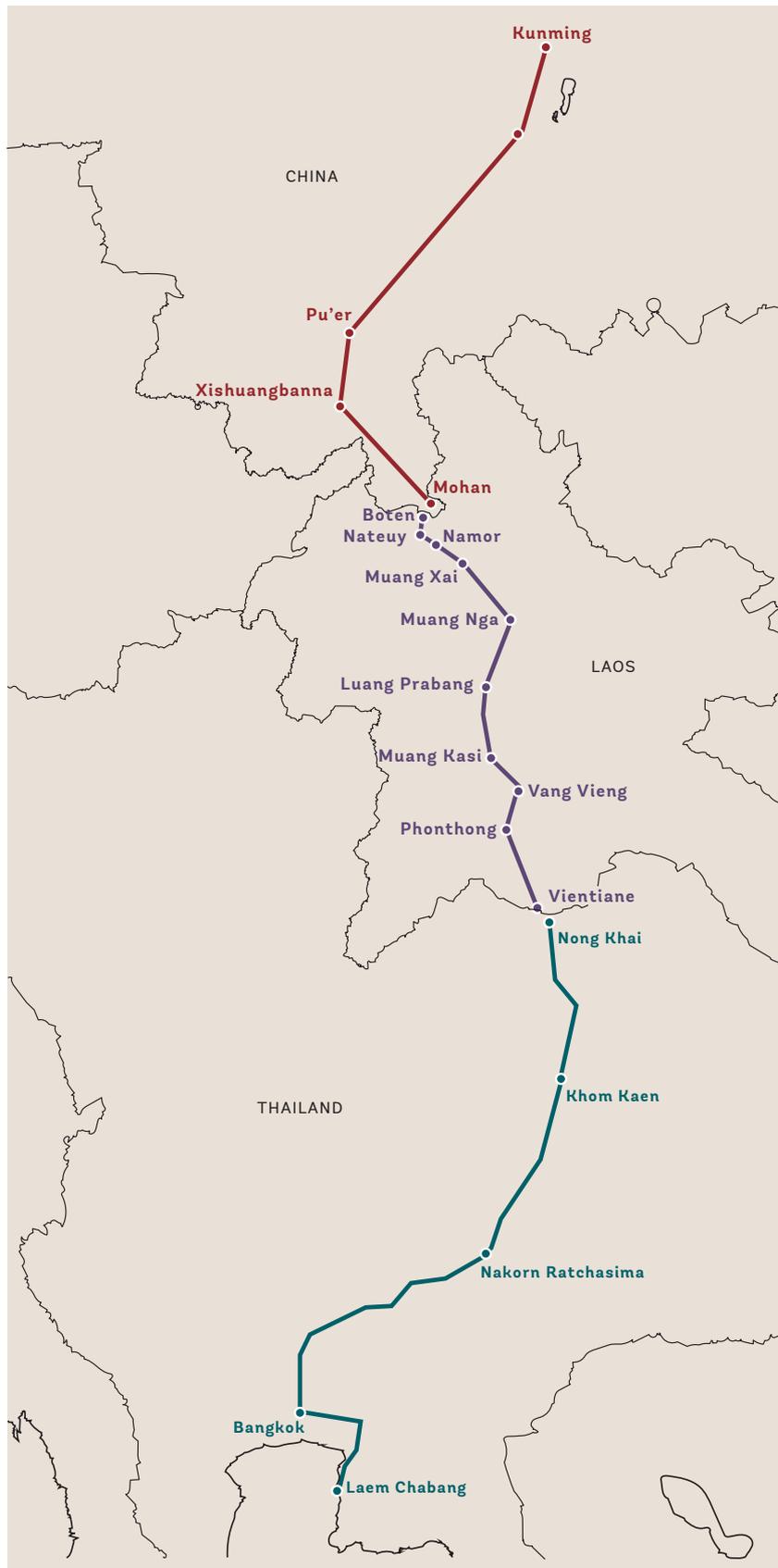
FIGURE 1: LAO-CHINA RAILWAY IS ONE OF THE BRI PROJECTS CONNECTING CHINA WITH SOUTHEAST ASIA



Source: World Bank.

⁴ It is also referred to as the Central Corridor of the Trans-Asia Railways. In this report, the Lao PDR-China segment will also be referred to as the Vientiane-Boten Railway.

FIGURE 2: CHINA-LAO-THAILAND SECTIONS OF THE CICPEC



there seem to be slight differences in technical specifications. The construction plan for sections beyond Bangkok remains unclear, and current plans regarding the transport of cargo to Bangkok and the Port of Laem Chabang involve using the existing meter-gauge railway in Thailand. This would, however, require transloading cargo from the standard-gauge⁵ railway in Lao PDR to the meter-gauge⁶ railway in Thailand. While an agreement was recently reached regarding the East Coast Rail Link project in Malaysia, there is no agreement between Thailand and Malaysia on the border crossing.⁷

5. The estimated cost of the Vientiane-Boten Railway is US\$5.9 billion, equivalent to 1.3 times the country's total investment spending in 2018. Estimated investment costs include operating costs for the initial period of operation, coupled with costs related to the construction of the rail track, tunnels, and bridges; the development of a power supply and signaling system; and the procurement of the rolling stock. The section from Kunming to the border with Lao PDR will be an integral part of the Chinese rail network. The Kunming-Yuxi section was built in the 1990s, and the section from Yuxi to Mohan is currently under construction at an estimated cost of CNY 46 billion (US\$6.9 billion), with all funding coming from China. The construction of the railway in Lao PDR started in January 2017, and an estimated 60 percent of the civil works were completed as of early 2019. The infrastructure for the Kunming-Vientiane section is expected to be completed by early 2020, which will be followed by the installation of rail signaling and controlling equipment, and commercial train operation is expected to commence on December 2, 2021.

6. The Lao-China Railway aims to create closer trade linkages between not only Lao PDR and China but also between all economies in the BRI, which is expected to lower trade costs and accelerate economic growth and poverty reduction in the region. While trade between China and ASEAN is significant, it relies mainly on maritime transport. In 2016, ASEAN exports to China totaled US\$143.5 billion, and China's exports to ASEAN totaled US\$224.5 billion. Overland trade represented only 17 percent of these trade flows. The combined BRI infrastructure network has the potential to reshape the regional economic landscape, and it is expected to lead to a sizeable increase in real income in Lao PDR. A 2019 World Bank report finds that countries can maximize the impact of the BRI on economic growth and poverty reduction by adopting complementary reforms. Policymakers in all participating economies need to identify policy gaps in trade facilitation and reduce barriers to trade, such as non-tariff barriers, as "bottlenecks in a single country could block the potential benefit of [an] entire corridor."⁸ Moreover, countries

need to do more to protect both domestic and foreign investors and increase transparency.

7. Lao PDR is expected to benefit from the Vientiane-Boten Railway due to its strategic location along the corridor and in the region. The railway will lower land-based transportation costs, which would make it possible for trade along the corridor to compete with current maritime routes. It would allow Lao PDR to benefit from freight transit moving between China and ASEAN. The country would also benefit from cheaper and faster movement of goods between Lao PDR and China, as China represents a large market for Lao exports and imports. The country's exports to China amounted to US\$1 billion in 2017. Major export commodities include base metal ore, metal salts, iron ore, semi-processed wood products, and agricultural products (e.g., rubber, rice, maize, fruits and nuts, and cereals). Except for rice, most agricultural products are produced in the mountainous part of Lao PDR that borders China and along the Lao-China Railway line. Imports from China have also increased significantly since transport connectivity improved between Lao PDR and the southern/southwestern parts of China. Lao PDR's imports from China, including consumer goods as well as construction materials and machinery for building the Lao PDR railway, totaled US\$1.4 billion in 2017.

8. To fully benefit from the railway investment, Lao PDR needs to develop efficient services and production along the railway corridor to outcompete maritime transport in terms of cost and time. Between 2014 and 2017, the country's total cumulative foreign direct investment (FDI) was about US\$10 billion, of which hydropower accounted for 45 percent, agriculture 21 percent, mining 14 percent, services 13 percent, and manufacturing 7 percent. FDI in manufacturing has been concentrated mostly in special economic zones (SEZs) in the capital of Vientiane and the province of Savannakhet. These investments are a part of global or regional value chains and require significant imported intermediate inputs, and outputs are mostly exported. Agricultural investments are dispersed throughout the country, while services investments tend to be concentrated in urban centers such as Luang Prabang, Vientiane, and Pakse in Champasak.

9. Along with complementary reforms, the Lao-China Railway and the broader BRI network have the potential to alter the comparative advantage of Lao PDR and increase the country's attractiveness as an investment destination.⁹ A significant reduction in trade costs and travel time will effectively improve Lao PDR's location relative to major production and consumption areas in China, ASEAN,

⁵ Standard-gauge railway refers to a railway with track gauge of 1.435 meter, which is the standard in the United States, the European Union, and Russia.

⁶ Meter-gauge railway refers to a rail with track gauge of 1 meter, which is common in Thailand, Malaysia, and Vietnam.

⁷ A rail crossing exists at Padang Besar to the west of the new rail line.

⁸ World Bank, 2019. *Belt and Road Economics: Opportunities and Risks of Transport Corridors*. Page 6.

⁹ World Bank, 2019.

BOX 1

Special Economic Zones in Lao PDR

and the world. An efficient railway connection with China will position Lao PDR halfway between China and ASEAN, offering opportunities for existing and new firms to leverage changes in transport prices and time, access global value chains, and participate in distribution networks. This could help link the railway to productive areas in neighboring countries, increase regional economic activity, lower transport costs, and make Lao PDR more attractive to investors.

10. However, the railway is unlikely to attract more private-sector investment unless Lao PDR improves its business, investment, and trade environment.

The country's business environment continues to be governed by a deal-based rather than rule-based approach to regulatory enforcement. Moreover, investment protection remains low, and logistics and trade costs are very high.¹⁰ Lao PDR ranked 154th out of 190 economies on the World Bank's 2019 Doing Business Index and 82nd out of 160 countries on the 2018 Logistics Performance Index (LPI). Among the other countries along the corridor, Lao PDR had the lowest LPI score in infrastructure, and the country performed poorly in terms of customs performance.

11. Businesses have access to few modern services in Lao PDR, which has a negative impact on productivity and competitiveness.

While business, financial, insurance, and information and communication technologies (ICT) services are important inputs for higher-value manufacturing and service sectors, the country's complex business environment and the underdeveloped state of regulatory legislation for services have resulted in limited investment in modern service sectors. This lowers the attractiveness to invest in Lao PDR and directly reduces the ability of firms to compete effectively.¹¹

12. A simplification of the regulatory environment in SEZs can help attract investments and generate jobs.

In recent years, SEZs in Lao PDR have attracted significant investments linked to international supply chains, although a number of zones have performed poorly (Box 1). Policymakers need to carefully design and plan SEZs along the Vientiane-Boten Railway to ensure they contribute to a competitive business

Lao PDR deploys SEZs as an instrument to increase economic activity and growth, including fiscal and non-fiscal incentives to attract investments for economic transformation, but they have generated mixed results. While incentive schemes for both developers and investors in SEZs are very generous, they do not guarantee the success of SEZs, as investment uptake in the country's SEZs has remained low overall .

Some new manufacturing firms have arrived in the country's SEZs in recent year, but they are still small in number and size. As of 2018, manufacturing firms accounted for 52 out of 263 firms in Lao PDR's SEZs, many of which are linked to supply chains. Only three SEZs (Savan-Seno Zone, Vita Park, and Saysettha Zone) currently host real manufacturing for exports, and the rest focus on service industries (including retailing and construction) or are at an early stage of development. In 2017, exports from the SEZs amounted US\$410 million, concentrated in the Savan-Seno Zone, and exports to Thailand constituted 95 percent of all exports. Export products were also highly concentrated in 2017, with the top ten products (e.g., transmission apparatus and telephone sets) accounting for 95 percent of total exports from SEZs. Imported intermediate inputs in the country's three SEZs originated primarily in Thailand (97 percent).

In a highly competitive environment for investment and international trade, it is not best practice to focus on incentives as tool to attract investments. Experience shows that investors wanting to invest in SEZs look for advantages such as the available supply of labor (skilled and unskilled); access to existing infrastructure (e.g., road, railway, airports, utility, and plug-and-play industrial facilities); efficient border clearance and logistics services; access to financial services; professional and client-oriented zone management; and efficient public service delivery.

With the arrival of the Lao-China Railway, SEZs can play an important role in improving the business environment and attracting new firms, which can bring in new technology and create backward linkages with the economy along the railway corridor. However, it will be critical for Lao PDR to adopt efficient policies to maximize the benefits from the SEZs. For example, the government needs to review existing operational models used to develop and manage these zones to understand what has impeded or facilitated their development. The adoption of reforms based on this assessment and international good practices will be important to ensure the efficient private management (a key success factor globally) of the SEZs, with the government providing relevant connecting infrastructure and simplified regulations. The government also needs to reduce the transaction time and cost of public service delivery in and outside of the SEZs.

¹⁰ World Bank, 2019.

¹¹ World Bank. 2016. Services and Manufacturing Linkages: An Empirical Analysis for Lao PDR. Report No: AUS8930, World Bank, Washington DC.

environment. For example, SEZs need to be located close to infrastructure hubs and have access to labor and efficient and client-oriented management, and procedures need to be simple and transparent.

13. Increased domestic and foreign private-sector investment will also require early information sharing with the private sector regarding planned railway operations.

Aside from progress in completing the necessary infrastructure and adopting relevant policies and procedures, authorities need to ensure that the private sector is fully informed of the plans for the Lao-China Railway. To integrate rail transport options into their investment decisions, private companies need to know details on the locations of rail stations, access conditions to stations, potential SEZs, railheads, and likely schedules and freight charges. Without this information, Lao PDR risks delays in critical investments needed to leverage the potential of the railway.¹²

14. With complementary reforms adopted in Lao PDR and neighboring countries, the railway could increase Lao PDR's aggregate income by up to 21 percent in the long term.

The country would benefit from new and improved links throughout the larger BRI network. Estimates from the global model used in a recent BRI study include the impact of all BRI-related projects currently being completed as well as relevant policy reforms that have been implemented (Box 2).¹³ The study shows the huge potential of BRI projects and stresses the importance of complementary reforms to reduce border delays.

15. The Vientiane-Boten Railway is also likely to increase tourism from China, generating further growth opportunities but also creating pressure on tourism sites.

To attract and benefit from the potential increase in tourists, private operators need to be able to accommodate Chinese visitors, whose consumption patterns are also changing. If managed well, increased tourism demand could create significant new jobs in Lao PDR, but the country will have to create complementary infrastructure and adopt reforms to ensure that the increase in tourism can be managed sustainably.¹⁴

Economic Benefits and Risks to Lao PDR from the Belt Road Initiative

The completion of all BRI infrastructure and the adoption of complementary reforms to reduce border delays could increase Lao PDR's GDP by up to 21 percent.¹⁵ This estimate considers the impact of the whole BRI network on Lao PDR, as the central goal of the Vientiane-Boten Railway is to link Lao PDR not only to China but also to broader BRI infrastructure (Annex A). The estimate also accounts for coordinated infrastructure development and reforms in all economies participating in the BRI.

By reducing trade costs, BRI transport projects can have positive effects on Lao PDR's economic growth through enhanced trade, foreign investment, and production efficiency. Using different models, estimates of the impact of BRI-related transport infrastructure point to sizeable gains for Lao PDR. BRI transport infrastructure projects, which are going to update and expand the current transportation network, are estimated to increase Lao PDR's aggregate income between 3.1 and 13.0 percent in the long term, assuming all projects will be completed and fully functional.

Improving the quality of infrastructure and availability of services are prerequisites but not sufficient to ensure a high level of connectivity. A landlocked country such as Lao PDR also depends on the quality of infrastructure and services in neighboring countries. The impact of lower tariff levels among BRI countries would likely only have a small effect on Lao PDR's GDP since the country already has preferential trading agreements with its main trading partners. By contrast, Lao PDR would benefit greatly from more in-depth relationships with its regional trade partners that streamline procedures to increase the utilization rate of preferences and reduce distortions due to non-tariff measures.

BRI projects carry inherent risks. While risks are common to large-scale infrastructure projects, they could be exacerbated by weak domestic institutions and poor economic fundamentals in participating countries. Countries with already vulnerable debt situations such as Lao PDR have limited fiscal space to take on new borrowing. Additional risks related to the BRI, not explicitly discussed in this report, are related to the environment (e.g., pollution from traffic, topographical, and hydrological damage); adverse social impacts (e.g., impacts on the health, safety, and wellbeing of workers, as well as gender-based violence) (Annex C); and governance (e.g., corruption or failures in public procurement).

¹² ECCIL White Papers 2019.

¹³ World Bank 2019.

¹⁴ See Box 4.

¹⁵ World Bank 2019.

16. Given the small size of Lao PDR's economy, the efficiency of the railway corridor will depend on attracting transit flow and sufficient cargo volume. Large transit flows could increase the overall volume of goods and lead to lower average costs. Lower prices could attract additional cargo, which could further improve efficiency and costs. Lao PDR could benefit from managing transit flows and occupying a central node in emerging logistics networks. Better logistics connections, lower costs, and more rail traffic (including more trains per day) would also increase the attractiveness of Lao PDR as an investment destination. However, this would require the corridor to work efficiently, the adoption of key reforms, and the development of soft infrastructure.

17. Policymakers need to adopt key policy reforms and build complementary infrastructure to connect production areas to the railway network. Complementary infrastructure will be particularly important for the agriculture and mining sectors, but more analysis is needed to fully understand existing gaps and the reforms needed to accelerate growth in these sectors. Since the completion of the railway is expected within the next two and a half years, it is important that policymakers prioritize reforms and investments that could maximize the benefits from the Lao-China Railway.

18. While the global BRI study in 2019 focuses on overall network effects, this study analyses policy gaps in LAO PDR and recommends reforms to maximize the impact of both the Vientiane-Boten Railway and CICPEC. Specifically, the study examines trade facilitation constraints in Lao PDR and the country's inefficient logistics sector that could hamper efficient railway operations and dampen the potential economic impact along the entire corridor. It also focuses on the hard and soft infrastructure needed to better connect the railway to economic activities, along with their respective hinterlands and markets, and maximize the impact of the railway on the domestic economy.

19. This study identifies key investments and policy reforms to maximize the benefits of the Vientiane-Boten Railway for Lao PDR, demonstrating the complementarity of hard and soft infrastructure investments. It describes physical and non-physical barriers and gaps along the railway corridor, and the study provides policy recommendations to improve logistics efficiency and trade facilitation in Lao PDR. It also analyzes the demand for railway transport by focusing on the transportation of commodities. The study does not assess the details of proposed railway operations, the financial viability of the railway project, spatial and income distribution effects within Lao PDR, or debt sustainability.

1.2 GENERAL CHARACTERISTICS OF THE RAILWAY CORRIDOR

Lao PDR-China Railway Project: Facts and Figures

20. The railway between Vientiane and Boten is 414 km long, of which nearly 200 km runs through seventy-five tunnels and 61 km over sixty-seven bridges (Table 1). Passenger trains will have a design speed of 160 km/h (maximum of 200 km/h), and freight trains will run at 120 km/h. Ten railway stations are planned in Lao PDR, which will handle both cargo and passenger operations. In addition, twenty-one passing stations will be constructed, where trains can pass each other in opposite directions or faster trains can overtake slower freight trains. The 2016 New Boten-Vientiane Railway Feasibility Study, undertaken by China Railway Eryuan Engineering Group Co., Ltd., indicates that the railway expects to run two passenger train pairs per day by 2025, which will increase to five train pairs per day by 2030. Moreover, the railway is expected to carry about 10 million tonnes of cargo by 2025 and 16 million tonnes by 2030.

TABLE 1: TECHNICAL AND MAIN ENGINEERING DATA

Technical Information	Main Engineering Works
Railway classification: Level 1	Total Route Length: 414 km, off which:
No. of main Line: Single track	• 75 tunnels and bridges: 198 km
Standard gauge: 1.435 m	• Longest tunnel: 12.6 km
Operating speed	• 167 bridges: 61 km
Passenger trains: 160-200 km/h	Civil works: 60 percent completed as of End-2018.
Freight trains: 120 km/h	
Traction type: Electric Power	
Traction mass: 3,000 tonnes	
Stations: Ten stations for passengers and freight:	
• Four main passenger stations: Vientiane, Vang Vieng, Luang Phrabang, Muang Xai	
• One Main Freight Transport and Logistic Compound in Vientiane	
• Twenty-one passing stations, where trains can pass each other in opposite directions or faster trains can overtake slower freight trains	

21. A build-operate-transfer (BOT) concession agreement was signed between the Government of Lao PDR and Laos-China Railway Joint Venture Company in December 2016. The total investment of the railway project is US\$5.9 billion, and the equity/debt ratio is 40:60 percent. One-third of the 40 percent equity will be provided by the Lao Government, of which US\$480 million will be financed with loans from the Export-Import Bank of China and the remaining from the government's budget (Figure 3).

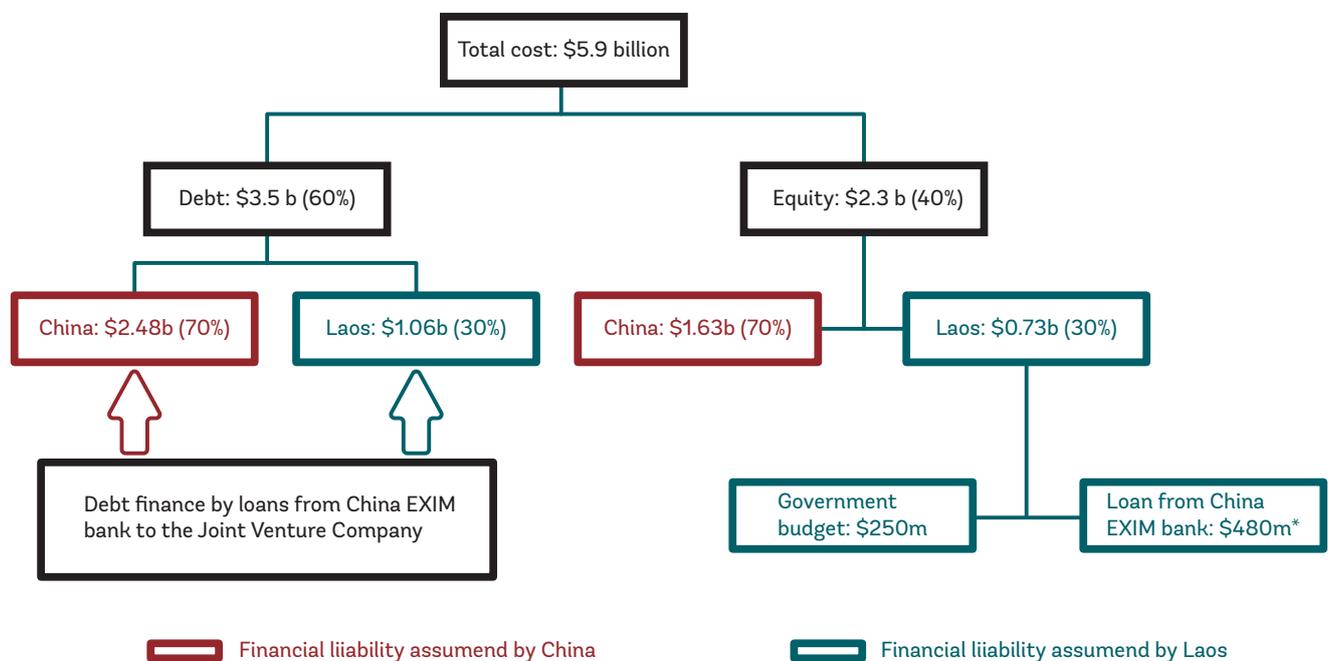
Basic Socioeconomic Characteristics

22. The Vientiane-Boten railway runs through diverse economic regions with varying production and tourism potential. It passes through the capital of Vientiane and the four provinces of Luangnamtha, Oudomxay, Luang Prabang, and Vientiane. The road network that connects the railway to the five northern provinces is in fair condition and covers about one-third of the country's population (Figure 4). Key agricultural commodities produced in the northern region, including in provinces along the railway corridor, are paddy, banana, maize,

starchy roots, and tea. The provinces connected by the railway also have considerable tourism potential. International visitors in provinces along the railway account for about half of all international visitors to Lao PDR (Table 2). Four out of ten domestic tourists in the country visit provinces along the railway corridor, including the capital of Vientiane.

23. The capital of Vientiane is the center of Lao PDR's socioeconomic activities. Compared to other urban centers along the railway corridor, the capital has the highest population density. More than 70 percent of Vientiane's population lives in urban areas, significantly higher than around 30 percent for the country as a whole. In 2017, the capital accounted for 29.3 percent of the country's GDP, 43.9 percent of all industrial output, 28.1 percent of agricultural output, and 26.3 percent of the value of the services sector (Table 3). In the same year, Vientiane's GDP per capita was double that of the entire country, and its GDP growth rate was 9.8 percent, year-on-year, slightly higher than 8.9 percent for the whole country (Table 4). GDP growth in the capital area was mainly driven by industrial activity.

FIGURE 3: LAO-CHINA RAILWAY PROJECT'S FINANCING STRUCTURE



Note: Terms of the loan from the Export-Import Bank of China: interest at 2.3 percent per year, twenty-five-year maturity, and five-year grace period. Source: World Bank staff discussions with authorities.

TABLE 2: TOURISM SECTOR DATA

	International Visitors (persons)	Domestic Tourists (persons)	Number of Hotels, Guesthouses, Resorts (places)	Number of Restaurants (places)	Number of Tourist sites (places)
Luangnamtha	600,369	242,883	107	161	123
Oudomxay	186,351	71,597	107	209	106
Luang Prabang	472,942	182,470	313	290	228
Vientiane	592,650	353,874	312	274	153
Vientiane Capital	1,347,866	55,953	459	111	37
Other provinces	3,172,336	1,330,164	1,436	1,315	1,447
Whole Country	6,372,514	2,236,941	2,734	2,360	2,094

Source: Lao PDR Statistical Year Book 2017.

TABLE 3: GDP IN LAO PDR AND THE CAPITAL OF VIENTIANE, 2016-17

Activity	2016			2017		
	Whole Country (Billion Kip)	Vientiane Capital (Billion Kip)	Proportion to Whole Country (%)	Whole Country (Billion Kip)	Vientiane Capital (Billion Kip)	Proportion to Whole Country (%)
Agriculture	22,275	6,090	27.3	22,801	6,407	28.1
Industry	37,180	16,656	44.8	43,509	19,122	43.9
Services	54,914	14,474	26.4	58,450	15,364	26.3
Net Taxes on Products and Import Duties	14,910	275	1.8	15,989	290	1.8
GDP	129,279	37,494	29.0	140,749	41,183	29.3
GDP Per Capita (kip)	19,048,033	45,669,112		20,395,450	46,481,580	

Note: GDP at current market prices.

Source: Lao PDR Statistical Yearbook 2017 and Social-Economic Data of Vientiane Capital 2017.

TABLE 4: GDP GROWTH RATE BY SECTOR, 2017

Activity	Whole Country (%)	Vientiane Capital (%)
Agriculture	2.4	5.2
Industry	17.0	14.8
Services	6.4	6.1
Net Taxes on Products and Import Duties	7.2	5.6
GDP	8.9	9.8
GDP Per Capita	7.1	7.8

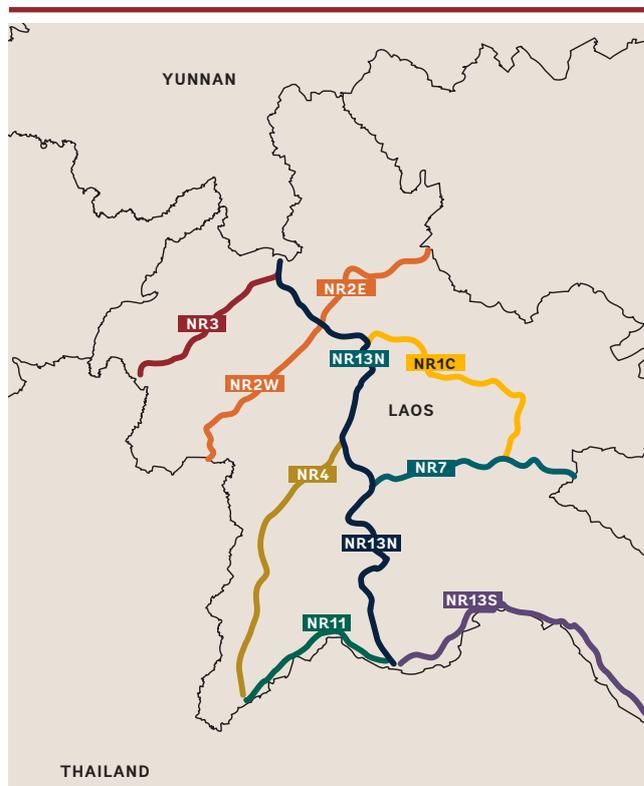
Source: Lao PDR Statistical Yearbook 2017 and Social-Economic Data of Vientiane Capital 2017.

Current Transport Infrastructure, Logistics, and Trade Facilitation Environment

24. Travel by road is the dominant transport mode in Lao PDR. National Road 13 (NR13) constitutes the backbone of the road network that connects Lao PDR with China in the north and Cambodia in the south (Figure 4). The road comprises NR13 North (671 km) from the capital of Vientiane to Boten on the Chinese border and NR13 South from the capital to the Cambodian border (829 km). The main sections of the road were completed in 1997 (with 8.2-tonne axle, which is lower than the average of 11 tonnes for the rest of the region) and have not been rehabilitated since.

- **China-Thailand Corridor.** National Road 3 (NR3) serves as the main corridor connecting Thailand with China through Lao PDR’s provinces of Bokeo and Luangnamtha. The road is in need of improvement due to a rapid increase in heavy transit traffic, coupled with the increasing number and frequency of flash floods.
- **Thailand-Lao-Vietnam Corridor.** National Road 2 (NR2W, 187 km and NR2E: 166 km) connects Thailand with Vietnam through the Lao PDR province of Oudomxay, and the main train station is located in Muang Xai. NR2W and NR2E roads were constructed in 2000, and both suffer from poor conditions.
- **Luang Prabang Area.** National Road 4A (NR4A) serves the main route to the provinces of Xayabouly and Nan in Thailand. National Road 1C (NR1C) connects Luang Prabang and tourism sites at Nongkoe as well as Houaphan. National Road 7 (NR7) connects Luang Prabang with Xiengkhuang and Vangvieng via National Road 13 (NR13), and there are train stations in Luang Prabang.
- **Vientiane Province.** National Road 11 (NR11) connects four southern districts of Xayabouly province to Vientiane. The first 56 km of road was upgraded to asphalt concrete in 2012, and the remaining road is under construction, with support from the Government of Thailand, which is expected to be completed by 2023. There is great potential to promote tourism and agri-business in Vientiane province, but this will require authorities to improve its provincial roads.
- **Capital of Vientiane.** The main passenger station of the Lao-China Railway is located 9 km from Vientiane’s city center and is called Vientiane South. The MPWT and DPWT need to improve urban mobility around the station to avoid traffic congestion. The freight station is at Thanaleng, close to the Thai-Lao Friendship Bridge south of Vientiane, which will likely become the point of cargo transshipments from standard-gauge trains in Lao PDR to the meter-gauge freight

FIGURE 4: LAO PDR’S KEY ROAD CORRIDORS



Source: OpenStreetMap.

network in Thailand. In early August 2019, the first cargo trains were operated between Thanaleng and Thailand.

- **Beyond Vientiane.** Borikhamxay and Khammouan provinces are about 140 km and 350 km, respectively, from the main train station in Vientiane. National Road 13 South (NR13S) serves this connection, and there is potential utilize the railway to transport rice and other agricultural produce.

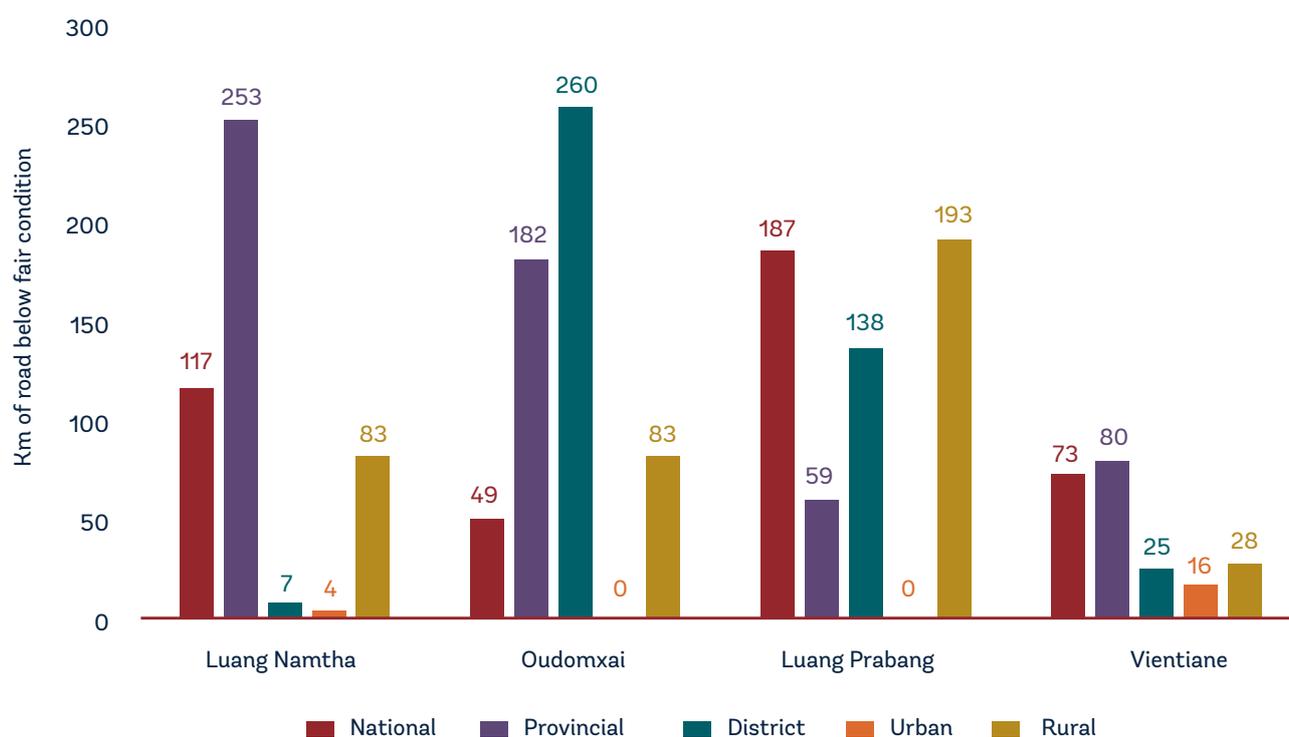
25. Poor road conditions have been a longstanding challenge for Lao PDR. Almost 1,500 km of Lao PDR’s national, provincial, and district roads along the railway corridor (i.e., roads in the provinces of Luang Namtha, Oudomxay, Luang Prabang, and Vientiane) are classified as below fair condition (Table 5 and Figure 5).

26. The MPWT needs to prioritize which road links to upgrade to improve accessibility to the railway corridor. In the short term, the government should consider focusing its investments in areas around the capital of Vientiane, where there is more freight and passenger traffic. However, sufficient road access to the railway corridor in other parts of the country is also needed to ensure not only long-term economic gains but also near-term social benefits from improved transport options for the rural population.

TABLE 5: ROAD LENGTH (KM) AND CONDITION BY ROAD CLASS AND PROVINCE

	National	Provincial	District	Urban	Rural	Special
Luang Namtha	300.746	477.700	117.390	4.790	197.820	8.500
...share of which below fair condition	39%	53%	39%	87%	42%	71%
Oudomxai	312.257	287.300	455.400	0.000	91.800	0.000
...share of which below fair condition	16%	63%	57%	-	90%	-
Luang Prabang	612.942	565.200	189.300	0.000	195.600	0.000
...share of which below fair condition	31%	10%	73%	-	99%	-
Vientiane	408.851	590.000	385.160	244.690	620.550	18.000
...share of which below fair condition	18%	14%	6%	7%	4%	0%

Source: Department of Roads Statistics.

FIGURE 5: KILOMETERS OF ROADS BELOW FAIR CONDITION BY PROVINCE

Source: Department of Roads Statistics.

27. To leverage the railway network to facilitate land-based access to international markets, Lao PDR needs to ensure the efficient use of its national infrastructure by increasing the competitiveness of the logistics sector and improving trade and investment regulations. Transport prices in Lao PDR remain high compared to those of neighboring countries, largely driven by low vehicle utilization, a lack of competition among transport service providers, and various entry barriers.¹⁶ In addition, trade regulations are complex and border processes are lengthy and cumbersome, creating additional costs for importers, exporters, and companies that use Lao PDR as a transit country. The complex business environment hampers the country's ability to attract FDI, although the recent inflow of manufacturing FDI into SEZs show that Lao PDR can diversify and attract new investments by improving its business environment.

1.3 FRAMEWORK OF STUDY

28. This study begins by analyzing the broader economic context of the railway sector and evaluating the complementary reforms and investments required to fully leverage the Lao-China Railway. Chapter 1 provided a background of the railway sector in Lao PDR, including the Vientiane-Boten Railway, and outlined the opportunities that regional rail-based trade routes can bring to Lao PDR. Chapter 2 focuses on estimating the existing short-term demand and potential long-term demand¹⁷ for railway services, both for the transit of passengers and the transit and non-transit (bilaterally traded) of commodities. It also presents initial links between expected freight transportation costs, trade facilitation, logistics, and infrastructure requirements.

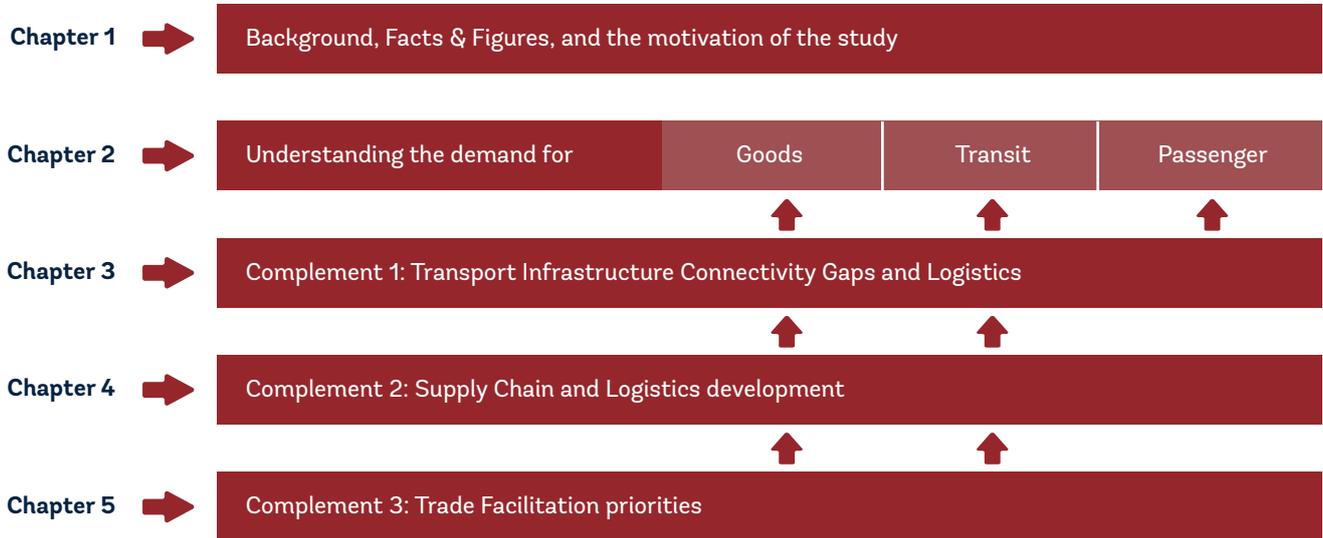
29. This is followed by an overview of three areas critical to the success of the railway corridor: (i) complementary transport infrastructure, (ii) an efficient logistics industry, and (iii) trade facilitation. Chapter 3 focuses on infrastructure connectivity gaps through a network analysis of key strategic links to the railway corridor. To maximize the economic impact of the railway, it needs to be connected to population and production centers and the rest of the economy. Chapter 4 evaluates the current status and challenges of the logistics industry in Lao PDR and identifies policy recommendations to make it more efficient. Logistics services will be critical to leverage the country's rail infrastructure, and the efficiency of the overall logistics environment will affect the demand for and efficiency of the railway corridor. Finally, chapter 5 identifies trade facilitation challenges and presents reform priorities to unlock the potential of a land-linked economy. Trade facilitation reforms will be able to reduce the costs and delays related to moving goods and intermediate inputs across borders, which will be important to leverage the potential of the Lao-China Railway.

30. The report's findings are based on quantitative analyses and extensive consultations with public and private stakeholders in Lao PDR, China, and Thailand. They are based on a review of existing literature, field trips, and discussions with key stakeholders within the government (at the central and provincial level) and the private sector (both domestic and international investors and producers). Discussions between central government agencies, the Ministry of Public Works and Transport (MPWT), and provincial governments remain central to the effective operation of the Lao-China Railway and the planning of additional projects along the railway corridor.

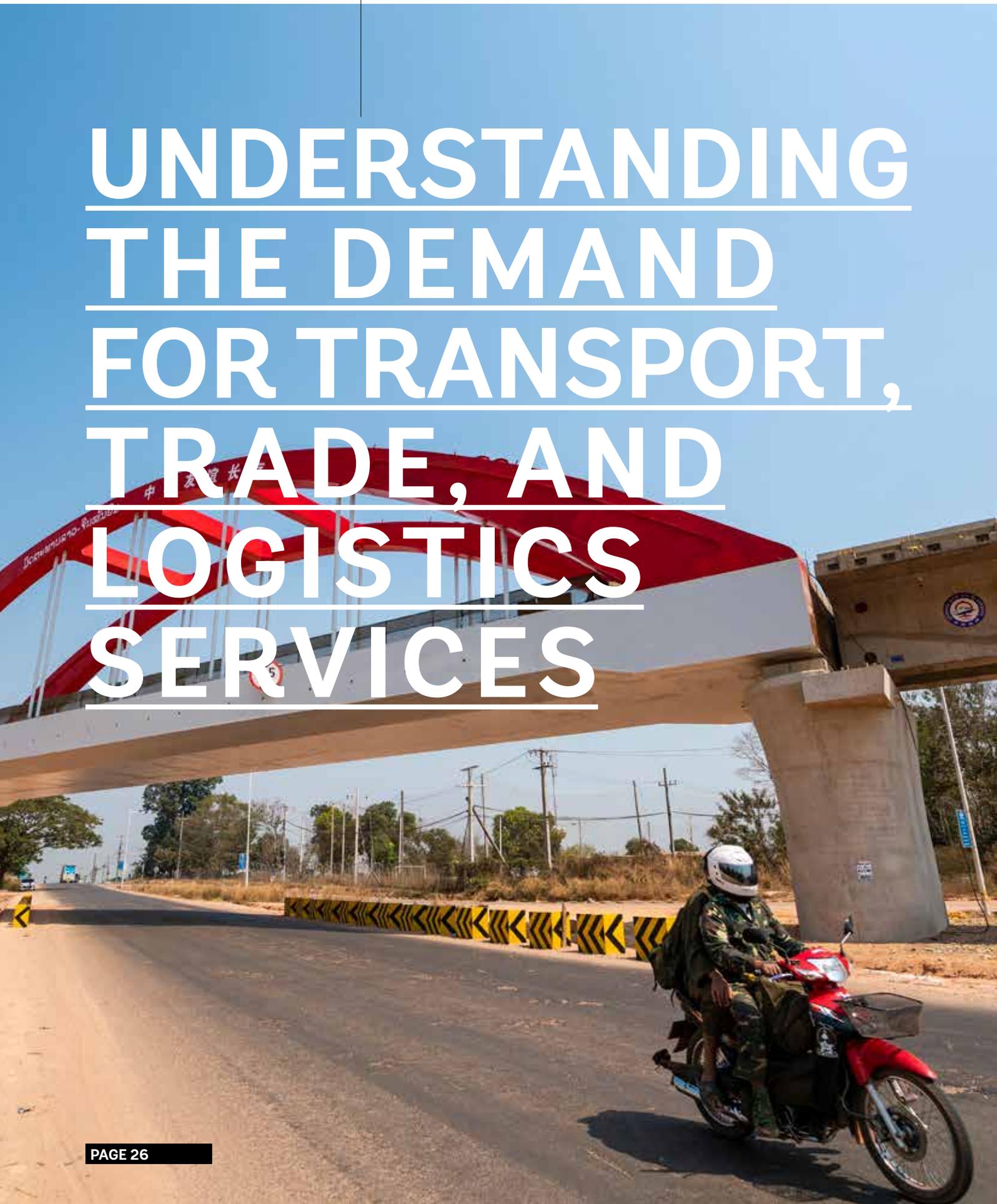
¹⁶ Ksoll et al. 2018.

¹⁷ With limited production-level data, the analysis utilizes customs data from China (cross-checking with data from Thailand) for freight movements. Data on cross-border passengers were obtained from checkpoints, but the process of estimating domestic personal trips was a challenge due to non-existing data. As a result, the demand assessment in this study intends to provide an idea of the boundaries of traffic demand rather than an accurate projection.

FIGURE 6: ANALYTICAL FRAMEWORK



UNDERSTANDING THE DEMAND FOR TRANSPORT, TRADE, AND LOGISTICS SERVICES



HIGHLIGHTS

- Transit trade will remain the largest share of freight rail traffic. Based on existing land transport trends, it is estimated that the transit trade through Lao PDR will grow from 2.0 million tonnes in 2016 to 3.4 million tonnes in 2030, and that land-based bilateral trade between Lao PDR and China is expected to grow from 1.2 million tonnes in 2016 to 1.7 million tonnes in 2030.
- The Lao-China Railway is expected to lower transport costs. The railway can potentially improve the efficiency of the trade corridor and reduce about one-third of transport costs. However, the transport cost saving may vary depending on Thailand's railway section, i.e. the efficiency of trucking sector and if the standard-gauge railway in Thailand becomes operational.
- For the railway corridor to attract more traffic from maritime routes, authorities need to implement complementary reforms and prioritize investments that link key production areas. It is estimated that up to 1.5 million tonnes of trade between China and ASEAN and 2.0 million tonnes of trade between China and Lao PDR could be shifted from maritime routes to the railway.

2.1 FREIGHT DEMAND FOR RAILWAY SERVICES

31. As of 2016, maritime trade represented nearly all trade between China and Lao PDR, Thailand, Malaysia, and Singapore, with only 1.6 percent (3.2 million tonnes) of goods transported via land (Figure 7: China’s Trade with Lao PDR, Thailand, Malaysia, and Singapore by Land, 2016). The land-based trade between Lao PDR and China totaled 1.2 million tonnes in the same year, while trade flows between China and the other three countries constituted 2 million tonnes. The expanding rail network in the region aims to improve the poor quality of land infrastructure and transition trade from maritime to land-based trade routes. This section analyzes current China-ASEAN trade flows, starting with current land transport trends, before presenting a projection of trade movements until 2030. The 2016 New Boten-Vientiane Railway Feasibility Study is used to compare results.

2.1.1 ANALYSIS OF TRADE STATISTICS BY KEY COMMODITIES

Bilateral Trade between China and Thailand, Malaysia, and Singapore

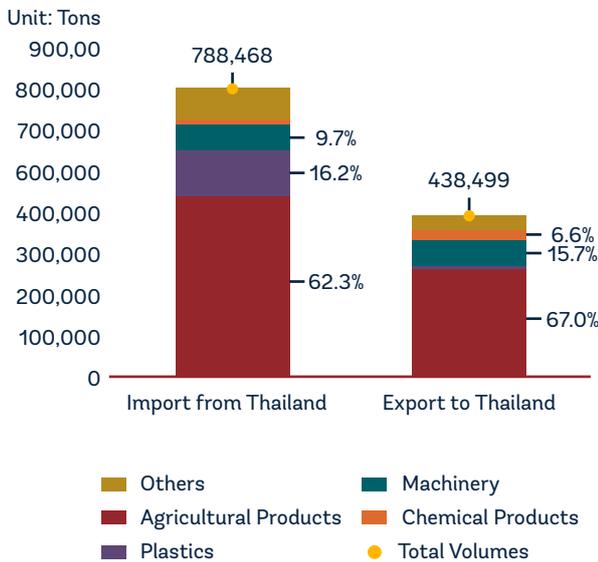
32. Trade between China and Thailand, Malaysia, and Singapore totaled 40.4 million tonnes in 2016, of which a mere 2 million tonnes were transported on land through Lao PDR (i.e., transit trade). China’s land-based trade (imports and exports) with Thailand via Lao PDR totaled 1.2 million tonnes and was dominated by agricultural products (around 80 percent), followed by machinery and plastics (Figure 8: China’s Land-Based Trade with Thailand, 2016). Its land-based trade with Malaysia and Singapore amounted to 0.8 million tonnes and was made up primarily by machinery (61 percent of exports and 35 percent of imports) and plastics (46 percent of imports), followed by inorganic chemicals and chemical products (Figure 9: China’s Land-Based Trade with Malaysia and Singapore, 2016).

FIGURE 7: CHINA’S TRADE WITH LAO PDR, THAILAND, MALAYSIA, AND SINGAPORE BY LAND, 2016



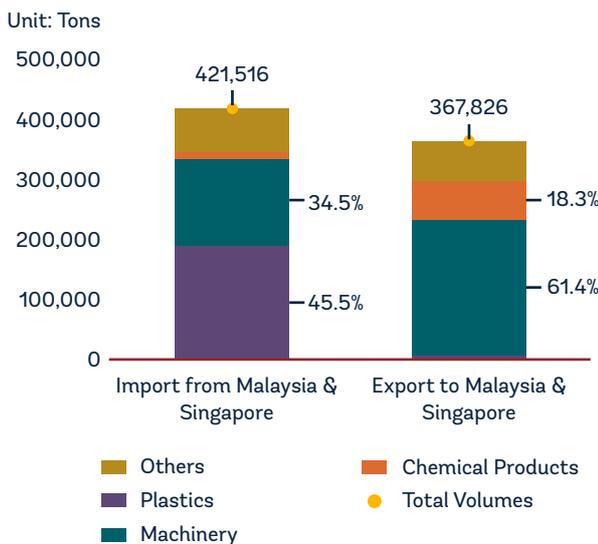
Source: China Customs Data 2016.

FIGURE 8: CHINA'S LAND-BASED TRADE WITH THAILAND, 2016



Source: China Customs Data 2016.

FIGURE 9: CHINA'S LAND-BASED TRADE WITH MALAYSIA AND SINGAPORE, 2016



Source: China Customs Data 2016.

Bilateral Trade between China and Lao PDR

33. In 2016, about 70 percent of China's imports from Lao PDR were transported by sea. This leaves about 0.8 million tonnes transported by land in the same year, made up by wood (53 percent), minerals (22.4 percent), and agricultural products (15.2 percent) (Figure 10: China's Imports from Lao PDR, 2016). Almost all of China's agricultural imports from Lao PDR were transported by land, while the majority of wood and mineral exports were transported by sea. China's sea-based imports from Lao PDR went mainly to provinces outside of Yunnan and included wood, minerals, and fertilizer.

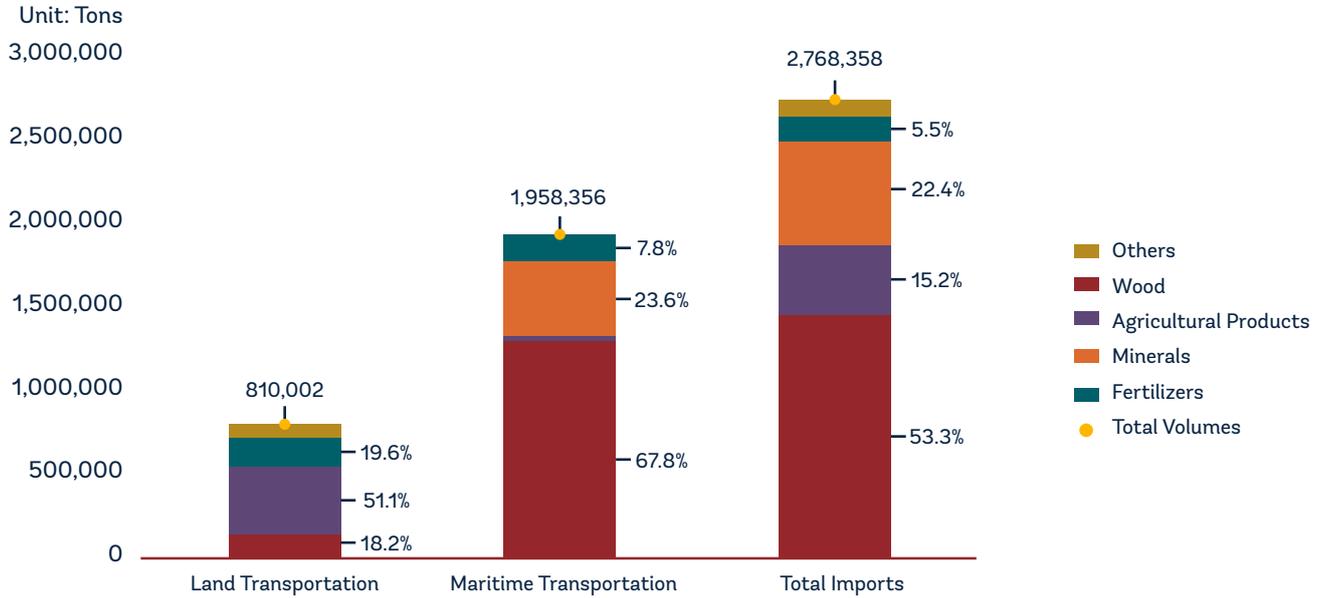
34. In 2016, 76 percent of China's exports to Lao PDR were transported by land, although the overall volume was only 0.4 million tonnes. Sixty-six percent of all Chinese exports to Lao PDR (491,000 tonnes) consisted of iron, steel, machinery, paper, paperboard, fertilizer, and cement (Figure 11: China's Exports to Lao PDR, 2016). Goods shipped from China to Lao PDR by sea originated primarily in provinces outside of Yunnan.

35. The Vientiane-Boten Railway, along with the broader BRI network, has the potential to significantly expand land-based trade between China and ASEAN. However, most of Lao PDR's maritime trade with China is with Chinese provinces far away from Yunnan,¹⁸ which is less likely to shift to the rail network, unless rail connectivity within China improves. For example, goods need to be loaded on trains directly (especially once the BRI extends down to Singapore) to avoid additional multimodal transfers that can generate significant costs.

36. The immediate potential for increasing bilateral trade between China and Lao PDR will be in existing goods, particularly agricultural and mining products. The Vientiane-Boten Railway can increase Lao PDR's agricultural trade with China, as China currently imports a relatively small volume of agricultural products from Lao PDR. As of 2016, Chinese agricultural imports from Lao PDR totaled 419 thousand tonnes, with goods originating across Lao PDR and mainly destined for the Yunnan province (Table 6). This corresponds to only 5.7 percent of all agricultural production in the northern and central provinces of Lao PDR, consisting mainly of rice, maize, starchy roots, and sugar cane. As a result, there is room to increase agricultural exports, especially if production is linked to an increase in demand. Indeed, existing export relationships and the large agricultural potential in the northern part of Lao PDR create opportunities for traders to leverage the railway corridor to accelerate growth in the agriculture sector. This has been confirmed by interviews with importers in Kunming.¹⁹

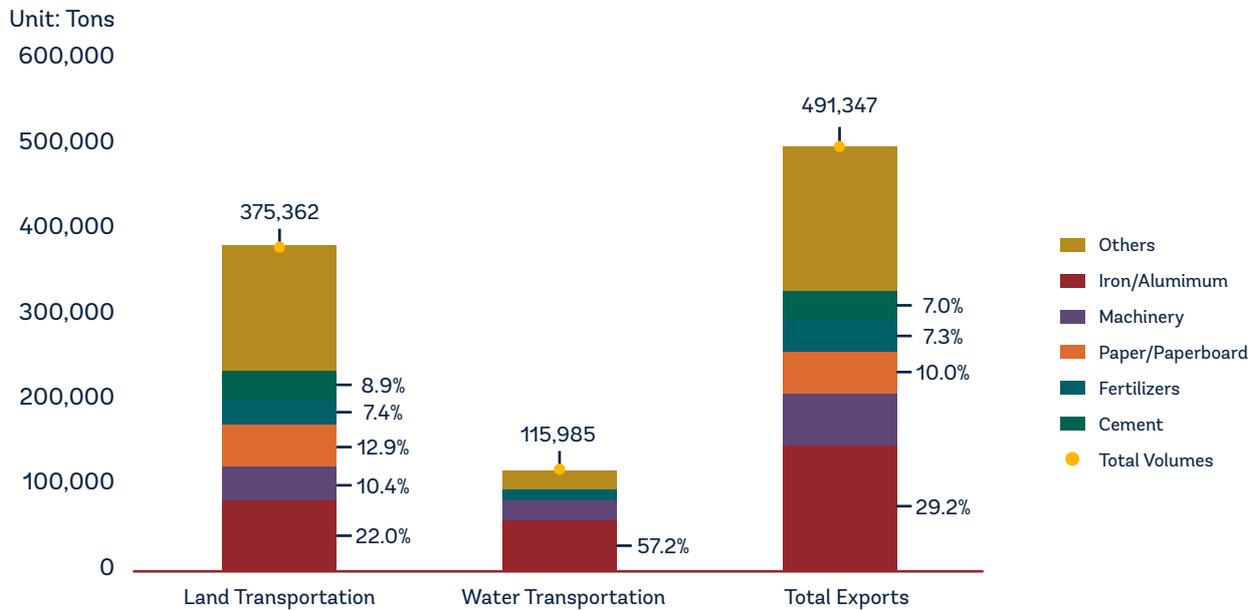
18 In 2016, 89 percent of all imports by river or sea transportation were destined to southeastern, eastern, or northern provinces of China, mainly in Guangdong, Zhejiang, Shanghai, Beijing, Fujian and Jiangsu. Sixty-four percent of all Chinese exports by river or sea transportation originated in the municipality of Beijing or the province of Henan, Anhui, Guangdong, or Hebei.
 19 World Bank's mission visited the province of Yunnan during January 13-17, 2019 and met with provincial authorities, the China Council for Promotion of International Trade (CCPIT): Yunnan Sub-council, and other relevant stakeholders.

FIGURE 10: CHINA'S IMPORTS FROM LAO PDR, 2016



Source: China Customs Data 2016.

FIGURE 11: CHINA'S EXPORTS TO LAO PDR, 2016



Source: Analysis of China Customs Data 2016.

TABLE 6: DESTINATION OF LAO PDR'S LAND-BASED AGRICULTURAL EXPORTS TO CHINA, 2016

Destination Provinces in China	Import Volumes
Yunnan Province	414,032
Hunan Province	199
Jiangsu Province	34
Total	414,265

Unit: Tonne

Source: China Customs Data 2016.

TABLE 7: TOTAL MINERAL PRODUCTION BY PROVINCE

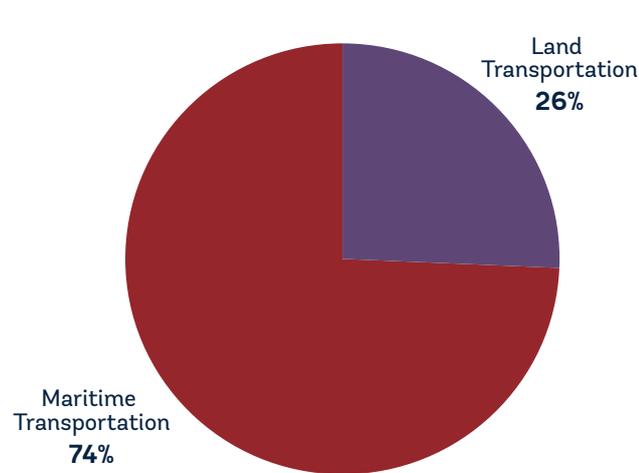
Total Mineral Production along the Railway Corridor by Province		Total Mineral Production by Other Provinces (~400km from Vientiane)	
Vientiane province	545,000	Savannakhet	427,000
Luangnamtha	300,000	Khammuane	600,420
Sub-total	845,000	Sub-total	1,027,420
Share	45%	Share	55%

Source: U.S. Geological Survey, Minerals Yearbook

37. Along the railway corridor, Lao PDR's main mineral production capacity exists in the provinces of Vientiane and Luangnamtha (Source: U.S. Geological Survey, Minerals Yearbook).²⁰ However, a majority of the country's minerals are produced in the provinces of Savannakhet, Borikhamxay, Xiengkhuang, and Khammuane. Mineral products are estimated to represent one-third of total freight on the Lao-China Railway by 2030, according to the 2016 New Boten-Vientiane Railway Feasibility Study's freight projections. Lao PDR's mineral production more than doubled between 2008 and 2010, followed by a slight decline in 2011 and 2012. It reached a peak of 6.78 million tonnes in 2013, before falling to 3.91 million tonnes in 2014—about twice the volume in 2008. Based on official government statistics, the main production of mineral commodities in 2014 consisted of iron ore, limestone, gypsum, and coal, which represented 87 percent of total mineral production.

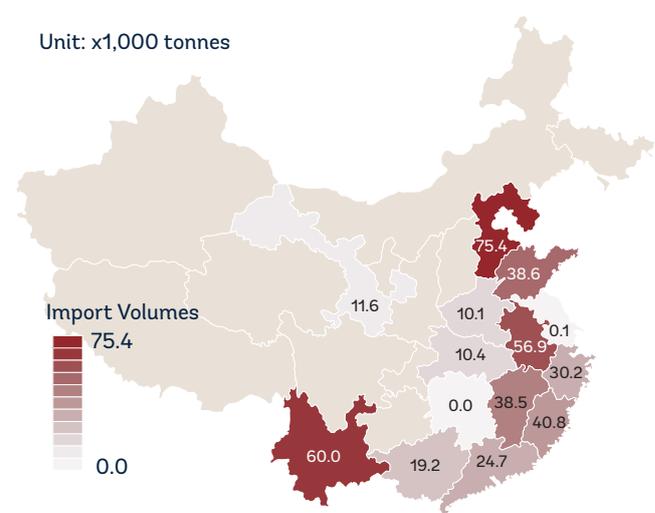
38. The province of Yunnan was the main destination of Chinese mineral imports from Lao PDR by land in 2016 (Figure 12). By contrast, mineral imports by sea were destined to provinces far from Yunnan in the southeastern, eastern, and northern parts of China (Figure 13). The most likely mineral imports that could be diverted to the railway network are those that are currently being transported by land, which totaled 158,000 tonnes in 2016. However, a portion of the 60,037 tonnes of mineral transported through maritime routes and destined for Yunnan could instead be transported by rail, especially if the minerals originate in provinces located along the railway corridor.

FIGURE 12: CHINESE MINERAL IMPORTS FROM LAO PDR BY TRANSPORT MODE, 2016



Source: China Customs Data 2016.

FIGURE 13: DESTINATION OF CHINESE MINERAL IMPORTS FROM LAO PDR BY SEA, 2016



Source: China Customs Data 2016

20 Annual capacity is the total mineral production capacity of all major operating companies in the province.

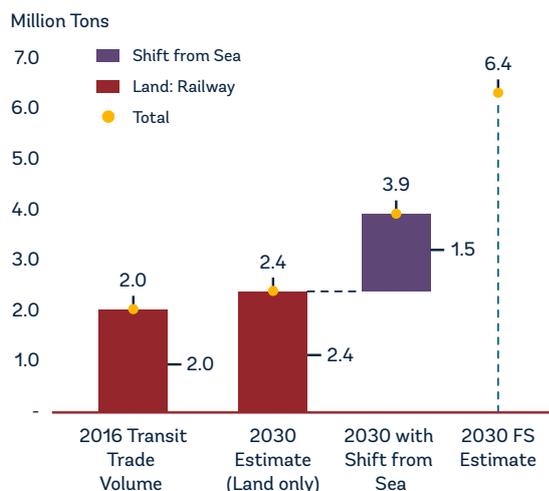
2.1.2 POTENTIAL TRADE MOVEMENTS BY 2030

39. The regional railway is expected to move up to 2.4 million tonnes of freight each year between China and Thailand, Malaysia, and Singapore by 2030 (Figure 14). Based on average growth rates between 2008 and 2017,²¹ the land-based transit trade between these countries is projected to grow from 2.0 million tonnes of freight in 2016 to 3.4 million tonnes by 2030. An estimated 70 percent of the trade by land will be done by rail and the remainder by road.

40. Moreover, an additional 1.5 million tonnes of goods traded between China and ASEAN could shift from maritime transport routes to the railway network by 2030.²² This is based on the rough assumption that 40 percent and 20 percent of the regional land-based trade with the province of Yunnan and neighboring provinces, respectively, will be done by rail (Table 8). However, further in-depth research is required to create more accurate estimates.

41. As a result, the total transit trade by rail between China and ASEAN would account for more than half of the region’s railway traffic and reach 3.9 million tonnes of freight by 2030. However, this would require countries, including Lao PDR, to implement complementary reforms.

FIGURE 14: PROJECTION OF LAND-BASED TRADE BETWEEN CHINA AND THAILAND, MALAYSIA, AND SINGAPORE (TRANSIT TRADE THROUGH LAO PDR) BY 2030



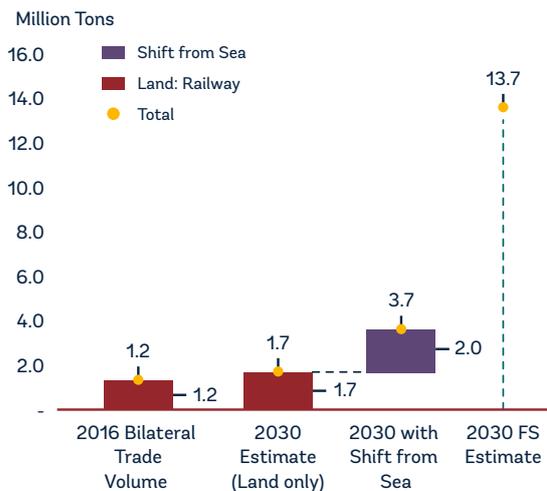
Source: World Bank.

Transport operators are only likely to move goods from maritime routes to the railway corridor if costs and delays are reduced and procedures simplified.

42. An estimated 1.7 million tonnes of freight, or 70 percent of total bilateral trade flows, could potentially be transported by rail between China and Lao PDR by 2030 (Figure 15). Based on average growth rates²³ between 2008 and 2017, the land-based trade between the two countries could reach 2.4 million tonnes in 2030. The bilateral trade is projected to focus on agricultural products (33.8 percent), minerals (13.3 percent), wood products (12.0 percent), steel and cement (10.6 percent), rubber (4.7 percent), and fertilizers (2.5 percent) (Figure 16).

43. An additional 2 million tonnes of bilateral trade could shift from maritime routes to the railway by 2030. No more than 2 million tonnes of freight is expected to shift from being transported by sea to rail, as the mineral trade with provinces outside of Yunnan would likely remain on maritime routes. Nevertheless, freight from the Vientiane area and nearby provinces that is currently shipped by sea via Thailand could potentially shift to the railway. As a result, a total of 3.7 million tonnes of freight between Lao PDR and China could be transported on trains by 2030.

FIGURE 15: PROJECTION OF LAND-BASED TRADE BETWEEN CHINA AND LAO PDR BY 2030



Source: World Bank.

21 Using an econometric regression approach, the annual growth of China’s imports from Thailand, Malaysia, and Singapore is estimated at 1.9 percent, and the annual growth of China’s exports to the same countries is estimated at 5.9 percent.

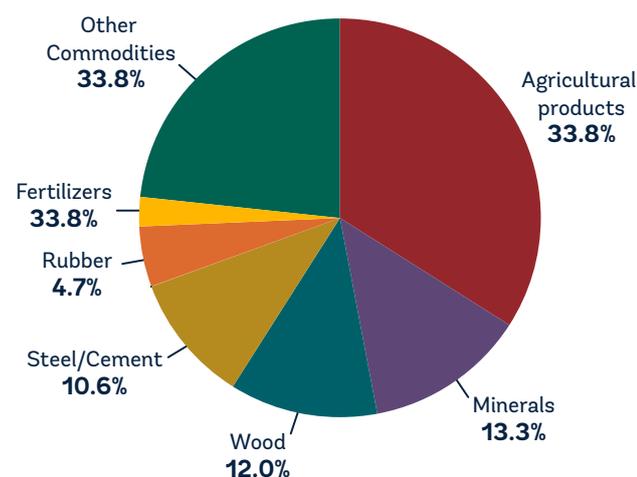
22 Based on China’s customs data.

23 Using an econometric regression approach, the annual growth rate of China’s imports from Lao PDR is estimated at 4.8 percent; and the annual growth rate of China’s export to Lao PDR is estimated at 5.6 percent.

TABLE 8: TRADE BETWEEN SELECTED PROVINCES IN CHINA AND ASEAN BY MODE OF TRANSPORT, 2016

Province	Unit: Tonnes		
	Air	Land	Sea
Yunnan	2,776 (0.1%)	364,983 (19.4%)	1,517,158 (80.5%)
Guangxi	80 (0.005%)	50,484 (2.8%)	1,730,362 (97.2%)
Guizhou	807 (0.1%)	975 (0.2%)	580,897 (99.7%)
Sichuan	7,638 (1.3%)	5,800 (1.0%)	561,108 (97.7%)

Source: China's Customs Data 2016

FIGURE 16: PROJECTION OF BILATERAL TRADE BY COMMODITY BY 2030

Source: World Bank.

2.2 UNDERSTANDING PASSENGER DEMAND

44. This section reviews and evaluates demand projections for passenger railway services made in the New Boten-Vientiane Railway Feasibility Study.²⁴ The study identified three sources of passenger demand: (i) between China and Lao PDR; (ii) between China and ASEAN countries; and (iii) within Lao PDR by Lao residents. The total passenger demand for railway routes between China and ASEAN that cross the border at Boten (i.e., the first two sources of passenger demand) was estimated at 480,000 and 1,170,000 passengers in 2025 (the preliminary stage) and 2030 (short-term stage), respectively (Table 9). Moreover, the number of passengers expected to cross the border at Boten by either rail or road was estimated at 630,000 and 1,370,000 passengers in 2025 and 2030, respectively.

45. The feasibility study's projections for cross-border passengers appear to be relatively conservative and consistent with tourism statistics. In 2016, tourism data from Boten indicate that 385,300 tourists arrived at the city by road, 126,200 people entered China from Boten using a border pass, and an additional 4,366 Laotians left the country using a passport. Excluding Laotians who used a border pass for short trips, an estimated 390,000 tourists crossed the border at Boten in one direction and 780,000 tourists crossed the border in both directions by road (mainly buses).²⁵ Using the five-year average historical growth rate of about 3 percent per annum for tourists from ASEAN and China, passenger border crossings at Boten could grow to about 1.18 million people by 2030, slightly lower than the feasibility study's projection of 1.37 million.

²⁴ The process of estimating passenger demand for railway services is complex requires a separate in-depth technical study.

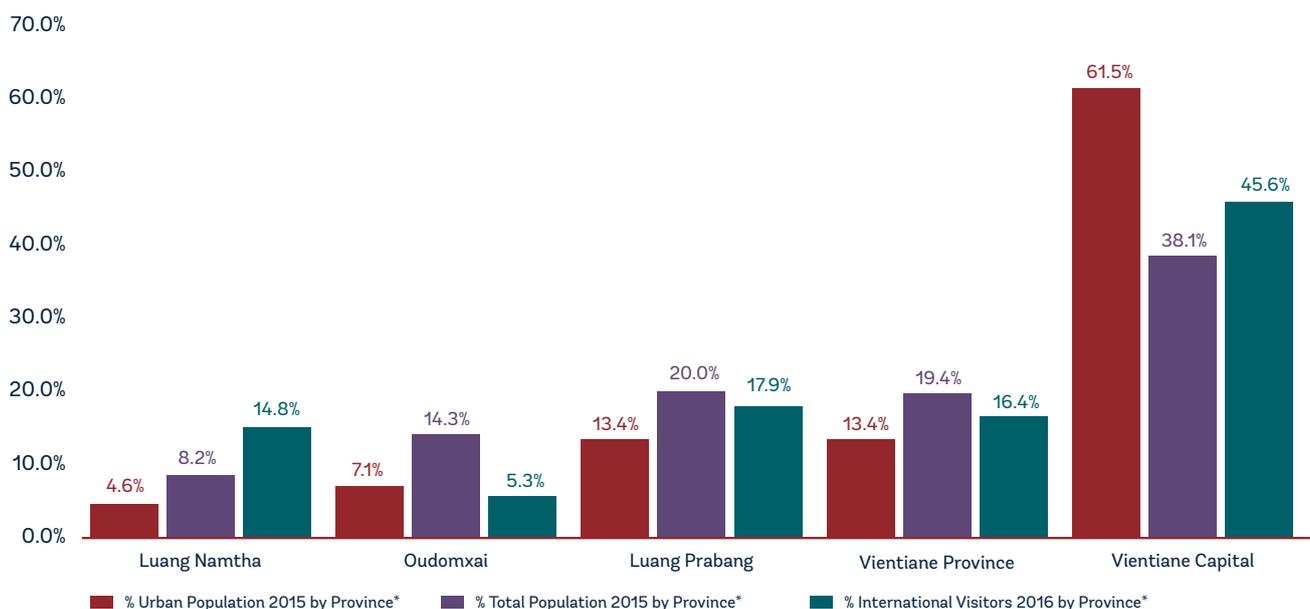
²⁵ 2016 Statistical Report on Tourism in Laos, Tables 12 and 15. <https://www.mekongtourism.org/about/tourism-performance/> (accessed 15 April 2019).

TABLE 9: CROSS-BORDER PASSENGER PROJECTIONS

Means		Preliminary Stage (2025)	Short Term (2030)
Passenger traffic from southwest and northwest China to Lao PDR	Railway	380,000	830,000
	Highway	100,000	130,000
	Aviation	240,000	630,000
	Sub-total	720,000	1,590,000
	Market share of railway (%)	52.8%	52.2%
Cross-border passenger traffic between southwest and northwest China and Singapore, Malaysia, Thailand, and Cambodia via Lao PDR	Railway	100,000	340,000
	Highway	50,000	70,000
	Aviation	2,750,000	3,500,000
	Sub-total	2,900,000	3,910,000
	Market share of railway (%)	3.4%	8.9%
Sub-total Railway passenger traffic volume of railway at Mohan (Boten screenline)		480,000	1,170,000
Port			
Total passengers, all transportation modes (Boten screenline)		3,620,000	5,500,000
Total passengers, land transport modes only (Boten screenline)		630,000	1,370,000
Mode share of railway versus all modes (Boten screenline)		13.2%	21.2%
Mode share of railway versus land transport only (Boten screenline)		77.4%	85.4%

Source: New Boten-Vientiane Railway Feasibility Study.

FIGURE 17: DISTRIBUTION OF CROSS-BORDER TRIPS AT BOTEN BY PROVINCE IN LAO PDR, 2015



Source: Lao Results of Population and Housing Census 2015 and International Visitors by Province, 2009-2016.

BOX 3

46. In 2015, about 60-70 percent of all international cross-border visitors went to the capital of Vientiane or around the province of Vientiane (Figure 17). Luang Prabang attracted up to 13-20 percent of all visits, and Oudomxay and Luang Namtha attracted roughly around 5-14 percent each.

47. While Chinese tourists only account for 15-20 percent of tourists in Lao PDR, this market segment has been consistently growing, and the railway is expected to further increase Chinese tourism. China's population is very familiar with train travel, as China is home to a vast network of bullet trains that connects over 550 cities. Train travel is, therefore, a well-established mode of transport in China, and it is often more affordable than air travel, with additional benefits in terms of baggage allowances and cheap group/family fares.

48. However, economies of scale restrict convenient rail connections to major urban centers and secondary towns along the railway, requiring adequate public infrastructure to facilitate transportation to and from railway stations. Therefore, itineraries will likely be limited, with price being a dominant selection criterion. The railway will have to compete with the airline industry, as both Vientiane and Luang Prabang are accessible daily by airplane for around U\$200 (return ticket) from Kunming and other cities in China. Nevertheless, the railway is likely to attract first-time travelers from China who are inclined to travel in groups on a short itinerary that includes well-known tourist sites.

49. The Lao-China Railway is expected to be used by more budget-oriented travelers from Kunming on short package tours to Luang Prabang, as well as laborers and traders. It could also be used by visitors to Vientiane, but the capital lacks primary tourist attractions and only serves as a gateway to the rest of the country if the airport is used. The degree to which these travelers will constitute a new consumer group in Lao DPR and replace existing air travelers will depend on the train schedule, the pricing of tickets, and the willingness of Chinese outbound operators to create packaged trips to Lao PDR. It will also depend on Lao PDR's ability to provide the appropriate accommodation, transport, and services to cater to travelers arriving by train (Box 3. Train Tourism). It is likely, however, that the rail connection between Kunming and Vientiane becomes a preferred means of travel for laborers and trade visitors.

Train Tourism

A railway network can benefit a country's tourism industry by making it possible to offer iconic rail journeys and a mode of long-distance transportation that can connect different parts of the country.

Iconic rail journeys focus on the journey itself as a major tourist attraction, but this is unlikely to be relevant for the Vientiane-Botou-Kunming railway. These itineraries are mostly along historical routes, ranging from short daytrips to long-distance, overnight journeys, such as the seven-day Trans-Siberian Railway or the Belmond Hiram Bingham in Peru. Trains that are used for iconic rail journeys are often constructed as authentic historical coaches pulled by steam engines, or as modern trains with panorama windows that make it possible for travelers to view the passing landscape. The railway connection between Kunming and Vientiane was not built for scenic value and will be operated by high-speed trains on a wide gauge. Should the planned extension from Vientiane to Bangkok happen, the wide gauge trains will not be able to use the track of the Eastern and Oriental Express (the region's only tourist-specific train journey) that operates between Bangkok and Singapore, as the size is too narrow.

By contrast, a long-distance rail connection between Lao PDR and China is likely to be a key driver of increased tourism, as train travel is well established in China, with fast bullet trains connecting over 550 cities around the country on a daily basis. However, tourism operators in Lao PDR need to have a good understanding of Chinese habits and preferences to attract and capture the business of Chinese visitors. For example, Chinese families tend to travel with three generations (i.e., grandparents, parents, and children) and are often willing to spend more to ensure they can travel in comfort. Moreover, the consumption patterns of Chinese travelers are changing. While shopping and sightseeing continue to be important elements of overseas group trips (Chinese travelers are still the highest-spending tourists in many areas), more experienced travelers are focused on enjoying high-quality local food and activities while travelling abroad, including travelling at a slower pace and "live like a local."

Lao PDR also needs to make sure its local businesses are ready to accept mobile payments, as 65 percent of Chinese tourists use mobile payment platforms during overseas travel, compared to only 11 percent of tourists from other countries. Chinese tourists primarily use mobile payments for shopping, dining, and visiting tourist attractions. The rapidly growing, more experienced Chinese travelers appear to opt for multi-destination travel, and it remains to be seen if this segment is attracted by the Lao PDR-China Railway.

Tourism enterprises in Luang Prabang and Vientiane should, therefore, consider accepting Alipay and Wechat Pay and adopt diverse marketing strategies, including using popular Chinese technologies and media channels, to target Chinese consumers. In addition, they need to closely cooperate with Chinese tour operators, leveraging their understanding of and influence in local markets.

BOX 4

Mobility and Accessibility Challenges in Luang Prabang and Vang Vieng

50. While the feasibility study is likely conservative in terms of cross-border passengers, its projections for domestic travelers may be optimistic. According the New Boten-Vientiane Railway Feasibility Study, cross-border trips will represent only 27 percent of the total projected rail passenger demand by 2030, which means that domestic rail travel by Laotian residents will make up 73 percent of the projected demand (3.1 million trips). This assumes an annual trip rate of 0.9 trips per capita for the urban population and 0.5 trips per capita for the non-urban population by 2030.²⁶ More than half of all domestic rail trips are estimated to be in the capital of Vientiane (51.1 percent), followed by the provinces of Luang Prabang (16.4 percent), Vientiane (16.1 percent), and Oudomxay (10.3 percent) (Table 10). While it is difficult to evaluate the feasibility of these projections, the level of demand would depend on the quality and convenience of railway connections, fare levels, the railway timetable, and the proximity of provinces to the railway.

TABLE 10: ESTIMATED RAIL TRIPS MADE BY RESIDENTS WITHIN LAO PDR BY PROVINCE, 2030

Provinces	Total Lao resident trips	%
Luangnamtha	192,640	6.2%
Oudomxay	321,628	10.3%
Luang Prabang	511,465	16.4%
Vientiane	503,445	16.1%
Vientiane Capital	1,597,830	51.1%
Total Along Railway Alignment	3,127,008	100.0%

Source: World Bank.

51. The feasibility study’s overall passenger estimates are too optimistic and push capacity limits. The study estimates a total of 1.17 million cross-border trips and 3.13 million domestic trips, or a total of 4.3 million passenger trips, on the Lao-China Railway by 2030. Assuming an average train size of eight cars with eighty passengers in each, as is the case for similar passenger trains in China, the estimate of 1.17 million passengers would require at least five trains to do roundtrips every day. To also capture domestic demand, more than two trains would need to be running by 2025, possibly only on the network’s sub-sections. These assumptions are in line with discussions with the LCRC.

Luang Prabang, declared a UNESCO World Heritage City in 1995, is one of the main tourist attractors in Lao PDR. The city comprises a UNESCO-protected historical center, limited at the north by the Mekong river and at the east by the Nam Khan river, and it is surrounded at the south by a sprawling urban area. Luang Prabang continues to attract on average of 8 million international visitors per year, and the city’s historic infrastructure and land are under pressure.

Vang Vieng is a fast-growing town with an economy that is almost entirely dependent on tourism and ecotourism. The town’s center borders the east side of the Nam Song river, and the west side of the river is home to a combination of agriculture and livestock breeding, as well as ecotourism activities such as hiking, trekking, and motorsports.

Tourism is critical for the future development of urban areas along the Boten-Vientiane Railway, and national and as well as provincial government authorities have prioritized railway-related programs that aim to create new jobs and accelerate economic growth. With visitor numbers expected to steadily increase from the current 1.2 million to an estimated 4.5 million in 2020, public authorities need to ensure that urban areas along the railway can prepare, adapt, and benefit from planned infrastructure development.

The strategy is important because the railway increases accessibility and reduces travel costs to these two cities, creating both opportunities and challenges for growth.

Both Luang Prabang and Vang Vieng are at an opportune moment to redefine their respective strategic development plans to prepare, adapt, and manage the structural economic changes that will come with the implementation of the Boten-Vientiane Railway. The fast-paced implementation of the railway, along with its accompanying land development, will inevitably change these cities’ economic environment. To ensure that Luang Prabang and Vang Vieng benefit from increased economic activity associated with the railway, both cities need to urgently implement efforts to:

- Enhance urban and land use planning and zoning, which needs to be coordinated with land development projects that are directly associated with the new railway corridor;
- Improve urban mobility strategies to manage connectivity between areas around stations and urban centers; and
- Improve institutions and their technical capacity to ensure the sustainable management of urban and green mobility during the initial phase of the railway and associated development projects.

26 Assumed to be the sum of trips in and out per capita per year.

52. To attract railway passengers, authorities need to improve transportation infrastructure, information dissemination, and local supporting infrastructure. The highest demand for railway passenger services would be in the capital of Vientiane and the provinces of Vientiane and Luang Prabang, although Luang Namtha and Oudomxay could also attract passengers, particularly tourists. Therefore, all the main passenger railway stations in each province would need to be serviced by: (i) good road and public transport connections; (ii) adequate public transport facilities, ticketing systems, and public access to information on rail and other transport options, as well as local hotels and other services; and (iii) good local infrastructure, including hotels and restaurants, that support provincial tourist attractions (Box 4).

2.3 UNDERSTANDING BULK SHIPMENT COSTS

53. An analysis of potential shipping costs for bulk and containerized freight reveals that the Lao-China Railway could be competitive with current road-based transport when the haul length is greater than 400 km. For hauls over 1,000 km in length, the new railway appears to be cost-competitive even against efficient road-based transport. The analysis also shows that authorities need to ensure efficient trade facilitation, which should be prioritized along with modern railway infrastructure.

2.3.1 SCENARIOS

54. A strategic analysis was carried out of possible supply-chain costs for bulk or containerized cargos for three types of trade routes that are relevant to the Lao-China Railway. These trade routes are the (i) regional transit-trade; (ii) bilateral trade between Lao PDR and China as well as Lao PDR and Thailand; and (iii) domestic trade within Lao PDR.

55. The World Bank's Highway Design Model was used to estimate vehicle operation costs (VOCs) for trucks with payloads of 15 to 31 tonnes.²⁷ Lao PDR's trucks with a net load of 15 tonnes have an average load of 25 percent, which corresponded to observed VOCs for trucks operating between Vientiane and Luang Prabang.²⁸ The operating cost of the Lao-China Railway is estimated at US\$0.018 per net tonne-km, with a an average load of 62.5 percent per round trip.²⁹ The operating cost of transshipping containers and bulk goods on the current Thai railway is estimated at US\$5.0 per tonne.³⁰

56. The supply-chain analysis examined four main scenarios for the period before and after the Lao PDR-China Railway is expected to be completed in 2022 (Table 11). Scenario A assumes that Lao PDR's trucking industry remains inefficient before and after the railway opens. Scenario B assumes the railway is only completed to Vientiane and that goods are transported by relatively efficient Thai trucks to Laem Chabang. Scenario C assumes freight on the railway to/from Laem Chabang is transferred to/from current meter gauge trains in Thailand. Finally, scenario D assumes that the railway is completed to Laem Chabang. For both scenarios C and D, different access distances to the railway were also explored for traffic generated in Lao PDR. The analysis also explored variations of scenarios to evaluate the effect of trade facilitation on the competitiveness of rail with efficient trucking. Additionally, the scenarios explored different levels of efficiency in Lao PDR's trucking industry, which revealed trucking is

TABLE 11: SCENARIOS UNDER THE SUPPLY-CHAIN ANALYSIS

	China and Lao PDR	Thailand	Remarks
Scenario A	Road	Road	Current roads
Scenario B	Rail	Road	Lao-China rail + Thai Trucking
Scenario C	Rail	Existing Rail	Lao-China rail + existing Thai rail
Scenario D	Rail	New Rail	Lao-China rail extended to Bangkok

Source: World Bank.

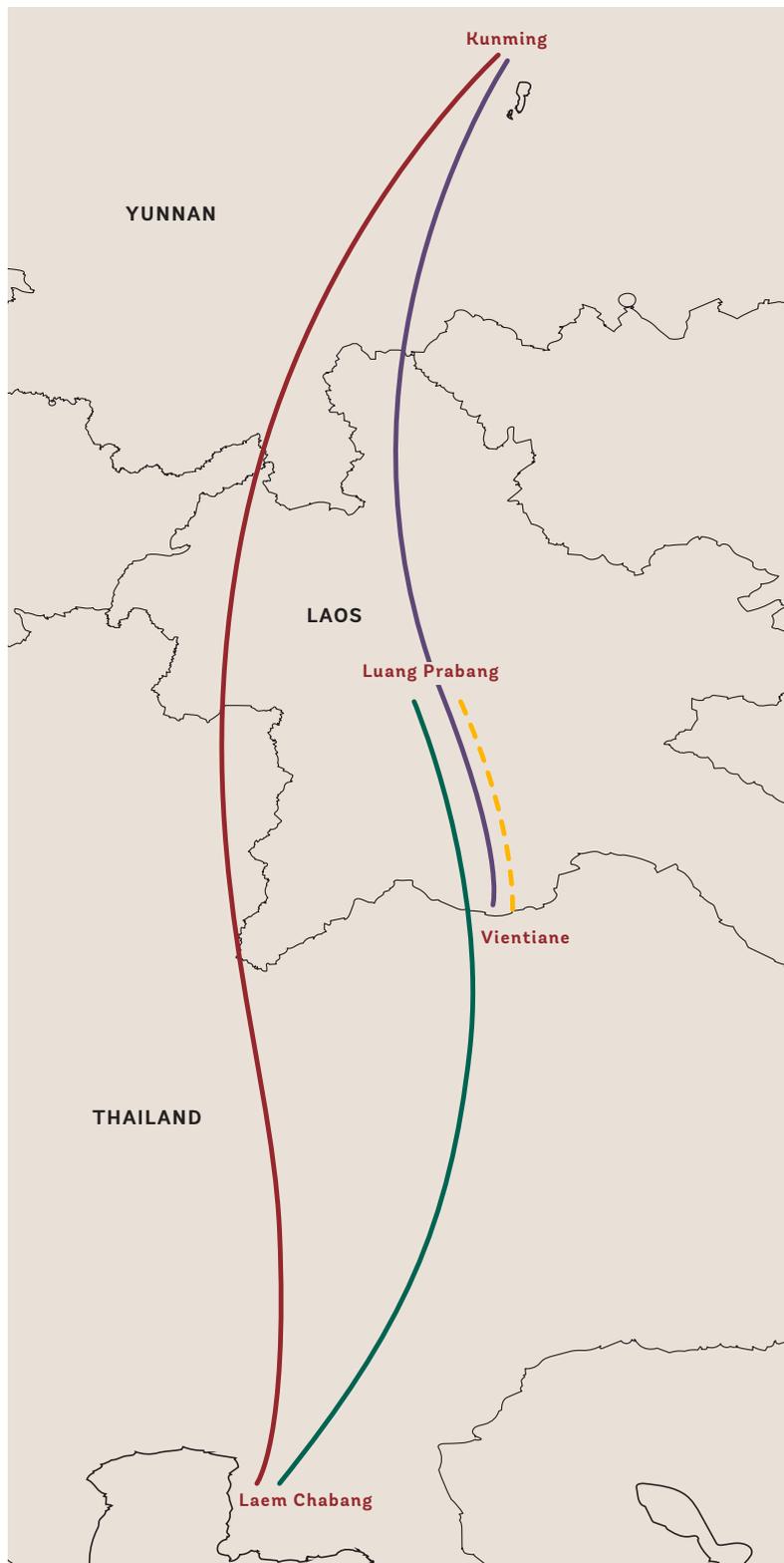
²⁷ Loading levels included 25 percent, 50 percent, 75 percent, and 100 percent. A loading of 50% corresponds to a truck loaded in 1 direction i.e. no backload. Efficient trucks were assumed to have a 31 tons payload and are 100% loaded as operate today between Laem Chabang, Thailand and Boten, Lao PDR, or from Kunming, China, and Boten.

²⁸ World Bank 2018.

²⁹ Asian Development Bank. 2018. *GMS Missing Railway Links: Connecting the Railways of the Greater Mekong Subregion*. Final Report. TA-9123 REG.

³⁰ World Bank 2018.

FIGURE 18: CHINA-LAO-THAILAND TRADE SCENARIOS



Source: OpenStreetMap

Transit trade

- The route between Laem Chabang and Kunming (in red) is assumed to be representative of trade movements between Thailand and China that transit through Lao PDR.

Bilateral Trade

- The route between Laem Chabang and Luang Prabang (in green) is assumed to be representative of trade movements between Thailand and Lao PDR that are located midway along the Lao-China Railway.
- The route between Vientiane and Kunming (in purple) is assumed to be representative of trade between Lao PDR (primarily from Vientiane) and China, which is likely to be a major driver of commodity demand for both the railway and China.

Domestic Trade

- The route between Vientiane and Luang Prabang (in yellow), representing domestic traffic.

relatively inefficient in Lao PDR, with higher average operating costs than in Thailand. Moreover, there is weak demand and no competition in some trade corridors, which means that prices are determined by the market and have little relationship to VOCs.³¹

2.3.2 ANALYSIS OF BULK SUPPLY-CHAIN COSTS BY SCENARIO AND ROUTE

Transit Trade between Laem Chabang and Kunming

57. The three scenarios with rail are the most efficient for the transit trade between Laem Chabang and Kunming, a distance of 1,907 km by road and 1,631 km by rail (Figure 19). Scenario B, which has freight transported by rail to Vientiane and then by trucks to Laem Chabang, is two-thirds of the cost (US\$62.37/tonne) of scenario A (US\$92.27/tonne)—the least efficient road-based scenario. Scenario C (US\$55.54/tonne), which has freight on rail to Vientiane and then by Thai rail to Laem Chabang, is only slightly less efficient than the most efficient Scenario D (US\$39.36/tonne). Scenario D has freight transported from Lao PDR to Laem Chabang on a completed Lao PDR-China Railway and the Thai-China Railway.

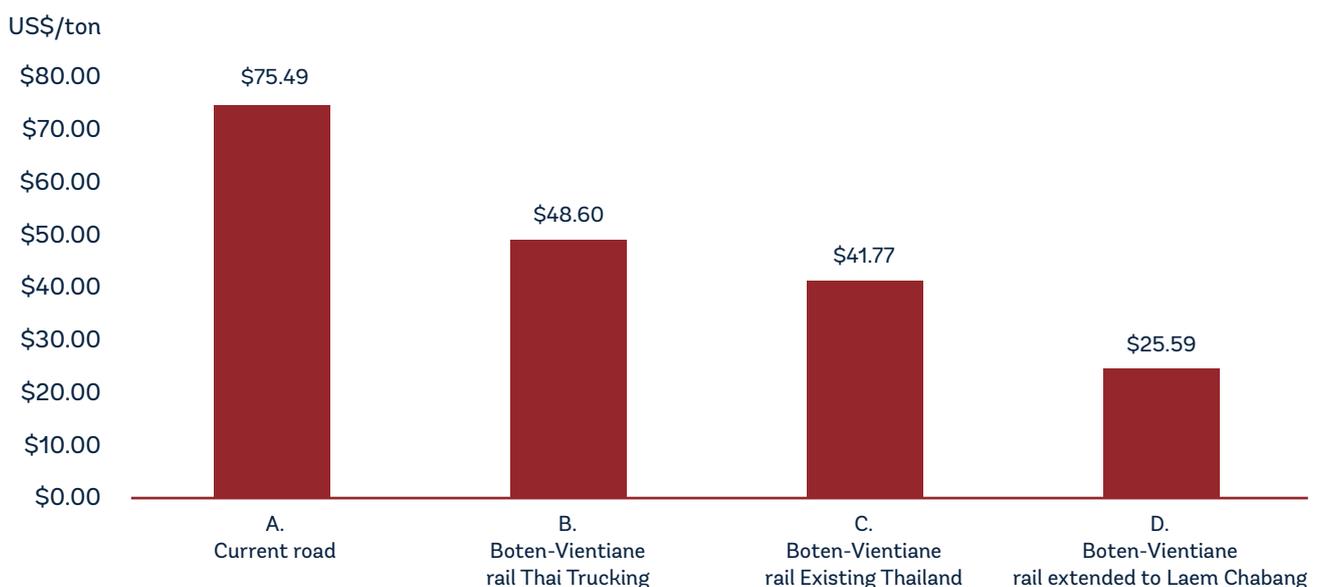
Bilateral Trade between Laem Chabang and Luang Prabang

58. Scenarios that involve the railway for bilateral trade between Lao PDR and Thailand are the most cost effective, even with routes not extending all the way to China (Figure 20: Estimated Cost for Bilateral Trade between Laem Chabang and Luang Prabang). The current distance between Laem Chabang and Luang Prabang is 1,039 km by road, which will be reduced to 950 km when the Luang Prabang expressway is completed. When the railway is completed, the distance by rail will be 866 km. As expected, Scenario A (US\$75.49/tonne), which only utilizes the current road network, is less efficient than Scenarios B (US\$48.60/tonne), C (US\$41.77/tonne), and D (US\$25.59/tonne) that partially or fully use the railway network. This suggests that the railway section in Lao PDR can substantially reduce transport costs for trade between Lao PDR and Thailand.

Bilateral Trade between Vientiane and Kunming

59. The Vientiane-Boten Railway can improve the efficiency of cross-border trips and bilateral trade between Lao PDR and China (Figure 21). The distance between Vientiane and Kunming is 1,320 km by road, which is expected to be reduced to 1,231 km when the construction of the expressway is finished. When the railway is completed,

FIGURE 19: ESTIMATED COSTS FOR THE TRANSIT-TRADE BETWEEN LAEM CHABANG AND KUNMING



Source: World Bank.

31 World Bank. 2018. *Transport Costs and Prices in Lao PDR Unlocking the Potential of an Idle Fleet*. Final Report. September.

the distance by rail will be 1,000 km. Scenario A (US\$72.53/tonne), which uses current roads and inefficient trucking, is the least efficient. Based on Scenario A, the completion of the Vientiane-Luang Prabang expressway would reduce transport costs by approximately 7.5 percent (US\$67.08/tonne), and a more efficient trucking industry would reduce transport costs by 38.3 percent (US\$44.7/tonne). Scenario Ci (US\$34.94/tonne), which assumes the new Vientiane-Boten Railway has an access distance of 20 km, is the most efficient, with less than half of the cost of Scenario A. Scenario Cii (US\$42.69/tonne), where the railway has an access distance of 100 km, is still more cost effective than Scenario A.

Domestic Trade between Vientiane and Luang Prabang

60. An efficient trucking industry is important for domestic trade within Lao PDR (Figure 22). The distance between Vientiane and Luang Prabang is 339 km by road, which is expected to be reduced to 250 km when the construction of the expressway is completed. Once the railway is completed, the distance by rail will be 245 km. Scenario Ai (US\$35.19/tonne), which uses the current road network and the country’s inefficient trucking, is the least efficient scenario. Based on Scenario Ai, Scenario Aii (US\$25.95/tonne) is more efficient since it includes the effect of the expressway, and Scenario Aiii (US\$18.16/tonne) is even more efficient since it includes not

only the effect of the expressway but also an improved trucking industry. Scenario Aiii with the expressway and an efficient trucking industry is actually more efficient than both railway scenarios Ci (US\$21.17/tonne) and Cii (US\$28.92/tonne). Efficient trucking reduces the unit costs per tonne compared to an inefficient trucking sector by 30 percent. Nevertheless, both railway scenarios are more cost effective than Scenario A, which only considers the current road network. These results emphasize the importance for authorities in Lao PDR to implement complementary reforms in the trucking industry.

SUMMARY

61. The Lao-China Railway is expected to improve the efficiency of the transport network and reduce transport costs by one-third if regulatory reforms to improve competition and efficiency in the trucking industry are successfully implemented. Besides improving the quality of transport infrastructure, efforts to increase the efficiency of the trucking industry can be important to optimize transport costs—especially for domestic routes in Lao PDR. The analysis of transport costs under different routes (i.e., transit trade, bilateral trade, and domestic trade) and the selected scenarios are summarized in.

TABLE 12: ESTIMATED COSTS FOR SELECTED TRANSPORT ROUTES AND SCENARIOS

Scenario	Transit Trade (China-Thailand)	Bilateral Trade (Lao-Thailand)	Bilateral Trade (Lao-China)	Domestic trade (within Lao)
China/Lao Mode + Thai Mode				
Road Distance:	1,907 km	1,039 km	1,320 km	399 km
Rail Distance:	1,631 km	866 km	1,000 km	245 km
Scenario A: Road + Road	92.27	75.49	72.53	35.19
Scenario B: Rail + Road	62.37	48.60	N/A	N/A
Scenario C: Rail + Old Rail	55.54	41.77	34.94	21.17
Scenario D: Rail + New Rail	39.36	25.59	N/A	N/A

Source: World Bank.

FIGURE 20: ESTIMATED COST FOR BILATERAL TRADE BETWEEN LAEM CHABANG AND LUANG PRABANG

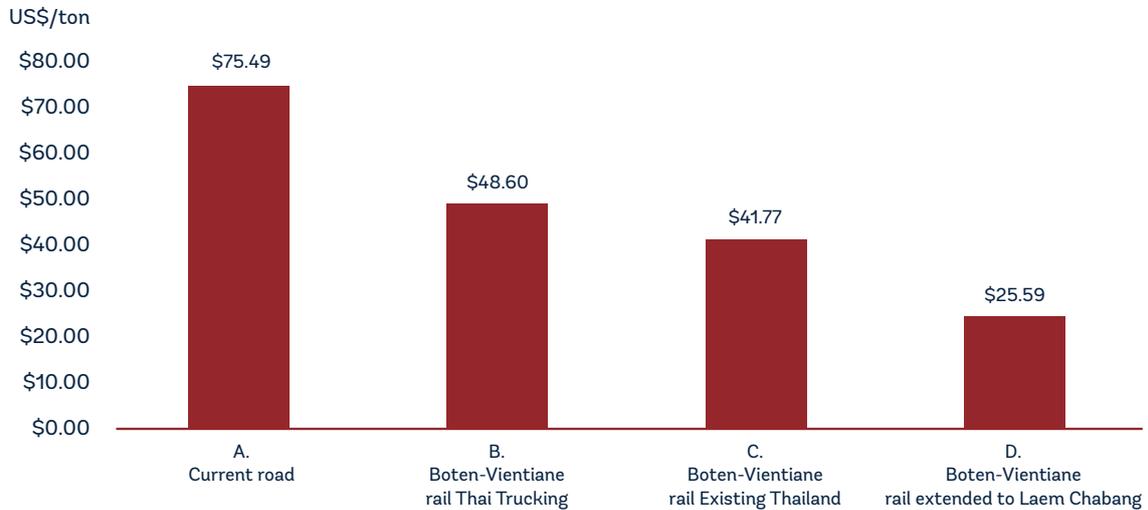


FIGURE 21: ESTIMATED COST FOR THE BILATERAL TRADE BETWEEN VIENTIANE AND KUNMING

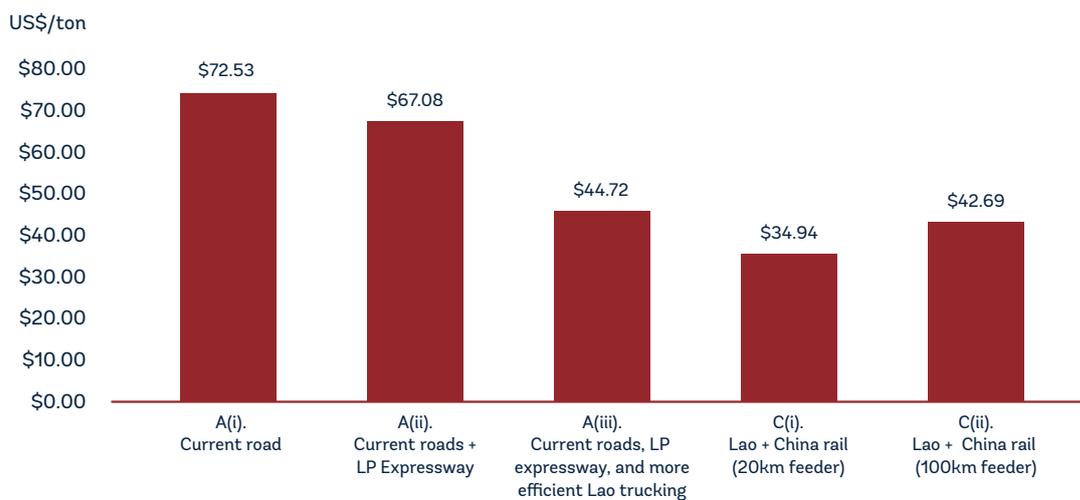


FIGURE 22: ESTIMATED COST OF DOMESTIC TRADE BETWEEN VIENTIANE AND LUANG PRABANG



Source: World Bank.

ASSESSMENT OF THE TRANSPORT CONNECTIVITY GAP

KEY MESSAGES

- Lao PDR aspires to become a land-linked economy, but managing the country's road network has been a challenge. Roads are generally poorly maintained, there are problems associated with overloading trucks, safety and climate change, and there is insufficient funding for maintenance.
- The Lao-China Railway will reshape transport landscape though being the spine of Lao PDR's transport infrastructure, which will require changes to how the country manages its transport infrastructure assets. Potential reforms include the implementation of a network approach³² to managing, developing, and maintaining transport assets—particularly the road network.
- However, the railway cannot reach its full potential without key supporting infrastructure and complementary policy reforms. Border-crossing transport corridors will become more important in connecting people and goods in and between Lao PDR and neighboring countries.
- The transport sector also needs to investment in handling equipment and ensure its open access to allow the railway to link with other modes of transport. Efficient multimodal operations will be key to make the rail corridor attractive and enhance the availability, quality, and reliability of transport services.
- With limited funding, it is very important that Lao PDR's prioritizes its investments, taking into account connections to areas and sub-corridors with high potential for tourism and agricultural development. The network approach to managing road investments and maintenance, which involves using higher standards for critical sub-corridors and lower standards for the design of secondary and tertiary links, will be key to increase the efficiency of the transport sector. Additionally, authorities need to adopt policies that support the development of logistics support such as distribution and collection centers and stringent overloading control for road assets according to their design standards.
- The efficient management of activities around railway stations will also be important. Large, strategic stations may attract truck traffic for freight deliveries. In consultation with private-sector stakeholders, the government needs to develop appropriate logistics handling infrastructure and related facilities. Moreover, authorities need to review and improve the regulatory framework for railway operations and ensure the efficient operation of the railway network.
- Further studies are needed to understand key connectivity bottlenecks in production areas, including areas that focus on agriculture, minerals, industries, and tourism. Specifically, more studies are needed to understand costs and benefits and how to optimize and plan the network approach.

³² The network approach in transport asset management refers to an optimized approach to the planning of transport asset routines and periodic maintenance to ensure consistent service quality regardless of traffic volumes.

3.1 LAO PDR'S TRANSPORT INFRASTRUCTURE CHALLENGES

62. The predominant mode of transport in Lao PDR is by road, which represents 98 percent of total passenger–km traveled, and 86 percent of all freight moved in the country. While the length of the total road network is 51,000 km, only 22 percent is paved. The road network is vulnerable to climate change risks, as the impact of natural disasters, including extreme heat, flooding and landslides, has increased the need for emergency repair. A large portion of the road network is also in poor condition. Seasonal closures are frequent due to poor surface conditions, deficient drainage systems, floods, and landslides. Lao PDR's road density (per sq. km of land area) is about 30 percent lower than the ASEAN average and closer to that of Philippines and Myanmar. However, the low density of the country's population means that Lao PDR's road length per capita (29 people per sq. km) is among the highest in ASEAN.

63. Lao PDR's transport services rely on a road network that is poorly maintained and insufficiently funded. The road sector received a total allocation of US\$107 million for the fiscal year 2017 from the national budget and the Road Fund, which represents an increase compared to previous years. However, a large portion of the allocation has been used to pay outstanding debt for road construction and upgrading, emergency repairs and road maintenance, and disaster recovery works over the last five years. The main sections of NR13, which is the backbone of the country's road network, were completed in 1997 and have not been rehabilitated since. As a result, they now require major improvement works to meet the growing demand, especially from heavy trucking.

64. The Lao-China Railway will provide Lao PDR with opportunities to transform itself from a landlocked to land-linked country. The government has endorsed this policy aspiration by focusing on three main policy priorities: (i) improving regional connectivity to support regional integration; (ii) enhancing the quality of inter-city connectivity to support economic growth; and (iii) improving rural area connectivity to support poverty alleviation.

65. The railway is expected to increase economic activities in agricultural production, manufacturing, logistics services, and tourism. However, the level of improvement in these sectors is expected to vary across the country. For example, the railway is likely to be key in connecting Lao PDR's hinterland with the rest of the country, especially major urban areas. While the capital of Vientiane is expected to benefit the most from freight and passenger traffic on the railway, there is an opportunity for areas along the corridor to develop value-added activities based on their

available resources. Moreover, the railway has the potential to transform the country's entire transportation network, which would shift some priorities in the transport sector.

66. The completion of the Lao-China railway can potentially relieve some pressure on the current road network. Heavy freight that is currently being transported on roads could instead be transported by rail, as long as roads are connected to the railway, which is on the same alignment as NR13—the center of the country's road network. Without the railway, efforts to control overloading are likely to be unsuccessful, as there are limited alternatives to the current road-based transport network. With the railway, authorities need to ensure the effective enforcement of size, weight, and load limits on the country's roads to transition heavy cargo to the railway.

67. The construction of the railway and the adoption of related reforms are expected to lower transport costs and enhance competitiveness. The road network in 70 percent of the total northern land area is in mountainous areas, where the speed limit is 40 km per hour. This makes it challenging to travel by road and contributes to higher transportation costs, delays in delivering cargo, and higher risk of road accidents. Improving these areas will, however, require more than the construction of the railway. It will also require authorities to increase the efficiency of the trucking industry and establish logistics services along the railway corridor, which will be key to also improving the overall competitiveness of the transport sector.

68. To fully leverage the benefits of the Vientiane-Boten Railway, the country needs to create the necessary supporting infrastructure and an efficient policy environment. Roads and other infrastructure are needed to support and facilitate access to and from the railway. For example, railway stations need to be able to serve both freight and passengers, and there needs to be good road links between the railway and farms, factories, and other industrial assets. Moreover, infrastructure that facilitates access to other transport corridors will be important to connect different parts of the country as well as Lao PDR with neighboring countries. Reforms in the trucking and logistics sectors will also be needed to improve competition in the transport sector, increasing the likelihood that the railway is sufficiently supported and utilized. In areas with tourism potential, multimodal transport modes and local connectivity are key to leverage opportunities posed by the railway. Finally, authorities need to create an efficient regulatory framework for the railway sector to allow companies to use railway services and eventually encourage potential rail operators to compete with the LCRC on the rail network.

3.2 STRENGTHENING KEY CORRIDORS CROSSING THE RAILWAY

69. There are existing transport corridors that cross the Vientiane-Boten Railway. Corridors that cross and/or connect with the railway at different points are the (i) NR3 in the north that connects Lao PDR with Thailand and China; (ii) NR2 that connects the provinces of Xayabouly, Oudomxay, and Phongsaly, as well as the country with the northeastern part of Thailand and the northern part of Vietnam; and (iii) NR13S that connects areas south of Vientiane.

China-Thailand Corridor

70. The trade route between China and Thailand through NR3 crosses the railway at Boten and Nateuy stations (Figure 23). Boten station is located at the border between Lao PDR and China in the province of Luang Namtha. This border can also be crossed by road, and there is already a lot of trucking activities near the border crossing. Road conditions around Boten are poor due to the high volume of heavy truck traffic. While it is expected that Boten station will be a border crossing point for passenger traffic, it remains unclear if cargo will be cleared at Boten or Nateuy station, an important decision yet to be taken by authorities. However, the distance between Boten and Nateuy is approximately only 20 km, which means that logistics activities are expected to be concentrated between these two stations. It would be preferable to have only one large logistics hub in this part of the country rather than two smaller ones that could potentially suffer from limited transport options.

71. Road conditions at both NR3 and NR13 need to be improved to facilitate transport to and from Nateuy and Boten stations. Nateuy station is located close to the junction between NR13 and NR3. Heavy truck traffic has been observed between NR3 and NR13, consisting mainly of Chinese trucks but also Thai and Laotian trucks. Both NR3 and NR13 are in poor road conditions. There are also rubber and paper factories located near Nateuy station. Most trucks on NR3 is transit traffic from the Thai-Lao PDR border to Boten and eventually the province of Yunnan in China. There is potential for further logistics services development that target goods in transit between Thailand and China through Lao PDR, which could generate local employment.

FIGURE 23: CHINA-THAILAND TRANSPORT CORRIDOR



Source: OpenStreetMap.

Thailand-Lao PDR-Vietnam Corridor

72. The Lao-China Railway's Muang Xai station crosses the NR2, which connects with Thailand to the West and Vietnam to the East (Figure 24: Thailand-Lao PDR-Vietnam Corridor). Muang Xai station is situated in the most populated area in the northern part of Lao PDR. While truck traffic is lower in this area compared to the province of Luang Namtha, an investment initiative by a Thai company for smart city could potentially increase traffic in the future. In addition, there is great potential for tourism development in the area that could benefit from the Muang Xai station. Chinese passenger vehicles have been observed in this area, and NR2W between Muang Xai and Nan Province in Thailand is a popular route for tourists. However, NR2W suffers from poor road conditions and needs to be improved.

FIGURE 24: THAILAND-LAO PDR-VIETNAM CORRIDOR



Source: OpenStreetMap.

Vientiane-Nong Khai (Lao PDR-Thailand) Corridor

73. The capital of Vientiane is a gateway to both Thailand and the southern part of Lao PDR. Vientiane station will constitute a major strategic, multi-purpose, and multi-modal connectivity hub. It will be the final station before trains enter Thailand, and cargo will have to be transloaded to the meter gauge at this station. There are also tentative plans to enable transloading at the station in Thanaleng or Nong Khai. Meanwhile, the station in Vientiane is also likely to function as transloading hub for goods originating in, or being destined to, southern parts of Lao PDR and arrive in Vientiane by truck. A number of SEZs exist in the Vientiane area, and efficient links to the railway could attract additional logistics or manufacturing investments. An efficient link between the Lao-China Railway and the Thai meter-gauge network will also be important to allow cargo to reach the port in Laem Chabang.

74. There are also plans to develop the capital of Vientiane as a regional logistics hub. Lao PDR can benefit from increased regional transit trade by promoting the railway or road link between the capital and the port in Laem Chabang in Thailand. Connecting the railway to maritime routes in Thailand could have a dramatic impact on regional trade and increase trade flows between Lao PDR and neighboring countries. This would, however, require not only the railway link but also better transport and supporting infrastructure. A paradigm shift in logistics and related industries would be imperative to position the capital of Vientiane as a logistics hub, which would require the close involvement of the private sector.

75. The Lao-China Railway could potentially compete with not only road transport but air transport as well. The expected reduction in transportation costs because of the railway could eventually make it competitive to ship high-value manufacturing products (i.e., intermediate inputs) by rail. The railway is expected to create new opportunities to attract investment in the Vientiane capital area and beyond, but the level and impact of new investment spending will depend on the development of Lao PDR's road network and the success of investment facilitation measures.

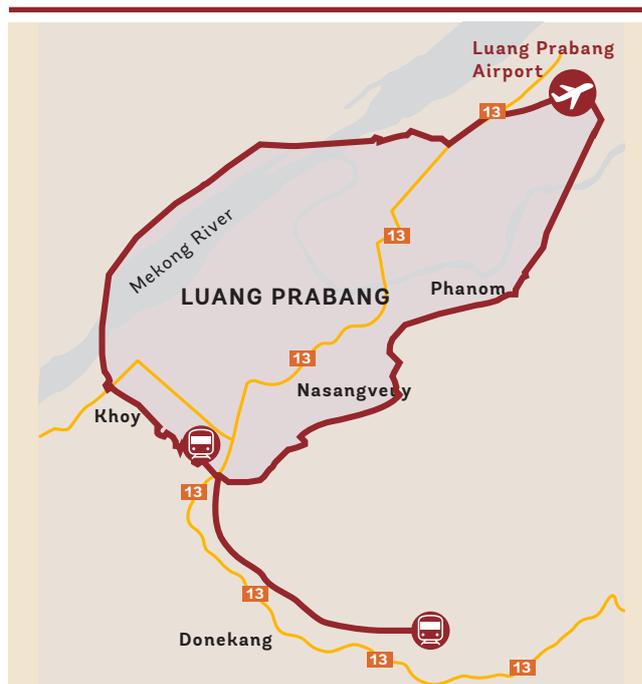
3.3 FACILITATING ACCESS TO TOURISM AREAS

76. While the Vientiane-Boten Railway has the potential to attract more tourists to Lao PDR, more efforts are needed to improve local connectivity and the infrastructure in and around tourist destinations. According to some estimates, the railway is expected to carry more than 1 million cross-border passengers by 2030. However, the railway link alone is likely not enough to attract more tourists. A railway network that suffers from long border delays, lack of interconnectivity, and inadequate transport options to and from tourist sites can deter tourists from traveling to Lao PDR by rail. This section provides an overview of two key destinations in Lao PDR that are situated along the railway: Luang Prabang and Vang Vieng.

Luang Prabang Area

77. With the railway in place, intermodal transport options in Luang Prabang will be important to the integrated development of the tourism industry. Luang Prabang station, which will be serving tourists who visit Luang Prabang city, is located 8 kilometers from the city center. To ensure the station and the city can benefit from an increase in tourist arrivals, authorities need to create road links between the railway station, city center, and airport (Figure 25). Moreover, the public transport system needs to be improved so that it can effectively serve both tourists and the local population.

FIGURE 25: LUANG PRABANG AREA



Source: OpenStreetMap.

Vang Vieng Area

78. Authorities in Vang Vieng need to improve public transport services and create transport linkages with the Vang Vieng station to leverage the benefits of an expected increase in tourists. While the area has experienced a rapid increase in tourism in recent years, there is inadequate local infrastructure to serve the growing number of tourists. Even though the railway station is located close to NR13 and the city center, connecting infrastructure needs to be improved. In addition, the city needs to develop its public transport network such as creating a bus service that connects the railway station with important tourist areas. The expected completion of the expressway between Vientiane capital and Vang Vieng by the end of 2021 may affect the number of tourists that will use the railway between Vientiane and Vangvieng.

Vientiane and Other Provinces

79. Both the tourism industry and agricultural production in Vientiane and nearby provinces could benefit from the Lao-China Railway. The four southern districts of Xayabouly province and Thailand's Lei province all produce paddy, maize, and starchy roots, among other agricultural products. There are also several eco-tourism sites in nearby provinces. There is great potential to use the railway, which connects to NR11, to increase agricultural exports from these areas as well as to connect tourists to tourism sites.

80. The completion of the Vientiane-Boten Railway will not be sufficient to leverage the economic benefits from the expanded railway network. The railway needs to be complemented by supplementary investments in supporting sectors and infrastructure. For example, authorities need to: (i) facilitate the private-sector-led development of logistics hubs; (ii) ensure there are efficient distribution and collection centers to serve people in production and consumption areas via existing infrastructure to the railway network; (iii) promote value-added activities in industrial zones, preferably in SEZs that are effectively managed and are subject to accommodating rules and regulations; (iv) implement investment facilitation measures in the tourism sector, including reducing restrictions for hotel buildings and permits; and (v) improve regulation in the services sector.

3.4 MANAGING THE TRANSPORT NETWORK UNDER FUNDING CONSTRAINTS

81. Lao PDR's public investment spending is heavily reliant on foreign official development assistance (ODA).

The government's public investment project plan for 2018 comprised 229 infrastructure projects worth LAK 7,013 billion (US\$814 million). The value of ODA-funded projects in 2018 totaled an additional LAK 8,790 billion (US\$ 1.02 billion), of which LAK 2,658 billion was budgeted for 2018, including LAK 838 billion for the Lao-China Railway investment's share and other capital and administrative costs. Excluding funding for the railway, funding from ODA for public investments increased by about 10 percent per annum over the last three years, while government funding³³ increased by an average of 35 percent per annum in the same period.

82. Therefore, the funding of the existing public infrastructure program looks increasingly unsustainable.

The MPWT regular investment budget is only LAK 127 billion (which includes NT2 payments), while arrears payments are estimated at LAK 4,000 billion. Moreover, the number of debt projects (i.e., projects that are completed but not paid for) increased from twenty-six in 2016 to fifty in 2018. As a result, Lao PDR's outstanding debt was approximately LAK 815 billion in 2018, which represents an increase of nearly 200 percent since 2015.

83. Similarly, there is insufficient funding for road maintenance, despite an increasing Road Fund (Figure 26: The Road Fund compared to Road Maintenance Needs, 2018). The Road Fund has grown from LAK 370 billion in 2014 to around LAK 660 billion in 2018. However, the Department of Planning and Cooperation (DPC) at the MPWT estimates that the fund only met about 11 percent of commitments made in 2018, partly due to the estimated fourfold increase in the cost of repairing damaged roads because of flooding in 2016-18.

84. The government has implemented measures to address financial over-commitment in transport infrastructure spending, including:

- Increasing funding available in the Road Fund by resolving debt with private contractors;
- Introducing decrees and laws designed to prohibit public departments from carrying out unapproved projects or unlawfully creating public debt;

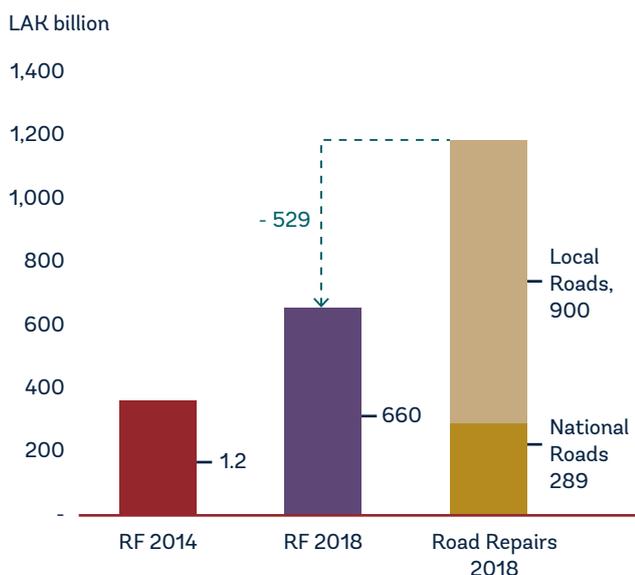
33 Includes funds from the Road Fund, payment funds, and the regular investment fund, but it excludes funds for the Lao-China Railway.

- Prioritizing debt payments, with at least 40 percent of the public budget assigned to paying off debt and only 10-15 percent available for new projects; and
- Increasing the government’s reliance on ODA funding.

85. However, authorities need to do more to improve the financial management of its public infrastructure projects in the transport sector, including:

- Prioritizing projects based on a criticality analysis of needs and greater use of differential standards for roads based on their function and traffic;
- Implementing cost-efficiency measures to enhance its life cycle, including the use of output-based performance contracts for road maintenance;
- Enforcing maximum axle loads to reduce the rate of deterioration of roads;
- Increasing the participation of the private sector in promoting, funding, and operating transport infrastructure; and
- Incorporating climate resilience and road safety measures into road improvement and maintenance planning.

FIGURE 26: THE ROAD FUND COMPARED TO ROAD MAINTENANCE NEEDS, 2018



Source: MPWT.

86. To maximize the economic impact of the Lao-China Railway, authorities need to prioritize feeder roads to railway stations and transshipment points. For example, feeder roads are needed between railway stations and tourism sites as well as areas of agricultural production and mineral extraction. Last-mile access for agricultural production, along with transshipment and logistics terminals, will enable the consolidation of goods from surrounding areas. The government should also involve the private sector in efforts to improve roads and develop logistics terminals. This is particularly relevant to the development of the 3,000 hectares identified in the railway concession and for logistics parks.

87. The railway will become an integral part of Lao PDR’s transport network and needs to be efficiently managed alongside the country’s roads. The management of train operations involves not only in-country activities but also cross-border arrangements. For example, freight containers will need to switch between trains at the border with Thailand because of differences in rail gauge between the two countries. Passengers may also have to switch trains at that border, as the two train systems may be using different types of trains with different maximum speeds.

3.5 KEY POLICY RECOMMENDATIONS

88. Further information and in-depth studies are needed to evaluate the details and timetable for the recommendations provided in this section. For example, not all recommendations can be implemented at once, and an analysis of costs and benefits should inform prioritization efforts. It would also be informative to better understand how and to what degree each of the transport corridors can connect to Lao PDR’s production areas.

Recommendation 1: Improve Infrastructure Connectivity

89. Authorities need to complement the railway with multi-modal transport options to successfully transition Lao PDR from a landlocked to a land-linked country. A combination of transport modes will increase the cost-effectiveness of transport services along the Lao-China Railway corridor. Efficient transshipment and smooth transfers are key to keep overall transport costs low, reduce delays, and uphold established transportation standards.

90. Road linkages for both freight and passengers at key railway stations will be important for the railway to reach its full potential. While most of the roads important to

the railway already exist, they suffer from poor conditions and need to be improved. As resources for road development are limited, authorities should prioritize road links that connect the key railway stations of Boten, Nateuy, Luang Prabang, Vang Vieng, Muang Xay, and Vientiane.

91. The Boten and Nateuy stations are important for the country's freight traffic. Some logistics activities already exist in the Boten area, and a freight station is planned at the Nateuy station. Therefore, the development of road links between Nateuy, Boten, and NR3, as well as the border with Thailand will accelerate economic growth in the area. In addition, NR2W and NR2E will be important to connect Lao PDR with Thailand and Vietnam. NR13 should also be prioritized, as it provides access to both railway stations.

92. Road development around Luang Prabang, Vang Vieng, and Muang Xay stations are critical to Lao PDR's tourism industry. Each station's road development plan may be different depending on tourist sites and surrounding industries and infrastructure. At Luang Prabang station, the road network needs to provide a seamless connection with the airport and city center. In Vang Vieng, the road development plan should concentrate on improving road conditions and connections with tourist attractions, as the railway station is closed to NR13. Moreover, road development in Muang Xay should focus on linking various natural parks and recreation areas with the railway station. Authorities also need to consider developing an efficient public transport network to ensure that locals as well as tourists benefit from integrated infrastructure development.

FIGURE 27: IMPROVE INFRASTRUCTURE CONNECTIVITY

- Create roads that provide access to Boten and Nateuy stations and logistics facilities.
- Promote multimodal transport modes to support the tourism industry in Luang Prabang, Vang Vieng, and Muang Xai.
- Develop the road network in and around the Vientiane capital area to: (i) link the city's railway station with intermodal facilities for freight transport; and (ii) extend railway access to provinces south of Vientiane.

93. Finally, the station in the capital of Vientiane constitutes the country's multi-purpose transport hub and is vital for traffic going to and from Thailand. The station is central to the country's economic activities, and its facilities need to be carefully designed to handle both freight and passenger traffic and be accessible by all transport service providers. Authorities need to create a comprehensive

transport masterplan for developing the connectivity of the Vientiane capital area and support both tourism and logistics activities. NR13 will remain an important transport link for the city and between the railway and provinces in central and southern parts of the country.

Recommendation 2: Adopt an Integrated Transport Asset Management Approach

94. A successful railway needs access to not only a good road network but also well-managed roads. Some key roads need to be upgraded to regional standards and be more resilient to climate change to handle the expected increase in heavy trucks to and from railway stations. Meanwhile, the government needs to implement overloading control strategies for secondary and other roads to ensure the sustainability of the road network. Effective procedures to maintain existing roads and make them more reliable all year round will also help to reduce the cost of transportation services.

95. The national transport strategy needs to include intermodal transport options. The completion of the railway will likely change transportation patterns, which will have to be reflected in investment plans for improving the existing road network as well as developing multi- and intermodal transport infrastructure. This will require authorities to conduct a demand-based analysis during the planning of infrastructure projects. Moreover, the government should consider transitioning from asset delivery to service delivery in the maintenance and improvement of the country's transport infrastructure, including adopting strategies to ensure competition in the use of infrastructure.

96. The current World Bank's portfolio of transport projects in Lao PDR includes strategies to proactively plan the country's transport sector. The World Bank is working with the MPWT to strategically plan and prioritize investment projects, and this work should be integrated into transport initiatives related to the railway.

FIGURE 28. ADOPT AN INTEGRATED TRANSPORT ASSET MANAGEMENT APPROACH

- Conduct road asset management planning to understand the expected increase and decrease in truck traffic along the railway.
- Implement a proactive road management strategy that includes effective overloading controls.
- Create a transport strategy that focuses on service delivery rather than asset delivery.

Recommendation 3: Implement Plans and Regulations for the Railway

97. Each railway station needs a connectivity plan, which can range from a convenience of access point-of-view to a framework for logistics and intermodal transport options. An increase in truck traffic around larger stations can potentially disrupt road traffic to and from the railway. To mitigate this, authorities need to implement plans that include the use of intermodal transport modes and consider logistics routes. Passenger transfer facilities also need to be considered as essential facilities at each station.

98. Authorities need to introduce a regulatory body and framework for the railway as soon as possible. The development of Lao PDR’s railway sector is still at an early stage. Authorities will need to introduce a framework for regulating the railway network and create an independent regulatory body that can protect the interests of the public and consumers. This is especially important when there are natural monopolies. Also, the regulator will need to define the conditions for using the railway network (e.g., by third-party train operators) or connecting to the railway (i.e., by companies that want to build last-mile connectivity to and from their production facilities).

FIGURE 29: IMPLEMENT PLANS AND REGULATIONS FOR THE RAILWAY

- **Ensure that each station have access to well-maintained roads.**
- **Develop logistics and intermodal transport plans for large railway stations.**
- **Introduce an independent railway regulator and an accompanying regulatory framework.**

SUGGESTED NEXT STEPS

99. Analyze the costs and benefits of connecting production areas, including farms, mines, and industries, as well as tourist sites to the railway network. This includes an understanding of how far these areas are from a railway station and the quality of the road network. The study should also evaluate various production centers with logistics support, including distribution and collection centers, and evaluate their potential economic value and the estimated cost of connecting them with the railway. The results of the study would allow the government to prioritize complementary infrastructure investments based on their economic returns.

100. Conduct a passenger demand study. Authorities need to understand what the railway’s expected passenger demand will be, especially regarding domestic passengers. There is currently no survey of local passenger demand, and there is no in-depth study of cross-border passenger demand from China or Thailand. Beyond a better understanding of the general demand for tourism, the government also needs to identify key supply constraints and barriers to private-sector involvement in tourism, including in areas such as Luang Prabang and Vang Vieng.

101. Adopt a regulatory framework for the railway sector. Regulations are important to allow authorities to oversee and guide railway operators, especially since the rail network will in principle be open to private operators. Access to the rail infrastructure will have to be well regulated to prevent the owner or primary operator to restrict access and competition. A clear regulatory framework will also help the government in its negotiations with neighboring countries. Capacity building for the railway authority will also be needed to increase the effectiveness of regulations.



ASSESSMENT OF LOGISTICS DEVELOPMENT CHALLENGES



KEY MESSAGES

- Logistics costs and prices are high in Lao PDR, and the variety, quality, and sophistication of logistics services is low. Many value-added services such as integrated door-to-door multimodal transport, container leasing, inventory management, or cold chain services are either not available at all or only to a limited degree, and transport prices per tonne-kilometer are about twice as much as in other ASEAN member states.
- The introduction of the railway as a new mode of transport can fundamentally alter the economic geography and the logistics environment in the country, but the success of the railway will depend on the availability of efficient and modern logistics services, most of which are currently missing. Such services will need to reliably and cost-effectively link the economy to the railway, making the rail corridor attractive for freight transport in and out of Lao PDR. This is especially important for the railway to attract cargo flows from other modes of transport.
- Modern logistics services depend on a capacity to transport unitized cargo efficiently and with least possible risk. Multimodal transport involves the transportation of goods through various modes of transport such as ship, rail, truck, or air, and it usually includes value-added services such as inventory management or cold chain services. The availability of multimodal transport services depends on access to existing infrastructure and the organization of the logistics service industry, which ultimately relies on sufficient competition in the sector.
- Poor logistics outcomes in Lao PDR are primarily the result of limited competition in the logistics market. Barriers to entry, restrictions to ownership, and a complex and unevenly applied business environment result in small operators with limited international expertise that focus on traditional logistics services.
- Competition is essential for healthy private-sector-led development and the provision of efficient and high-quality logistics services. It encourages innovation, attracts new technology and knowledge, and ensures that consumers have access to efficiently priced, high-quality services.
- To ensure the success of the rail corridor and allow it to attract sufficient cargo, the country's regulatory framework will have to be revised to remove barriers to entry, foster competition, and ensure public access to key logistics infrastructure. Addressing existing anti-competitive practices in the transport sector through the Lao Competition Authority could further increase competition.

4.1 LOGISTICS AND TRANSPORT INFRASTRUCTURE: DEVELOPING INLAND CLEARANCE DEPOTS

102. An efficient and well-functioning logistics industry is critical for using the Lao-China Railway to successfully integrate the country's economy into regional and global markets.³⁴ The availability of high-quality and competitively priced logistics services depends on competition among service providers and open access to infrastructure. Efficient logistics services are essential for the overall competitiveness of Lao PDR, as it allows for the efficient import of inputs and consumer goods, domestic distribution of products, and export of final products.

103. However, Lao PDR's logistics and transport infrastructure continue to suffer from poor quality. The necessary infrastructure to handle containers is limited and multimodal transport services are currently non-existent. To take advantage of the new railway, authorities need to create an infrastructure capable of handling containers (Table 13). In addition, the country needs to remove existing institutional constraints to the development of the logistics sector if it is to benefit from multimodal transport options and other value-added logistics services.

TABLE 13: MINIMUM INFRASTRUCTURE NEEDED TO HANDLE CONTAINERS IN LAO PDR

INLAND TRANSPORT	
ROADS	*Axle Loading
	*Bridges & Tunnels
RAIL	*Rolling Stock
	*Motive Power
	*Bridges & Tunnels
	*Cranes & Stacking Areas
INLAND DESTINATION ³⁵	
INLAND CLEARANCE DEPOT	*Container Handling Equipment
	*Stacking Areas
	*Road, Rail & Inland Waterway access

Source: UNCTAD 1990.

104. While the country needs to develop its logistics infrastructure, the success of the railway will also depend on the availability of efficient logistics services.

The development of the railway sector will expand hard infrastructure, which is essential for the logistics industry, and authorities need to ensure open access to infrastructure such as railheads. In addition, the availability of high-quality and affordable logistics services will depend on not only the physical infrastructure, such as roads or railways, but also the level of competition in the national logistics market and the capability of existing local providers to offer rail-related logistics services such as multimodal transport.³⁶

105. Policymakers need to implement reforms to provide an enabling environment for modern logistics services.

The most urgent reforms involve efforts to avoid overregulation, simplify business registration processes, and standardize the implementation and interpretation of laws and regulations.

106. Lao PDR is a landlocked country, which means that inland clearance depots (ICD), also known as dry or inland ports, are critical to improving the logistics industry. The function of an ICD is to provide an inland destination for:

(1) customs clearance of export and import goods, although the implementation of trade facilitation reforms and better risk management will limit the role of ICDs; (2) warehouse facilities, including cold and reefer storage; (3) container and cargo handling; (4) cargo stuffing and un-stuffing services; (5) efficient communication facilities; (6) road haulage brokerage; (7) consignment consolidation services; and (8) cargo tracking services. This list is not exhaustive and is dependent on the services required by cargo owners.

107. ICDs provide services for the handling and temporary storage of containers and general and/or bulk cargoes that enter or leave dry ports by any mode of transport, including roads, railways, inland waterways, and airports.³⁷ While planned trade facilitation reforms will limit the role of ICDs in the customs clearance process, dry ports still need customs-related services such as essential inspections for the export and import of cargo. There are only a limited number of ICDs in Lao PDR that provide similar services.

108. The management of containerization and value-added logistics services is important for the integration of transport chains. In Lao PDR, the Vientiane-Boten Railway needs to have the necessary capacity to handle containers and dedicated locations at key train stations for freight access with adequate freight handling equipment. ICDs, which have

³⁴ Banomyong et al. 2008.

³⁵ Inland clearance depots are commonly referred to as "destinations" and are often the point to which goods are consigned under a multimodal transport document, although they are usually a collection point before the final movement to actual customers' premises.

³⁶ Dawson and Barwell 1993.

³⁷ UNESCAP 2010.

become key nodes in the provision of door-to-door services,³⁸ will provide an intermodal transfer capability between road and rail transport, as export and import customs procedures can be arranged at site (since the majority of the freight flows would be international). These services will benefit Lao PDR's cargo owners, as they will be able to handle the import and export clearance process without having to be located at any physical land border. Cargo owners will also have access to containers for both full container load (FCL) and less than container load (LCL).

109. The Lao-China Railway will need at least two ICDs at Boten or Nateuy and Vientiane, although trade facilitation reforms that significantly reduce inspection rates will limit the need for ICDs in the customs clearance process. Trade facilitation reforms are important to reduce the need for additional border-related infrastructure, in line with good international practice. ICDs at other stations can be added but their success will depend on freight traffic flow (which is important to achieve economies of scale) and the requirements of cargo owners in these specific areas.

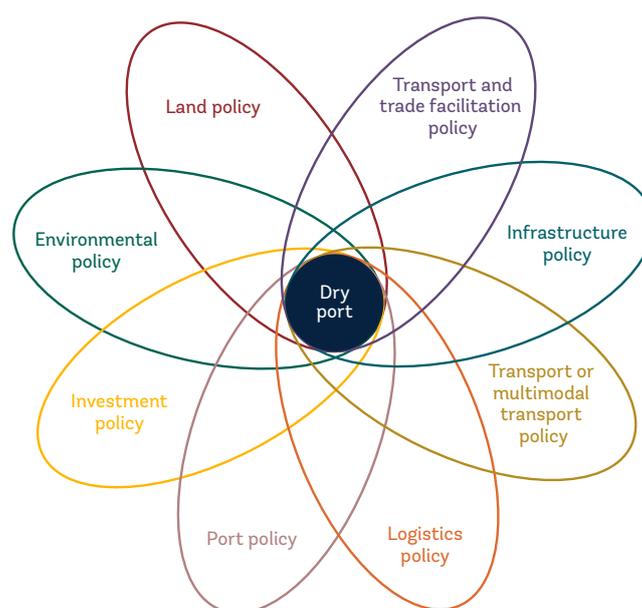
110. ICDs should be connected to the railway line to allow intermodal capability between road and rail transport. This would enable the provision of multimodal transport and value-added logistics services, enabling door-to-door multimodal transport and connectivity between the road network and the railway. To benefit from other auxiliary services, dedicated

locations for the loading and unloading of freight (i.e., the railheads) should be located within the boundary of the dry port. Moreover, there needs to be public access to the railhead, which will be the point where goods are loaded, unloaded, or transferred from the railway to other modes of transport. The railhead can be located near main stations or at key intersections of the railway and highways near industrial and agricultural centers.

111. Public access to the railhead can be guaranteed if ICDs are established as common-user facilities. If an ICD is set up as a common-user facility, there is open access for multiple users, and it must be able to accommodate a number of different firms. Firms that operate in ICDs can have their own management and workforce and are accountable for their own services. However, it is unclear if there can be multiple operators in Lao PDR's ICDs, as ICD concessions have in the past only been awarded to single firms.

112. Allowing competition between multiple operators at each ICD could increase the efficiency of the country's dry ports. The government should, therefore, clarify the operating modalities of ICDs. Currently, ICD concessionaires physically build the infrastructure, in addition to managing the operations, which means that they have to recover their investment and prefer not to have other operators competing in the facility they built. The size of the ICD may be a factor in allowing multiple operators at the same site.

FIGURE 30: POLICIES AND REGULATIONS RELATED TO DRY PORTS



Source: Hanaoka & Regmi 2011

38 Rodrigue et al. 2010.

113. Sector-specific policies and individual ministries can influence the establishment of dry ports and their related public services (Figure 30). Policies may also differ depending on what level of government (central, provincial, or local) is involved, which means that coordination between different public agencies is essential. The government should consider designating a lead or coordinating agency that can provide potential developers of dry ports with one-stop services and advice related to government services, including all necessary government approvals during planning and operation. In Lao PDR, the one-stop shop should be under the authority of the MPWT, with representation from all public agencies involved in the regulation, development, and/or operation of dry ports.³⁹ This agency should also closely collaborate with the National Trade Facilitation Committee (NTFC).

114. Institutional uncertainties related to the development of dry ports in Lao PDR remain, as there is no public mechanism to coordinate ICD-related policies. While draft legislation is currently being considered by the National Assembly, it will be important to implement trade facilitation reforms and review existing regulations to eliminate the comprehensive inspection of cargo at land borders and allow full clearance procedures to be carried out at origin and destination dry ports. A national committee should further review issues related to: (a) taxation and other financial measures, including tax holidays or waivers, concessional land rent, and public utility rates; (b) the development of priority transport infrastructure that connect to dry ports, including, where relevant, the provision of investment incentives for private developers of dry ports; (c) the incorporation of dry ports in SEZs (as these areas could generate high volumes of cargo handling for dry ports, and access to dry ports could make SEZs more attractive); and (d) regulatory measures to encourage sustainable transport connections to dry ports, including the regulation of truck weights and dimensions to discourage the use of environmentally damaging vehicles.

115. The development of ICDs, which is a part of the country's national logistics strategy, needs to be complemented by comprehensive trade facilitation reforms. While the legal regime for ICDs has not yet been approved, a number of dry ports have been earmarked in the

logistics strategy to be developed alongside key transport corridors. An inland terminal that can be directly linked to a seaport by rail or road is an important component of a multimodal transport strategy, as it can relocate port activities from a foreign coastal transit country to the inland terminal. Such a terminal would also reduce transit times and procedures at land borders, although the implementation of comprehensive trade facilitation reforms would have a greater impact. Land transit times could decrease considerably through less handling and cumbersome procedures, resulting in reduced door-to-door transport costs and less dependence on the transit country's ports and transport industry.

116. Lao PDR's national logistics development plan includes the creation of at least nine ICDs, but three to four dry ports would be sufficient to cover the whole country, especially with complementary reforms that reduce inspection rates and clearance times. Lao PDR has earmarked nine locations for international logistics parks: Huoayxai in Bokeo; Nateuy in Luang Namtha; Xay in Oudomxay; Luang Prabang province; Thanalaeng in Vientiane; Lak Xao in Borikhamxay; Thakhaek in Khammuan; Xeno in Savannakhet; and Vangtao in Champassak. The cities of Nateuy, Xay, Luang Prabang, and Thanaleng are located along the railway, while Huoayxai lies along NR3 that connects Nateuy (and the railway) to Thailand. It may be excessive for Lao PDR to have up to nine ICDs, considering its domestic, international, and transit market in the near term. Limiting the overall number ICDs will increase the volume at remaining ICDs, increasing their economic profitability.

117. There is interest from the private sector to be involved in the development of the country's dry ports through public-private-partnerships (PPPs). In November 2017, the government signed a number of agreements to further support the development of ICDs in Lao PDR. These providers are managing government-owned assets (i.e., land) and will be in a position to benefit from the railway, as they have experience in managing dry ports and will be able to provide value-added services that enable connectivity with other modes of transport and neighboring countries. The success of these local providers will depend on where ICDs are located along the new railway line.

39 There is evidence that such an approach has been applied successfully in a few countries in Asia. [https://www.unescap.org/sites/default/files/E_ESCAP_DPWG\(2\)_4-Regional%20framework-en.pdf](https://www.unescap.org/sites/default/files/E_ESCAP_DPWG(2)_4-Regional%20framework-en.pdf) (accessed April 25, 2019).

4.2 AVAILABILITY OF TRANSPORT LOGISTICS SERVICES IN LAO PDR

118. Multimodal transport involves the use of different modes of transport and logistics activities through a single operator. The operator is responsible for managing and coordinating the entire shipment cycle, ensuring the use of the best routes and the most efficient and cost-effective options. The single operator could be the operator of the railway or the ICD, a local non-asset logistics service provider (i.e., freight forwarder), or a local trucking firm with the necessary capabilities.

119. Lao PDR's freight and logistics market is small, and there is currently no operator that can offer integrated multimodal transport services. The overall market size is expected to reach US\$695 million by 2023. There are three main types of logistics providers in Lao PDR. First, local providers are mostly small and medium-sized enterprises (SMEs) and non-asset-based providers under the Lao International Freight Forwarder Association (LIFFA) umbrella, which only has twenty-four members. These few local freight forwards dominate the country's logistics sector. Second, asset-based providers include those that have received concessions to manage ICDs as well as trucks owners with their own fleet. Finally, joint ventures between domestic and foreign logistics firms make up the third type of logistics provider in Lao PDR. The combination of expertise offered by these three types of providers can be used to provide full logistics services in the country.

4.2.1 NON-ASSET OWNING LOGISTICS SERVICE PROVIDERS

120. While Lao PDR's freight forwarders are better organized than smaller operators,⁴⁰ they operate below international standards. Many are members of LIFFA, which was set up under the MPWT by ministerial decree in 2001. LIFFA currently has around twenty-four members, composed of freight forwarders, trucking companies, and customs brokers. The majority of members are based in Vientiane, where most of the country's transit traffic is currently concentrated. They enter into contracts with the Lao Customs Department and offer transit guarantees for vehicles and cargo transiting through Lao PDR. Trucking associations at district levels have existed since the late 1980s, and many of them act as freight brokers as well as schedule coordinators between members. The MPWT is trying to develop a national association of trucking operators, which could potentially come under the umbrella of LIFFA. For

transit freight under the Greater Mekong Subregion's (GMS) Cross-Border Transport Facilitation Agreement (CBTA), the MPWT provides guarantees, to the Lao Customs Department, in the event of a default by one of LIFFA's members on a transit operation. The majority of LIFFA's members are SMEs.

121. LIFFA members are the strongest and most influential members of the Lao transport sector. They work with cargo owners/customers (domestic as well as international) and concentrate on operational logistics such as:

- inbound clearance of containerized cargo;
- imports, including the clearance and handling of general and regional cargo;
- onsite project cargo clearance, unloading, and handling;
- the provision of cranes and equipment for project cargo;
- air and sea freight exports; and
- transit customs clearance for domestic trucks in EWEC and foreign trucks in the North South Economic Corridor (NSEC).

122. Members of LIFFA usually handle transit customs clearance, container swapping, and, where required, manual transshipment, although they are not involved in freight trucking. The institutional environment for exports, imports, and transit in Lao PDR is challenging, resulting in high fees for facilitation services by local service providers. Since there is a limited number of local logistics service providers, the members of LIFFA have a dominant market position. They operate with minimal transport assets and often subcontract trucking work to operators that own their vehicle fleet. The majority of subcontractors are small and family-owned business with a limited number of trucks, and they lack bargaining power when dealing with LIFFA members. They also tend to overload their vehicles in order to reduce costs and increase productivity.

123. Not all LIFFA members have the capability to provide project cargo or trade consultancy services, as these services require specific skills not always available in the country. Acting as agents to external international freight forwarders, the main source of revenue for local providers come from domestic transport and customs brokerage services. Equipped with local knowledge and an in-depth understanding of Lao PDR's institutional setup, local providers are able to provide competitive value-added services, albeit as subcontractors to international logistics providers. However,

⁴⁰ Based on interviews with private service operators.

local providers do not currently have the expertise to provide railway-related logistics services, which is a challenge since the scheduled completion date for the Vientiane-Boten Railway is December 2021.

4.2.2 ASSET-OWNING LOGISTICS SERVICE PROVIDERS

124. Asset-owning logistics service providers' assets can be their truck fleet or government-owned assets under a concession agreement (e.g., dry ports). The challenge for these providers is similar to that of non-asset owning providers in terms of how they can provide support services for the Lao-China Railway, connect roads with the railway, and provide multimodal transport.

125. Trucking plays an important role in connecting different types of transport modes. However, the capability of truck operators in Lao PDR is less than that of local freight forwarders. For example, a study by Ksoll (2018) finds low levels of productivity in the country's trucking industry, which consists of a dozen large companies (with a fleet size of more than fifty trucks) and many small companies (owner-operators or companies with less than five trucks), as well as many micro firms working in the informal sector. The study also finds that the average truck is driven a relatively short distance of around 55,000 km each year. Truck operators could be involved in rail-related multimodal transport services but only under the instruction of freight forwarders that control the door-to-door movement of containers. According to Apthorp et al. (2014), asset-owning truck operators can be separated into two subgroups:

- 1) **General haulers:** These are companies without any specialization that operate in the open (spot) market. They usually work on shipment-by-shipment contracts, and they often take second-hand work or operate under the control of a freight forwarder. These firms tend to be SMEs.
- 2) **Owner-operators:** These companies usually operate in the informal sector. Their trucks are for hire at various truck gates around the country, and they often operate on specific routes with a fixed customer base. However, these operators tend to have little respect for laws and regulations and often overload their trucks.

126. Companies that obtain concessions from the government to operate dry ports and provide cross-border transit services are also considered asset-owning logistics service providers. Lao PDR's first dry port was established in October 2017 and is located in Savannakhet province. It is strategically positioned along the GMS EWEC. However, there is no rail link at this location, and the ICD only acts as an inland terminal, with onsite customs clearance along the EWEC serving the needs of the Savan-Seno SEZ.

127. The Lao International ICD Co., Ltd, which was established at Boten in November 2017, is expected to deliver intermodal transfers and was to start operations by the end of 2019. The company was established through a PPP agreement between the Logistics State Enterprise (which holds 10 percent of the investment share) and TZ ICD Lao-China (which owns 90 percent). It is located on 22.3 hectares at the Boten international border crossing in Luang Namtha province next to the railway on the Chinese border. The two companies agreed to a twenty-eight-year concession period from 2018 to 2045, with a possible extension. Facilities and equipment for intermodal transfers have been earmarked, and the ICD is expected to contain warehouses for cross-border e-commerce. The Chinese partner is expected to transfer knowledge related to rail logistics operations. Due to its close proximity to the railway in Boten and the expertise offered by the Chinese partner, this ICD has the strongest potential to offer value-added logistics services for rail freight operations.

128. It remains unclear whether the first railway stop for cargo will be in Nateuy, as originally stated by the government, or in Boten, as the new investments and information suggest. The creation of an ICD linked to the railway at Boten would make it less feasible to establish a dry port in Nateuy, as the distance between both locations is only around 20 km. Moreover, the Boten ICD is already in operation, while the one in Nateuy still needs to be constructed.

129. During the second week of April 2019, a memorandum of understanding was also signed to conduct a feasibility study for the investment and development of a dry port in Thanaleng and a logistics park in Vientiane. Sitthi Logistics Lao, a subsidiary of the Petroleum Trading Lao Public Company, is involved in the initiative together with the Government of Lao PDR. In Lao PDR, the firm that is allowed to conduct a feasibility study for an ICD will usually obtain the concession for its operations. Before crossing into Thailand, the last stop of the Lao-China Railway will be in Thanaleng. The ICD located here would link the railway to parts of southern Thailand by road, including ports. It would also be the location where cargo can be transhipped from standard-gauge wagons to the Thai railway's meter gauge, allowing them to run on the Thai cargo rail network before the completion of the new Thai rail network and a decision as

to whether cargo trains will run on the new or old network in Thailand. The upcoming decisions regarding the location of the cargo hub(s)⁴¹ will have important implications for the scale and efficiency of the country's transport hub(s).

130. The operators at the ICD at Boten and the dry port earmarked for Thanaleng are likely to be the most prepared local logistics service providers when the railway is completed. They will have the necessary capability to facilitate intermodal transfers between the railway and the road network, and they will be able to provide door-to-door transport to 3rd countries and other value-added logistics services such as packaging or labelling.

4.2.3 JOINT VENTURES WITH FOREIGN LOGISTICS SERVICE PROVIDERS

131. Joint ventures between local and foreign logistics service providers focus on providing international integrated logistics services on par with global standards. Restrictions on ownership only apply to international operators, and joint-venture arrangements may become more attractive when the volume of imports and exports increase as a result of the railway. However, the current complexity of joint ventures has resulted in international partners outsourcing domestic operations to established partners, effectively limiting competitive pressure in the market.

132. In 2013, Lao Nissin SMT was established to provide cross-border transit services along EWEC. The aim was to have a logistics service provider that was able to offer door-to-door road transport services between Thailand and Vietnam via Lao PDR without having to transship trucks along the way. Lao Nissin SMT's trucking logistics, which was based on existing Japanese logistics service standards, included:

- door-to-door services with the use of single trucks with no transshipment;
- the use of 45' high-cube containers;
- regular daily bi-directional runs between Bangkok and Hanoi;
- just-in-time delivery of international logistics; and
- safe service and accident prevention through regular inspections and maintenance by Nissin.

133. Logistics service providers that manage government-owned assets and are involved in the operations and development of ICDs are likely the most prepared to offer multimodal transport options that are integrated with rail logistics services. Some of the country's ICDs are already located along the railway line and will likely be the first to offer integrated door-to-door logistics services in Lao PDR once the railway is completed.

4.3 THE CHANGING REQUIREMENTS OF A RAIL-LINKED ECONOMY

134. Developing multimodal transport in Lao PDR will require access to new infrastructure⁴² that links the road network and the railway. This will require the establishment of other logistics-related services such as warehousing, domestic distribution, and dry ports. The development of logistics parks and other similar facilities may also be needed. However, it is critical that each train station and other related logistics nodes have intermodal transfer capabilities. Moreover, public access to railheads must be guaranteed with a transparent fee schedule for services. Efficient competition for logistic services will allow the integrated and cost-effective delivery of goods with minimal delays, benefitting importers, exporters, and transit companies.

135. In addition, efficient multimodal transport will require a number of integrated value-added logistics services, many of which are currently not provided by private operators in Lao PDR. For example, the country's logistics providers are unable to provide intermodal transfer, container leasing, inbound management and distribution, or inventory management (Table 14). It is important to ensure that all types of freight and value-added logistics services are available in Lao PDR so the country can reap the full benefits from the Vientiane-Boten Railway. This would require increased competition in the logistics sector to support and incentivize the growth of high-quality private logistics firms.

136. Lao PDR's rail traffic will be part of a multimodal transport system and rely heavily on logistics services. Multimodal transport options and logistics will remain important for the railway in the foreseeable future, as only one main rail line is being constructed, and the construction of the Thai section has yet to begin. Rail traffic will have to rely on logistics companies that can provide cross-docking services to move

⁴¹ There are plans for multiple cargo hubs around Vientiane or one single hub in the capital of Vientiane or Thanaleng station.

⁴² Logistics infrastructure investments can help reduce logistics costs, which would help increase market efficiency (Jacoby 2000). The immediate benefit of logistics infrastructure investments is the fall in unit costs for each type of traffic using the infrastructure in question, multiplied by the amount of traffic. This would represent costs saving for existing traffic and will improve economic performance in various ways (Banister & Berechman 2001). Open access is needed to avoid capture by firms with preferential access.

TABLE 14: MULTIMODAL TRANSPORT AND VALUE-ADDED LOGISTICS SERVICES

Capability	Service	Current Status in Lao PDR
Global integrated supply chains	Integrated door-to-door multimodal transport	Not available
Freight	End-to-end transport solutions	Partial service ^a
	Consolidator	Available
	Intermodal transfer (road/rail/IWT/air)	Not available
	Customs brokerage	Available
	Transit customs	Available
	Freight agency	Available
	Container leasing	Not available
Value-added logistics	Cold chain	Partial service
	Vendor managed inventory	Not available
	Inbound management & distribution	Not available
	Merge in-transit & cross-dock operations	Not available
	Consolidations & finished-goods management	Available
	Configuration & built-to-order management	Not available
	Kitting-to-line operations	Not available
	Order fulfilment & management of purchase orders	Not available
	Material handling	Available
	Packaging	Available
	Inventory management	Not available
	Warehouse management	Available
	Sourcing & supplier management	Not available
Reverse logistics	Partial service	
Cargo insurance	Available	

Note: a: Only for pick up or last-mile delivery.

Source: World Bank.

freight from trucks onto trains. It is unclear if private firms will develop their own rail-sided buildings along the railway corridor. Using local logistics firms for cross-docking services appears to be the most plausible solution.

Types of Equipment Used for Railway Logistics Services

137. For multimodal transport, rail operators will need access to specialized railway cars. The transportation of unitized and/or containerized cargo requires different types of railway cars (Table 15: Types of Railroad Cars Required for Unitized and Containerized Freight). For example, boxcars are often used for large bulk items, well cars are used for containers, and refrigerated boxcars are needed to ship fresh goods such fruits and vegetables (Figure 31).

138. Apart from specialized railway cars, railway infrastructure needs to include necessary container handling equipment at the railheads. There need to be warehouses near the railheads, complete with forklifts to transfer palletized goods. Cold chain facilities are also needed to allow the transport of perishable goods, and the container yard should be sufficiently large to store enough empty containers. Rail-related logistics providers need to have a strong working relationship with rail operators to ensure seamless connectivity between the road network and the railway.

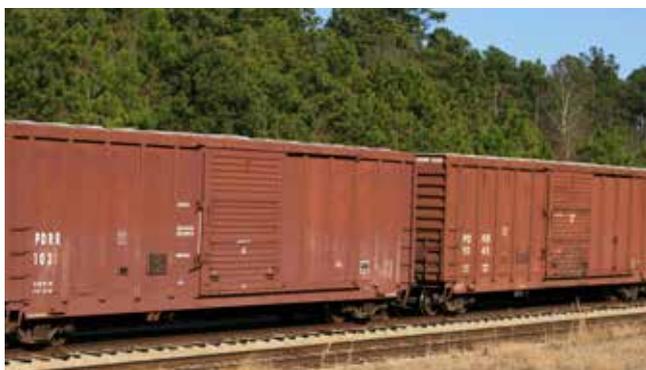
TABLE 15: TYPES OF RAILROAD CARS REQUIRED FOR UNITIZED AND CONTAINERIZED FREIGHT

Boxcar	The boxcar is the most common type of railway car. It is designed to transport crated, palletized, or large bulk items such as paper stock rolls.
Well car	A well car, also known as a double-stack car, stack car, or well wagon, is a type of railroad car designed to carry shipping containers used in multimodal freight transport.
Refrigerated Boxcar	Similar to boxcars, refrigerated boxcars have refrigerated units that can store fresh fruits and vegetables, frozen foods, and other perishable products that need to be temperature controlled.

Source: <https://blog.intekfreight-logistics.com/rail-logistics-services-what-to-know-and-how-to-get-most-value>.

FIGURE 31: RAIL BOX AND WELL CARS

Box Cars



Well Cars



Source: https://commons.wikimedia.org/wiki/File:DTTX_724681_20050529_IL_Rochelle.jpg

4.4 LOGISTICS PERFORMANCE AND OPERATIONAL CHALLENGES

139. Lao PDR’s logistics services suffer from high costs and prices and relatively low quality, which negatively affects the country’s ability to fully benefit from the railway.

Survey results show that logistics costs are twice as high in Lao PDR relative to other ASEAN countries.⁴³ This is an obstacle to both the development of the country’s logistics sector and efforts to attract foreign investment, and high costs have a negative effect on the competitiveness of all Lao firms. High logistics costs are not only the result of infrastructure constraints but also challenges related to trade facilitation, and high logistics prices are due to limited competition in the logistics sector.⁴⁴

140. Domestic logistics service providers are not able to provide the necessary services required for multimodal transport and value-added logistics.

There are many types of logistics services available in Lao PDR, but none are dedicated to supporting rail freight logistics. Local providers offer mainly traditional logistics services, including freight forwarding, customs brokerage, trucking, and warehousing. The competitive advantage of local service providers is related to country-specific import/export processes as well as transit transshipment. Other modern value-added logistics services such as labelling, packaging, tracking and tracing, and even managing vendor inventory are limited, as they require specific expertise and technology not available in the domestic market. Local logistics providers lack skills related to optimization models, quantitative tools for logistics decision-making, and logistics simulation, and they do not have access to enterprise resource planning software, warehouse management systems, or transport management systems.

141. Similarly, there is limited capacity in Lao PDR to offer value-added services to the agriculture, manufacturing, or trading sectors.

While partial cold chain services exist for food produce, many other value-added logistics services are not available, including vendor managed inventory; inbound management and distribution; merge in transit and cross dock operations; configuration and built to order management; kitting-to-line operations; order fulfilment and purchase order management; and inventory and supplier management services. Moreover, reverse logistics as a service only partially exist. The limited service offering is largely due to the absence of demand, as logistics companies mainly focus on traditional logistics services such as transport, warehouse, and customs brokerage services. Still, demand for these services is expected to grow as more opportunities are unlocked with the Vientiane-Boten Railway.

43 Ishida 2017.
44 Ksoll 2018.

142. The domestic logistics market is not only constrained by the available infrastructure but also market conditions, the level of competition, and the institutional framework.

The next two sections will focus on how market conditions and competition as well as the overall institutional framework for logistics and transport hinder the development of logistics in Lao PDR.

4.4.1 MARKET CONDITIONS AND COMPETITION

143. The overall business environment and the level of openness in the economy have an impact on the degree of competition in the private sector. Regulations in Lao PDR's logistics industry are unevenly applied, generating market distortions that result in barriers to entry. Meanwhile, large logistics operators complain that small operators with limited numbers of trucks are able to compete because they pay lower taxes, which is due to them operating in areas with weak tax collection. This creates an unfair advantage relative to operators that are following national laws and regulations. Direct barriers to entry also hamper investments, especially in the logistics sector, which requires not only large investments in physical infrastructure but also in vehicles and facilities to provide value-added services.

144. Instead of one integrated market for transport services, there are a number of small, uncompetitive markets in Lao PDR. This is due to the country's geography and agglomeration effects from the distribution of its population and agricultural production, which limit competition and affect the degree of efficiency in the logistics sector. Effective competition in the market is also limited due to regulatory restrictions.⁴⁵ The logistics market is dominated by the founding members of LIFFA, namely SMT and Lao Freight Forwarder—which used to be state-owned before it was privatized. Limited competition results in higher logistics costs, inefficiencies and delays in service delivery, and higher risk of damage and loss.

145. As a result, there are few incentives for operators to innovate, compete for routes, or break into new markets.

The result is a highly fragmented trucking sector along territorial lines.⁴⁶ While it takes time to improve competition in a country that is undergoing a transition from a centrally planned to market-based economy, more efforts are needed to open markets and allow the entry of foreign firms. The adoption of effectively enforced competition regulations can play an important role in accelerating this process.

146. The Lao Chamber of Commerce points to the small market and collusive behavior as reasons for low competition in the logistics industry. The number and diversity of providers affect market competition, and the level of competition influences prices and the quality of services, which in turn determines the supply. While truck operators argue that the domestic trucking industry is competitive and tariffs are relatively low, barely covering fuel costs, a recent study by Ksoll found that operators have low load factors and high overheads. This is exacerbated by high dependency on imported consumer products, which results in high demand for the transport of imported goods to markets but low demand for return freight from local markets to urban centers (or national growth poles), limited backhauling.

147. Users of local logistics services complain about the high prices for logistics services in the country. Lao PDR's high logistics prices are due to the high transport costs that operators incur compared to those in neighboring countries, which are a by-product of the country's limited infrastructure, complex institutional environment, and small domestic market. However, there are also high mark-ups in Lao PDR's trucking industry, especially in the less-than full truckload segment.

148. A recent study⁴⁷ indicates that transport costs along the country's key trade corridors were between 1.4 and 2.2 times higher than those along corridors in Thailand, depending on whether backload cargo was secured. Ksoll (2018) estimates that operators in Lao PDR incur average transport costs of LAK 489 per tonne-km (equivalent to US\$0.06 per tonne-km). A majority of transport companies operate within a band of LAK 230/tonne-km (US\$0.028) and LAK 575/tonne-km (US\$0.07), of which variable costs make up 62 percent. Small firms tend to be less efficient than their larger counterparts, despite their much smaller overhead costs. The 25 percent cost advantage per tonne-km of informal firms is offset by the economies of scale of larger firms that operate newer and larger trucks. No official data on logistics costs are published in the country. According to local logistics service providers, high costs are due to complicated rules and regulations issued by numerous public agencies involved in the import, export, and transit process.

149. Prices paid by users of transport services are, on average, 37 cents per tonne-km, which represents six times the average cost. High transport prices are mainly observed in the less-than-truckload segment. Ksoll (2018) finds that transport prices in Lao PDR are particularly high when calculated based on actual cargo weight, while prices for full truck loads are lower, with an average of 11 cents per tonne-km. Transport prices vary considerably depending on the

⁴⁵ Ksoll 2018.

⁴⁶ Ksoll 2018.

⁴⁷ Ide-Jetro 2017.

route, with the lowest prices for southern routes between Pakse and Vientiane (4.8 and 11.8 cents/tonne-km for full and partial truckloads, respectively) and the highest prices for northern routes between Luang Prabang and Vientiane (6.9 and 45.9 cents/tonne-km for full and partial truckloads, respectively).

150. Transport prices based on actual cargo weight are much higher than those based on vehicle capacity, implying that transporters do not fully utilize their vehicle carrying capacity. However, downsizing the vehicle fleet is unlikely to reduce average costs of transporters, given the much higher per tonne-km operating costs of smaller vehicles. The underutilization of weight capacity in the transport sector is also attributed to cargo being, on average, more voluminous than heavy in Lao PDR. Truckers in the country operate trucks that are available to them rather than those most suitable to the task. This means that not all vehicle types and sizes operating in the country are ideal for Lao PDR's topography. Truckers tend to use larger vehicles on southern routes that have mostly flat terrain and smaller vehicles on the more mountainous northern routes. Several trucking firms in Lao PDR do not know their actual trucking costs, and many suffer from overall loss when revenue and costs are compared. Nevertheless, transport providers involved in the distribution of consumer goods do benefit from high profit margins, as consumer goods tend to be small in size and weight, with relatively high value. Still, overall profits are likely inflated because many trucking firms overload their trucks to increase productivity.

151. A properly functioning logistics market requires a regulatory environment that facilitates the entry of new operators while incentivizing the professionalization of the industry. This will benefit shippers in terms of increased availability and quality of services as well as more transparent freight rates based on actual market conditions. Truck operators also need to look at possible synergies with the new railway, focusing on first- and last-mile delivery. This will increase vehicle utilization rates, as distance and turnaround time will be shorter when the road network is linked to railway. However, the development of the country's logistics market is hampered by: (i) a shortage of skilled and semi-skilled staff, such as drivers and mechanics; (ii) a lack of awareness of the opportunities offered by participating in international supply chains; and (iii) a lack of training opportunities. Additionally, and partially as a result of the relatively closed market and limited competition, the technical standards of freight operations are often not in line with the requirements of international supply chains, especially in terms of safety, vehicle maintenance and loading, driver performance, and vehicle age. This means that the quality of the Lao PDR's transport fleet is too low to compete with regional competitors.

152. Investments by existing firms in the logistics sector are also hampered by limited access to finance and risk appetite, as firms are uncertain whether additional investments will be sufficient to compete with foreign firms. Personal and family relationships play a large role in Lao PDR's business culture. While trade deals are covered by contracts, it is primarily the relationship between the two parties that holds the deal together, rather than market competition. As a result, firms may not be able to gain new clients based on additional investments only.

153. Lao PDR's transport and logistics industry will have to quickly adapt to the arrival of rail services. It will be nearly impossible for road-based transport to compete with the railway, especially over longer distances. However, linking road and rail services would create new opportunities and is needed to provide door-to-door multimodal transport, which is critical for the survival of the local logistics industry. Local logistics operators need to find ways to attach their services to the railway, but limited local know-how and funding will make this a challenge.

154. Local operators could be supported by involving them in the development of dry ports, although the market is concentrated. There are only a few local players involved in ICD-related projects, which are both capital intensive and dependent on political connections. Project selection processes do not seem to be transparent, with limited information on official requirements. Information on a PPP is usually found through an official press publication when the feasibility study or project has already been awarded. It is noteworthy that two large projects in Boten and Thakhek are handled by the same person representing both investors.

155. Decisions involving multimodal transport and logistics will depend on a set of transport service requirements (e.g., lead-time, reliability, and cost) that providers need to meet. Shippers expect to receive reliable door-to-door services from logistics providers without having to worry about means and modes of transport. Logistics services, as a factor in the production of goods and services, represent a cost to individual businesses. Greater efficiency in the logistics sector can help stimulate greater demand, improving economies of scale. The efficiency of logistics services are dependent on the service provider's capability to provide timely, cost-effective, and accurate services, with minimal risk of loss or damage.⁴⁸

48 Nordas and Piermartini 2004.

4.4.2 INSTITUTIONAL ENVIRONMENT

156. The MPWT is responsible for the national logistics development strategy and regulation in the transport and logistics sector. While this strategy includes the creation of nine ICDs, the government lacks the necessary public resources to fund them. Authorities have, therefore, made it possible for private operators to create feasibility studies to demonstrate the viability of specific dry ports and obtain permission to invest in them. The MPWT is the ministry in charge of regulating transport and logistics activities, except customs brokerage services, which are the responsibility of the Laos Customs Department under the Ministry of Finance (MOF). Moreover, a national transport committee was created by the Prime Minister's Office on May 28, 2018, with the Minister of Public Works and Transport serving as the chairman of the committee. The committee comprises representatives from concerned government agencies, although its scope remains vague.

157. Lao PDR's regulatory framework for business operations in the transport and logistics sector are based on the:

- Law on Land Transportation (amended) No. 24/NA, issued on December 24, 2012;
- Law on Multimodal Transport No. 28/NA, issued on December 18, 2012; and
- Announcement of Regulations on Business Establishment Approval under Public Works and Transport Sector, No. 13779/PWT, dated August 21, 2012.

158. Article 21 of the Law on Land Transportation governs the regulation of transport and logistics activities. It requires all transport and logistics businesses to obtain a transport enterprise license (i.e., business operating license, BOL) and comply with the enterprise law, investment promotion law, and other related laws. A BOL is required for all passenger and freight transportation, freight forwarding, and vehicle rental services, as well as for the operation of passenger and freight transport stations, distribution centers, and logistics zones. License applications are evaluated based on criteria included in the Law on Land Transportation, the Law on Multimodal Transportation, and regulation 13779/PWT. Since February 1, 2019, the Ministry of Industry and Commerce can issue the Enterprise Registration Certificate without approval from the MPWT, but the applicant still needs to apply for a BOL from the MPWT.

Railway Law 62/NA

32 and 33 of the Railway Law prescribe the content of a required feasibility study and stipulate that the final feasibility study must be approved by MPWT and the Ministry of Planning and Investment "to be incorporated into national socioeconomic development plan." The Law covers important areas such as the rail strategy; types of railways; rail operations; trains; train staff; and train operation regulations; rail transport; rights and duties of rail operators and rail business operators; rail tariff and service charges; and governance and inspection of rail operations. However, it does not include provisions on the regulation of railway operations, management of traffic, or the development of ICDs. While articles 118-121 relate to the development of specialized freight facilities, they focus primarily on defining terms and general responsibilities, without outlining how the operations of such facilities should be regulated.

Railway authorities should consider addressing the following areas, in order of importance:

- 1) Traffic planning: Train and staff rosters should be based on a prepared traffic plan, together with actual diagrams for daily operations, and included in an operation management system and made available to the railway operator.
- 2) Operation management system: This system should automatically control and set routes based on trains' traffic plans. In the event of operational disruption, the system will continue to control trains' traffic plans based on revised commands from the central train control room.
- 3) Power supply and infrastructure: There should be centralized management, from a central power-supply control center, of the operational status of the electric substations and station power-supply facilities at railway stations. Power-supply facilities are monitored and controlled based on processed information.
- 4) Operation information for passengers: Information related to train departures and arrivals should be announced and provided on displays. Information should be based on data from the operation management system.
- 5) Operation information for staff: Station, maintenance, and train staff should all be provided with the necessary information regarding the status of train operations and the latest diagrams in real time. Moreover, there needs to be support for the creation of maintenance schedules, and maintenance work should to be carried out safely and efficiently on-site, using portable wireless terminals to keep track of schedules.
- 6) Driver: There needs to be systems that link the operation management system with platform gates.

159. Railway Law 62/NA, enacted in January 2019, is likely overregulating private-sector operations while not clarifying some key regulatory issues. The law requires an operator to submit a feasibility study to the MPWT before obtaining an operating license. While it covers a variety of areas, it does not clarify the regulation of railway operations, management of traffic, or development of ICDs (Box 5). It also raises questions with regard to the role played by the MPWT in the approval of operating licenses for rail businesses, and there is uncertainty around the capacity of the MPWT to properly evaluate feasibility reports.

160. Many of Lao PDR's legal provisions in existing laws are only partially implemented or not implemented at all. There is a risk that the same could happen with the railway law. It is clear from discussions with business owners and MPWT officials that there are gaps in the implementation of legal provisions related to operating licenses. For example, freight forwarders are not issued a specific operating license but rather a general transportation license. Moreover, the 2012 Law on Multimodal Transport does not appear to have been implemented and was likely issued to only comply with the ASEAN framework agreement for multimodal transport.

161. The main implementation regulation (13779/PWT) needs to be updated to ensure consistency with the main law (24/NA) and Lao PDR's commitments to ASEAN. The country has not yet aligned its domestic laws and regulations with the ASEAN Roadmap for the Integration of Logistics Services, which requires further liberalization of the logistics sector. Under this roadmap, ASEAN member states need to open their logistics service sectors to nationals from other member states, up to a ratio of 70 percent by 2013. However, there is no official timeframe for the necessary amendments due to budgetary constraints. While it is important to follow ASEAN commitments to improve the competitiveness of logistics services, it does not appear to be among the government's current priorities.⁴⁹

162. There is an inconsistent application of regulations, leading to a case-by-case approach. This means that MPWT officials do not strictly apply the criteria contained in regulation 13779/PWT when assessing applications for a BOL. Officials claim that this is partly because some of the criteria in regulation 13779 are too strict and cannot be realistically implemented, demonstrating legal overregulation. They argue for the need to revise existing regulations to make it consistent with the Law on Land Transportation, which was passed four months after 13779/PWT was issued. To obtain a BOL, an entrepreneur must demonstrate ownership of at least twenty vehicles, which limits the ability for small entrepreneurs to enter

the logistics sector, and it restricts the establishment of logistics service providers that entirely outsource their operations and only function as intermediaries. Alternatively, some business owners have indicated that they pay officials to overlook this requirement.

163. The tendency to rely on a discretionary case-by-case assessment of applications should be considered in the broader context of Lao PDR's transport and logistics sector. Established operators argue strongly for protection from international competition, particularly in the areas of freight transport and freight forwarding. Any prospective investor will need to submit a business plan with their BOL. MPWT officials have to assess the viability of the business plan and turn down the BOL request if they consider it unrealistic. The process offers opportunities for officials to receive under-the-table fees. This is not in accordance with international best practice, where government regulations focus on ensuring consumer protection, health, and safety, and environmental protection while business decisions are left to the private sector. Since the BOL application also needs to be approved by a committee of related agencies, local interest groups may delay the approval by asking for more documentation or details related to the proposed business plan. Involving existing business operators in the approval of operating licenses for potential competitors presents a clear conflict of interest and is likely to limit competition. The practice of approving business plans is another indication of overregulation.

164. The current regulatory environment makes it challenging for new companies to enter the market for truck and rail operations, as the approval of operating licenses depends on how MPWT officials interpret existing legal provisions. A level playing field and transparent criteria for the issuance of operating licenses are important to ensure sufficient competition, and authorities should remove opportunities for discretionary regulatory decisions. In the current environment, firms that want to obtain an operating license will likely be treated differently depending on how their proposed business plans are interpreted and the extent of their personal network.

165. In addition, foreign participation in Lao PDR's transport and logistics markets is restricted, with minimum capital requirements and maximum ownership thresholds (Table 16: Key Regulations That Affect Business Operations in the Transport and Logistics Sector).⁵⁰ For example, the provision of domestic road transport services requires at least kip 3 billion (around US\$350,000), and operators of international road transport need at least kip 5 billion (around US\$570,000). Moreover, warehousing and storage activities

49 Regulation 13779/PWT (dated August 21, 2012), which was published later than the ASEAN logistics priority integration logistics sector roadmap, did not align with or consider ASEAN commitments.

50 Regulation 13779/PWT.

require roughly kip 1 billion (US\$110,000), and establishing international and cross-border transport stations for goods needs at least kip 10 billion (US\$1.1 million). These minimum capital requirements effectively limit foreign investment and are a burden on local operators, as the amounts are high considering the size of Lao PDR's logistics market. Also, access to finance remains a key constraint on business, as reflected in the recent enterprise survey data. Traditionally, local transport operators used loans from family and friends to establish their business. Today, even though there exist banking and leasing facilities for trucks, these services remain underdeveloped. As a result, US\$300,000 is a substantial capital investment for local investors, especially when no foreign ownership is allowed for domestic road transport. Even if foreign investors are allowed to contribute up to 49 percent of the capital, local investor will struggle to raise the necessary funds.

166. The liberalization of logistics services among ASEAN member states outlined in the priority integration sector roadmap was expected to be completed by 2013, but progress has been mixed (Table 17). Contrary to commitments made, foreign ownership is still limited to 49 percent of businesses involved in international freight, freight forwarding (domestic or international), vehicle rental services, and operating a station service for cargo freight. Nevertheless, there are no foreign investment restrictions for operating taxi services or domestic freight. Still, Lao PDR is not the only country in ASEAN that has not complied with the requirements of allowing ASEAN investors to have up to 70 percent ownership in logistics businesses (Table 18).

167. Lao PDR has been unable to meet its commitments made on transit arrangements because of a lack of capacity. The Government of Lao PDR is party to many bilateral, trilateral, and multilateral agreements on international and transit trade, which have different and at times conflicting operational modalities. For example, Lao PDR is a member of both the ASEAN framework on the facilitation of goods in transit signed in 1998 and the second framework agreement on multimodal transport signed in 2005. However, the country has not yet implemented either of the agreements due to difficulties in negotiating implementation protocols. The third ASEAN initiative is the endorsement of the ASEAN roadmap for the integration of the ASEAN logistics sector in 2007. The objective of the GMS CBTA, signed in 2007, is to facilitate the movement of people, freight, and vehicles within the GMS. There are provisions in the agreement related to the exchange of traffic rights and the number of designated transit licenses per country.

168. Lao PDR risks overregulating its logistics sector. While licensing to protect users and attract professional operators is important, it should not be overregulated by numerous laws that are not applicable, as this creates barriers to entry and hampers the development of the industry. Existing regulation is already challenging, and officials at the MPWT have acknowledged that the sector is changing faster than any new law or regulation in the institutional pipeline. The draft law on truck terminals, for example, set the requirements needed to establish terminals of different sizes, which would be best left to the private sector.

TABLE 16: KEY REGULATIONS THAT AFFECT BUSINESS OPERATIONS IN THE TRANSPORT AND LOGISTICS SECTOR

ISIC	Activity	Minimum Capital (Kip)	Foreign Ownership	Regulations
4923	Freight transport by road	3 billion (US\$ 350,000)	100%	13779/PWT dated 21 August 2012
	a. Domestic freight transport	5 billion (US\$ 570,000)	49%	
	b. International freight transport			
5210	Warehousing & Storage	1 billion (US\$ 110,000)	49%	13779/PWT dated 21 August 2012
5221	Service activities incidental to land transportation	5 billion (US\$ 590,000)	49%	13779/PWT dated 21 August 2012
	a. Domestic goods transport stations	10 billion (US\$ 1,100,000)		
	b. International and cross border goods transport stations			
5229	Other transportation support activities	3 billion (US\$ 350,000)	49%	13779/PWT dated 21 August 2012
	a. Domestic goods transport services			
	b. International goods transport services			

Source: EMC 2016.

TABLE 17: ASEAN LIBERALIZATION TIMELINE

Timeline	2008	2011	2013
Shareholding structure	49 percent foreign ASEAN/ 51 percent domestic	51 percent foreign ASEAN/ 49 percent domestic	70 percent foreign ASEAN/ 30 percent domestic

Source: ASEAN Secretariat.

TABLE 18: ASEAN ROADMAP FOR THE INTEGRATION OF LOGISTICS SERVICES

NO.	MEASURES	IMPLEMENTING BODY		TIMELINE
SPECIFIC ISSUES				
1	Member country shall endeavour to achieve substantial liberalisation of logistics services in the following sectors:⁵¹			
1	Maritime cargo handling services	CPC 741	Coordinating Committee on Services (CCS)	2013
2	Storage & warehousing services	CPC 742	CCS	2013
3	Freight transport agency services	CPC 748	CCS	2013
4	Other auxiliary services ⁵²	CPC 749	CCS	2013
5	Courier services ⁵³	CPC 7512**	CCS	2013
6	Packaging services	CPC 876	CCS	2013
7	Customs clearance services ⁵⁴		CCS and Customs Coordinating Committee (CCC)	2013
Maritime transport services				
8	International Freight Transportation excluding Cabotage	CPC 7212	CCS	2013
Air freight services				
9	Implement ASEAN Multilateral Agreement of the Full Liberalisation of Air Freight Services		Senior Transport Officials Meeting (STOM)	December 2008
Rail freight transport services				
10	International rail freight transport services	CPC 7112	CCS and relevant STOM working gr.	Beginning 2008
Road freight transport services				
11	International road freight transport services	CPC 7213	CCS and relevant STOM working gr.	Beginning 2008

Source: ASEAN Secretariat.

⁵¹ The individual schedule of specific commitments will be negotiated by the Coordinating Committee on Services and relevant negotiating bodies. Flexibility in implementation will be provided for some member countries using the ASEAN minus X Formula.

⁵² Include the following activities: bill auditing; freight brokerage services; freight inspection, weighing, and sampling services; freight receiving and acceptance services; and transportation document preparation services. These services are provided on behalf of cargo owners.

⁵³ Express delivery services will be included in the list of services to be liberalized. These services are recognized to be distinct and separate from postal services.

⁵⁴ Customs clearance services (alternatively customs house brokers' services) include activities that are carried out on behalf of another party as well as customs formalities concerning imports, exports, or the transport of cargo, whether these services are parts of the service provider's main activities or constitute complementary services.

169. New legislation related to logistics services is ambiguous and creates uncertainties in the business community. For example, a draft law on ICDs and truck terminals does not specifically use the term ICD, likely creating confusion about their role. ICDs are also commonly referred to as dry ports. To function as dry ports conceptually, ICDs therefore would require a specific customs status. However, the draft law does not include a special customs status for ICDs, creating additional uncertainty regarding the status and function of ICDs. In other countries such as Thailand, the legal status of ICDs is set by the customs department and not the related ministry. Existing ICDs in Lao PDR have five-year-contract terms, while the draft law only considers three-year-contract terms.

4.5 KEY POLICY RECOMMENDATIONS

170. Lao PDR needs to improve its logistics services to fully benefit from the Lao-China Railway, which will require increased competition and international linkages, public access to infrastructure, and better regulations. The country's logistics sector is fragmented, and local service providers do not have the capability or expertise to provide rail-related value-added logistics services. The market is dominated by a small group of operators, with negative effects on competition and innovation. The competitive advantage of local service providers is in facilitating export, import, and transit processes, as they are familiar with the complex local institutional context. Lao PDR's logistics companies are not active in transit trade, which is expected to grow with the completion of the railway. To improve the logistics market, authorities need to address barriers to efficient competition in the market or allow for the entry of foreign firms that can contribute know-how and link domestic firms to regional and global supply chains. The government will also have to ensure public access to key infrastructure, link roads and rail transport, and adopt regulations that would allow a more efficient functioning of the logistics sector.

Recommendation 1: Encourage Effective Competition in the Logistics Sector

171. To facilitate the entry of foreign firms, existing laws and regulations need to be simplified. For example, regulation 13779/PWT needs to be amended. Simplification must be accompanied by increased transparency and predictability in implementation efforts. Case-by-case implementation should be eliminated. Instead, implementation measures should follow published standard operating procedures, with time-definite key performance indicators. In particular, efforts to simplify the regulatory framework should include clarifying the process for

BOLs and eliminating the need for MPWT officials to evaluate feasibility studies. Additionally, the MPWT should publicize their standard operating procedures and guarantee a level of service for the approval of licenses, including making actual issuance data public. Given that the financial feasibility of firms applying for BOLs falls outside the expertise of MPWT staff, there is little value in the ministry reviewing feasibility studies prepared by investors that are assuming the financial risk. Moreover, the reliability of service is as important as transparency, and BOLs need to be delivered and renewed on time, likely requiring a change in MPWT processes.

FIGURE 32: ENCOURAGE EFFECTIVE COMPETITION IN THE LOGISTICS SECTOR

- Facilitate the entry of new firms by amending regulation 13779/PWT, dated August 21, 2012, including:
 - eliminating ownership restrictions in the logistics sector;
 - eliminating the requirement for business proposal/feasibility study; and
 - making the licensing process more streamlined and predictable.
- Publicize data on the approval of BOLs and guarantee a level of service by adopting standard operating procedures, including clarifying the legal status and operating requirements for multimodal transport operators.
- Investigate the degree of anti-competitive practices in the logistics sector.
- Establish transparent and predictable standard operating procedures for awarding logistics facility concessions.

Source: <https://blog.intekfreight-logistics.com/rail-logistics-services-what-to-know-and-how-to-get-most-value>.

172. In addition, Lao PDR needs to align ownership restrictions for international transport operators with ASEAN commitments. Under regulation 13779/PWT, foreign investors are only not allowed to own more than 49 percent of the shares in businesses involved in international freight transport, warehousing and storage, and service activities related to land transportation and other support activities, including logistics. Authorities should consider aligning regulation 13779/PWT with ASEAN commitments and allow 70 percent foreign ownership. This would, however, create discriminatory barriers to non-ASEAN operators that may be more efficient. Therefore, authorities should open up the logistics sector to all foreign investors and remove all shareholding limitations.

173. An assessment of whether anti-competitive behavior affects market outcomes could inform efforts by the competition authority to foster competition. Lao PDR's competition authority was fully established in early 2019, following the adoption of the Competition Law in 2015 and additional regulations in 2018. To ensure competitive outcomes in the transport sector, competition authorities could perform an assessment of competition in the logistics sector. This would complement existing efforts to facilitate the entry of new firms by addressing ownership restrictions and simplifying regulations.

174. To facilitate the entry and improve the operations of multimodal transport operators, the MPWT needs to clarify their legal status and registration and licensing process. Multimodal transport in Lao PDR is based on the 2005 ASEAN Framework Agreement for Multimodal Transport with a 2012 national law on multimodal transport. However, the country's current multimodal transport legislation is lacking details related to the modalities for multimodal transport operators' registration, of Liability insurance coverage, a precondition for registration, is currently not available in Lao PDR. Efforts to facilitate access to such insurance services by potential operators (possibly from other countries) would therefore be important in supporting the development of multimodal transport operators in Lao PDR.

Recommendation 2: Ensure Public Access to Railheads and Other Rail Infrastructure

175. Public access to railheads must be guaranteed, with a transparent fee schedule for services (Figure 33). Public access to railheads is critical for healthy competition in rail freight logistics services, and authorities should ensure that no monopoly exists or that access is restricted, as this will have a negative impact on value-added logistics services in rail freight. Authorities can do this by classifying ICDs as common-user facilities. Even though there is a Lao-Chinese joint venture that will manage and operate rail operations, users of rail logistics services should also be guaranteed a transparent and easily understood fee schedule for services.

FIGURE 33: ENSURE PUBLIC ACCESS TO RAILHEADS AND OTHER RAIL INFRASTRUCTURE

- Establish ICDs as common-user facilities and allow for the competition of multiple operators at each ICD.
- Publish fee schedules for rail logistics services and ensure they are consistently followed.
- Revise the law on Inland Container Depots to explicitly cover ICDs and dry ports, clarifying their special customs status.

176. Similarly, authorities need to clarify the customs status of dry ports. The revised draft law related to ICDs needs to reflect the special customs status of dry ports, as it currently covers neither "ICDs" nor "dry ports." While the MPWT may have jurisdiction over ICDs, it cannot legislate on ICDs or dry ports since exemptions or probation is under the jurisdiction of the Lao Customs Department under the MOF.

Recommendation 3: Regulate the Use of Containers

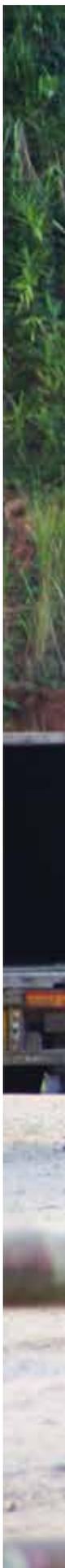
177. Once the railway is completed, the development of multimodal transport in Lao PDR will require regulations related to the use of containers (Figure 34). Lao PDR should consider officially using the ATA Carnet, which is an international customs and temporary export-import document. It is used to clear customs in eighty-seven countries and territories without paying duties and import taxes on merchandise that will be re-exported within twelve months. The country should also consider signing the TIR Convention to further support the movement of transit goods through Lao PDR. Finally, authorities need to consider transit fees for freight services using Lao PDR as a land-link between neighboring countries.

FIGURE 34: RECOMMENDATION 3: REGULATE THE USE OF CONTAINERS

- Implement the official use of ATA Carnet, an international customs and temporary export-import document.
- Consider joining the Convention on International Transport of Goods Under Cover of TIR Carnets (TIR Convention).

SUGGESTED NEXT STEPS

178. Review the development of logistics markets in other countries. Lao PDR can benefit from a review of the international experience in developing logistics service markets, including how markets developed and overcame challenges. The study should also look at barriers to the development of an efficient logistics market within Lao PDR and provide recommendations and next steps.



TRADE FACILITATION REFORMS AND PRIORITIES



KEY MESSAGES

- To reap the full benefits from initiatives like the Lao-China Railway and the overall BRI, authorities need to combine economically sound investments in infrastructure with investments in trade facilitation reforms that lower transaction costs, minimize delays, and improve transparency and reliability. For example, long border delays can eradicate much of the benefits from improved infrastructure.
- While Lao PDR has made some progress in improving customs and border management procedures, its performance remains the weakest along the corridor, and there are various challenges that authorities need to address before the country can efficiently handle higher volumes of railway cargo.
- Implementing risk- and border-management reforms, improving regulations, increasing transparency, and developing an effective transit system could fundamentally improve trade procedures, attract investments to the corridor, and increase the transit of cargo, accelerating the economic returns of the corridor.
- Reforms and additional resources are also needed to ensure Lao PDR can effectively manage the arrival of a large number of railway passengers and their luggage. Delays could reduce the faster travel times trains permit, which could have a significant impact on how attractive the railway is to potential passengers.

5.1 BENEFITS OF TRADE FACILITATION REFORMS FOR THE RAILWAY CORRIDOR AND THE BRI NETWORK

179. Initiatives such as the Vientiane-Boten Railway and the BRI can only be successfully implemented if economically sound investments in infrastructure are combined with trade facilitation reforms that lower transaction costs and improve transparency and reliability. The World Bank's LPI shows that supply chains are only as strong as their weakest links, and benefits from investments in one area may not be fully realized unless complementary investments are made to overcome constraints and bottlenecks in another. Given Lao PDR's relatively poor trade facilitation performance, authorities need to address key bottlenecks to ensure the success of the entire rail corridor and its linkages to the broader BRI.

180. Border clearance procedures continue to be among the most problematic links in supply chains around the world, including in Lao PDR. Despite significant investments by many countries in infrastructure connectivity, outdated and overly bureaucratic procedures imposed by customs authorities and other border-management agencies remain a greater barrier to trade than high tariffs. This is also the case in Lao PDR. Cumbersome systems and procedures increase trade transaction costs and lead to delays and uncertainties in the clearance of imports, exports, and transit goods. As the recent World Bank report on the BRI shows that an increase in delays and higher transaction costs limit the potential benefits from BRI investments such as increased economic growth.⁵⁵

181. Despite efforts to reform border-management procedures in Lao PDR over the past ten year, measures have been patchy and challenges remain. There are a number of traditional or legacy issues authorities need to address. Additionally, Lao PDR's rail freight operations, with high cargo volumes that require clearance over short periods of time, will require new business processes, regulations, and infrastructure to fully integrate them with the global BRI network. Without these reforms, the country will not be able to fully leverage the economic opportunities offered by the Lao-China Railway, as the current trade environment makes it less attractive to invest in Lao PDR as part of supply chains centered around China.

182. The adoption of trade facilitation reforms will be essential to increase the attractiveness of the railway compared to other modes of transport and potentially attract some of the cargo that is currently being transported by sea between ASEAN and China. The implementation of efficient trade facilitation and transit procedures for all modes of transport in Lao PDR will increase the throughput of traffic, as goods can move faster along the corridor. It would also lower the costs to transport operators. In turn, higher trade volumes would create additional pressure on border agencies and cross-border controls, increasing the need to continue implementing trade facilitation reforms. Without complementary reforms, delays are expected to increase, limiting the increase in traffic compared to expectations and estimates. This would make it less profitable to use the railway network and affect the ability of Lao PDR to leverage its access to the global transport network through the BRI.

183. Implementing risk management and border-management reforms, improve regulations, increase transparency, and implement an effective transit system could improve trade procedures and increase the economic returns of the rail corridor. To support Lao PDR in meeting its commitments under the World Trade Organization (WTO) Trade Facilitation Agreement (TFA) and improving the overall competitiveness of the economy, reforms need to be comprehensive and implemented nationally and across all modes of transport. Expected gains, however, will only materialize if authorities fully implement the TFA, rather than merely complying with its basic legal requirements. A contemporary transit-management regime will be essential to attract sufficient transit cargo to allow the railway to operate at scale, improve the railway's operating income, and help Lao PDR become a regional transit logistics hub.

Economic Relevance of Trade Facilitation Reforms

184. Trade facilitation reforms that reduce costs and increase efficiency can potentially generate large returns on investment, especially for low and middle-income countries such as Lao PDR. The World Bank (2019) estimates that real income gains for corridor economies would be two to four times higher if complementary reforms reduced border delays and trade policy restrictions. This finding is in line with earlier research indicating that domestic (trade facilitation) reforms have a bigger impact than reforms undertaken in partner countries.⁵⁶ The WTO-TFA, which came into force in February 2017, aims to address these domestic challenges, and Lao PDR was one of the first countries to

⁵⁵ World Bank 2019.

⁵⁶ For a general discussion on the importance of domestic reforms, see World Trade Organization (2015) World Trade Report, Geneva for a discussion on trade facilitation vs. tariff reforms; and Wilson, Mann, and Otsuki (2004), Assessing the Potential Benefit of Trade Facilitation: A Global Perspective, World Bank Policy Research Working Paper 3224, World Bank, Washington DC.

ratify the agreement, which demonstrates the government's commitment to reforms.⁵⁷ The estimated economic impact of implementing the TFA on trade vary widely, ranging from US\$80 billion per year to over US\$1 trillion, but they tend to favor developing countries.

185. As confirmed by the World Bank's LPI, the performance of trade logistics is directly linked with economic growth, an expansion of trade, and export diversification. Countries with more advanced logistics sectors grow faster, become more competitive, and increase their trade-related foreign investment.⁵⁸ Research also indicates that improving logistics performance in low-income countries to the middle-income average could boost trade by around 15 percent and benefit all firms and consumers through lower prices and better access to competitively priced services.⁵⁹ Similar evidence emerges from cross-country datasets, including the World Bank's Doing Business (trading across borders) dataset and the LPI, as well as the World Economic Forum's Global Enabling Trade Index.

186. Trade facilitation reforms are especially important for countries along economic corridors, as weak performance in one country can undermine the impact of infrastructure and regulatory reforms in other countries. The performance of trade facilitation measures varies widely in countries along the future Kunming-Singapore corridor (as it does in other BRI land corridors). Long delays in one country can undermine the overall performance of the corridor, affecting the competitiveness of participating countries. The risk of delays and costs associated with regulatory compliance are especially high for trade corridors that involve a large number of countries. Moreover, trade facilitation reforms need to focus on not only the railway but also on other modes of transport such road and sea transport.

187. Efficient logistics services are important for the success of the railway and its link to the BRI network, and trade facilitation reforms will directly contribute to improving logistics performance. Trade facilitation reforms improve the capacity of firms to participate in regional and global value chains. While the speed and efficiency of border clearance is important, traders also need predictable

and reliable border processes. In Lao PDR, as in many developing countries, poor risk management practices lead to time consuming and often unnecessary physical inspections and laboratory testing requirements, affecting clearance times. For example, multiple inspections by different border agencies are relatively common in Lao PDR. An unpredictable trade environment prompts traders to adopt costly hedging strategies, such as maintaining large inventories to prepare for worst-case supply scenarios, or switching to more reliable, and frequently more expensive, transportation modes.⁶⁰ Research suggests that these induced costs on the supply chain can be even higher than direct freight costs, negatively affecting firms' competitiveness and making it difficult for firms in poorly performing countries to participate in global value chains, which require the just-in-time availability of inputs and high levels of predictability.⁶¹

Key Principles of Trade Facilitation Reforms

188. Trade facilitation practitioners generally agree on five key principles that underpin contemporary approaches to trade facilitation reform (and the WTO TFA). The five key principles are:

- 1) simplification**, which refers to the process of eliminating all unnecessary elements and duplication in formalities, processes, and procedures;
- 2) harmonization**, which refers to the alignment of national formalities, procedures, operations, and documents with international conventions, standards, and practices;
- 3) standardization**, which refers to the process of developing internationally agreed formats for practices and procedures, documents, and information requirements;
- 4) procedural reform and modernization**, which refers to the adoption of modern, internationally agreed processes and systems; and
- 5) transparency** in what procedures apply to trade and how they are enforced.

⁵⁷ The WTO TFA was negotiated over ten years and is designed to support the shift to the new border management paradigm. It brings together, through a multilateral agreement, many of the developing best practices and standards on trade facilitation, building on previous international efforts (e.g., by the World Customs Organization, United Nations regional commissions, and free trade agreements).

⁵⁸ Arvis *et al.* 2010. Connecting to compete 2010: *trade logistics in the global economy: the logistics performance index and its indicators*. Washington D.C.: World Bank.

⁵⁹ Hoekman & Nicita. "Trade Policy, Trade Costs, and Developing Country Trade" (Policy Research Working Paper; No. 4797. Washington, DC: World Bank, 2008).

⁶⁰ Guasch and Kogan. 2003. Just-in-case inventories: a cross-country analysis. World Bank Policy Research Working Paper 3012, Washington, D.C.: World Bank.

⁶¹ Arvis, Raballand, and Marteau. 2007. The Cost of Being Landlocked: Logistics Costs and Supply Chain Reliability. Washington, D.C.: World Bank.

189. Together, these principles are critical for sound trade facilitation, allowing the government to cost-effectively achieve relevant policy objectives. They allow for the effective management of a broad range of important government functions, including revenue collection, community protection, national security, and trade policy, in a way that ensures high levels of compliance without imposing excessive transaction costs on businesses (Table 19). Fortunately, there is strong evidence that adopting modern approaches to border management can improve regulatory control while improving trade facilitation.

190. Achieving meaningful improvements in trade facilitation is neither an easy nor a straightforward process. It requires that border management agencies move away from exclusively focusing on control, which has traditionally dominated the culture of customs and other border management institutions.

5.2 TRADE FACILITATION PERFORMANCE ALONG THE CORRIDOR

Overview of Trade Facilitation Performance along the BRI CICPEC

191. Lao PDR performs poorly compared to regional peers and other countries along CICPEC on various trade facilitation indicators (TFIs) (Table 20). The country underperforms on the LPI, the Enabling Trade Index, and the Organisation for Economic Co-operation and Development's (OECD) TFIs. Lao PDR also performs poorly on both the time to comply with export and import requirements and trading across borders in the World Bank's Doing Business report.

TABLE 19: TRADE FACILITATION ACTIVITIES

Issue	Key Government Objective	Broad Strategy
Food Safety	Protect public health and safety. Protect the reputation of a country's food industry.	Minimize the potential risk of food-borne illnesses by ensuring that the quality of internationally traded food meets relevant standards.
Biosecurity – Animal Quarantine	Protect the country from exotic pests and diseases. Protect the country's reputation in overseas markets.	Minimize the risk of pests and diseases entering the country by ensuring that national and international standards of animal health are met.
Immigration	Protect the government's right to determine who may enter, leave or remain in the country on a permanent or temporary basis.	Minimize the risk of people entering, leaving, or remaining in the country illegally by ensuring that people who travel across or remain within a country's borders are authorized to do so.
Intellectual Property	Protect the rights of owners of trademarks and copyright material. Protect the community from potentially unsafe products (e.g., counterfeit medicine).	Minimize the risk of trade in counterfeit and pirated goods by ensuring that internationally traded goods do not infringe intellectual property rights, including trademarks and copyright.
Revenue Collection	Protect national revenue.	Minimize the risk of government revenue leakage by ensuring that the correct amount of revenue is paid on imported (or exported) goods.
National Security	Protect the supply chain against acts of terrorism.	Minimize the risks of terrorist attacks by ensuring that international and national security standards are met.
Safety Standards	Protect consumers against injury, illness, or death related to unsafe goods. Protect a country's reputation in overseas markets.	Minimize the risk of trade in unsafe goods by ensuring that internationally traded goods meet national and international safety standards.

Source: World Bank (2012), Risk-Based Compliance Management.

TABLE 20: OVERVIEW OF SELECTED TRADE FACILITATION INDICATORS FOR COUNTRIES ALONG CICPEC

Economy	LPI Customs score 2018	LPI Customs % of highest BRI performer	DB 2019 Time to import (Total Hours)	DB 2019 Time to export (Total Hours)	DB 2019 TAB Score	WEF ETI Border Administration Value (1-7, 7=best)	WEF ETI Border Administration and of highest BRI performer	OECD TFI (0-2, 2=best)	OECD TFI % of highest performer
Cambodia	2.37	66.33	140	180	67.28	3.6	56.25	0.92	52.57
China	3.29	84.5	72	31	82.95	4.9	76.56	1.36	77.71
Hong Kong, SAR	3.81	97.9	20	2	95.04	6.02	94.06	1.72	98.29
Lao PDR	2.61	67.1	71	69	78.12	3.7	57.81	0.7	40
Malaysia	2.9	74.55	43	38	88.47	5	78.13	1.27	72.57
Myanmar	2.17	55.78	278	286	47.67	n/a	n/a	0.53	30.29
Singapore	3.89	100	36	12	89.57	6.4	100	1.75	100
Thailand	3.14	80.51	54	62	84.65	5.1	79.69	1.38	78.86
Vietnam	2.95	75.86	132	105	70.83	4.2	65.63	1.36	77.71

Source: World Bank, World Economic Forum, OECD.

Note: ¹ Greener-shaded cells indicate a value closer to the "best performer" in that indicator, red further away.

² Doing Business (TAB) time to Import / Export is a 'combined' documentary and border control figure.

192. While Lao PDR has made progress in improving its trade facilitation performance, it remains the weakest link along the Kunming-Singapore corridor, negatively affecting the performance of the entire corridor. Southeast Asian countries along and bordering this corridor are all implementing various trade facilitation reform programs, but they are at very different levels of performance. For example, in the 2018 LPI, Singapore ranked 7th out of 160 countries, while Myanmar ranked 137th, with other ASEAN economies spread between these two countries. The differential in performance between Lao PDR and China (and Thailand) is the most relevant for ensuring the smooth movement of goods along the corridor.

193. Other than China, all countries along the Kunming-Singapore railway are members of ASEAN, which should facilitate the implementation of coherent and coordinated reforms. There are numerous ASEAN agreements and procedures related to trade facilitation (largely matching international agreements), but their implementation remains incomplete and vary between countries. For example, progress in improving coordination among external border agencies in and between countries along CICPEC (including China) is significantly lower than progress on other TFIs, according to the OECD. Varying national capacities continue to delay the implementation of a number of regional initiatives, including the ASEAN Single Window.

194. Major improvements in trade facilitation in Lao PDR would require a paradigm shift in the work and approach of Lao Customs Department and other border management agencies. To achieve meaningful trade facilitation reforms that are consistent with the WTO TFA and Lao PDR's current logistics reform agenda, border management agencies need to move from the old management paradigm (left column in Table 22) to the new (right column). This includes a transition from focusing on real-time control and physical intervention to gathering information before goods arrive at the border and providing effective assistance to traders. While this shift is currently in progress in Lao PDR, more progress is needed to achieve a level of trade facilitation performance necessary to maximize the economic impact of the railway corridor.

195. It is important to not only improve the performance of customs but also that of other agencies involved in border processing. Evidence shows that a country's customs agency is often responsible for no more than one-third of regulatory delays. In many countries, including Lao PDR, logistics professionals have a more favorable attitude of customs than other border agencies. This highlights the need to reform and modernize the systems and procedures of all government agencies that regulate the flow of goods and services, including agencies that focus on health, agriculture, quarantine, police, and immigration issues.

5.3 TRADE FACILITATION PERFORMANCE IN LAO PDR

196. Despite ten years of reform efforts, Lao PDR continues to struggle with the full implementation of a range of border management strategies.⁶² Lao PDR lags behind other countries along the Kunming-Singapore corridor in terms of trade facilitation performance (Table 20). For example, the performance of the country's customs (as measured by the LPI) and border administration (as measured by the World Economic Forum) is the weakest among all countries along the corridor, with exception of Cambodia. In terms of aligning with the WTO TFA (Cat A), Lao PDR has only complied with 21 percent of measures (Table 21), significantly less than China (94.5 percent) and Thailand (93.7 percent) and less than all other countries in the region, with the exception of Myanmar.⁶³ A key concern is that Lao PDR has backloaded key provisions of the WTO TFA. While the country complies in areas related to transparency, notifications, and discipline with fees and charges, it requires additional technical assistance with the implementation of some of the TFA's most important measures, including improving inter-agency cooperation (including across borders), advance rulings, and transit procedures (Category C). Annex B includes details on TFA provisions and the country's commitments.

197. For Lao PDR to benefit from its strategic position as a potential transit country, the government needs to ensure that all public agencies are committed to the swift implementation of trade facilitation reforms and the creation of a modern trade facilitation regime. While the country has established an NTFC, with the Ministry of Industry and Commerce as the secretariat that oversees the implementation of a national trade facilitation action plan, its impact has so far been limited. Authorities need to increase the pace of trade facilitation reforms to keep up with efforts made in other Southeast Asian countries.

198. To ensure the efficient use of the trade corridor, Lao PDR also needs to adopt an efficient transit regime. This will be important for the efficient movement of goods along upgraded transport infrastructure that connects to the rest of the corridor. There is currently no efficient transit regime for domestic transit (i.e., for the transit of goods from border crossings to inland locations where they can be cleared) or international transit (i.e., for the transit of goods between two neighboring countries). Moreover, there is no efficient system to manage or guarantee international transit, as the current manual system is very resource intensive, results in high costs, and does not allow for effective compliance and risk management.

TABLE 21: LAO PDR LAGS BEHIND IN TRADE FACILITATION PERFORMANCE

Country	Cat A	Cat B	Cat C
Cambodia	60.9%	19.3%	19.7%
China	94.5%	5.5%	0.0%
Lao PDR	21.0%	11.8%	67.2%
Malaysia	94.1%	5.9%	0.0%
Myanmar	5.5%	9.2%	85.3%
Singapore	100.0%	0.0%	0.0%
Thailand	93.7%	6.3%	0.0%
Vietnam	22.7%	-	-

Source: WTO's database of TF commitments.

Current Environment and Challenges

199. Lao PDR's current border control procedures are not consistent with regional or international best practices. Operational practices and procedures at the country's borders are not conducive to promoting efficient border management (Table 22). The current border management environment is characterized by:

- a focus on real-time, physical controls on a transactional basis, resulting in excessive physical interventions (e.g., there is no compliance assessment of traders, and voluntary compliance levels are low);
- an underutilization of ICT to support automated processing, especially involving the processing and clearance of exports/imports before arrival, and avoid data duplication (i.e., electronic data submissions are also required to be submitted in paper format before processing can start);
- limited reliance on systems to profile and target shipments, resulting in excessive discretion and a high share of goods selected for examination; and
- poor interagency cooperation and coordination as well as a lack of transparency.

62 World Bank. 2014. *Lao PDR Trade and Transport Facilitation Assessment*. Washington D.C.: World Bank. Pgs.87-88.

63 The TFA contains important provisions that will help improve transparency, increase the capacity of countries to participate in regional and global value chains, and reduce the scope for corruption. All these provisions are important for the efficient functioning of the rail corridor.

200. However, the evaluation and monitoring of reform efforts are severely hampered by a lack of available operational performance data related to current border operations. Key actual performance data from Lao Customs and other border agencies are not even available for internal use to assess the impact of reforms. Without detailed data, agencies cannot monitor the implementation of reforms and identify bottlenecks. Relevant data are crucial for improving the targeting of controls and assessing the impact of regulations on users. Access to customs data can also permit authorities to assess the performance of individual officers and inform internal reforms to increase compliance and efficiency. While the time release studies carried out by Lao Customs in 2016 provides a snapshot of the country's customs environment, their results are difficult to reconcile with other indicators because of methodological challenges. Regulatory agencies need to collect more and better real-time data to guide the government's reform agenda.

Operational Practices - Automation & Risk Management

201. Over the past years, Lao PDR has implemented various customs clearance reforms and an automated customs declaration processing system (i.e., ASYCUDA World). These measures helped to reduce the mean customs clearance time from 17.9 hours in 2010 to 11.2 hours in 2012, before it fell to 6.5 hours in 2016, according to results from time release studies. However, the country's customs clearance time is still above what is recommended for an efficient customs process.⁶⁴ These results are generally consistent with World Bank enterprise survey data, which also show manufacturing firms reporting that the average number of days to import and export fell in Lao PDR between 2009 and 2016, before it rose slightly between 2016 and 2018.

TABLE 22: A CHANGING TRADE FACILITATION MANAGEMENT PARADIGM IN LAO PDR

Old Border Management Paradigm	Contemporary Border Management Paradigm
Focus on real-time control of actual goods and physical intervention	Balance between contemporary controls and facilitation focus on information pertaining to the goods preferably before arrival
High level of physical inspection and testing	Intervention by exception based on genuine risk
Limited use of ICT, mainly by Customs agencies	Extensive use of ICT and real-time information sharing by all agencies via Single Window systems
Limited availability of information on regulatory requirements	Transparency and a focus on assisting traders to comply voluntarily with requirements
Government officials always right	Capacity to challenge decisions
Consecutive processing and clearance by agencies	Parallel processing and clearance
Reform as a series of independent episodes	Reform as a process of continuous improvement

Source: World Bank experience in supporting reform and modernization projects in Lao PDR and across the world; and Doyle 2011.

⁶⁴ It is also not clear how the methodology for time release studies captured all of the relevant time delays experienced by traders, as availability of data from Lao Customs is limited and incomplete.

202. Despite an improvement in the customs clearance time, the country is not fully and efficiently utilizing its available systems and processes. For example, Lao PDR's Customs Department requires both the electronic and physical submission of customs declaration forms and supporting documents. Customs processing only starts once the paper-based application has been submitted, increasing costs and undermining the potential for increased efficiency. Customs officials also perform a manual assessment of customs declaration forms, even in the case of 'green' lane processing. Moreover, electronic signatures for the electronic submission of customs data are not widely recognized, even though the Law on Electronic Transactions permits it and the ASYCUDA World system allows for paperless trade transactions.

203. The use of ICT system remains limited, especially among border agencies, many of which continue to rely on paper-based clearance processes. As a result, the regulatory framework for a large number of commodities is cumbersome, and poorly administered non-tariff measures (NTMs) drive up compliance costs and generate paperwork. A greater use of ICT and increased information sharing across agencies, and

with neighboring countries, could minimize the duplication of import and export declaration data, improve the accuracy of customs processes, and reduce delays along supply chains. The planned establishment of the Lao PDR National Single Window (LNSW) and the full implementation of the ASEAN Single Window could increase information sharing nationally and internationally, resulting in a significant improvement in trade facilitation.

204. The optimal use of electronic customs clearance procedures would reduce unnecessary delays and the inconsistent application of customs rules and regulations. While the development of the LNSW is underway, its longstanding delay has affected the government's appetite and momentum for sustaining meaningful reforms to improve the predictability and transparency of trade regulations.⁶⁵ As articulated in the 2013 LNSW Blueprint, the establishment of the LNSW should facilitate the simplification and streamlining of business practices rather than simply automating existing procedures. The LNSW was launched in May 2019, but its application was suspended shortly afterwards. So far, it only covers one type of product at one main border crossing. In

TABLE 23: STEPS TO IMPROVE RISK MANAGEMENT IN LAO PDR

Gap	Action Required
No Strategic or comprehensive risk management framework	<ul style="list-style-type: none"> • Implement a risk management framework based on principles detailed in the Guidelines to the World Customs Organization's RKC (General Annex Chapter 6) and: <ul style="list-style-type: none"> ○ undertake a comprehensive risk identification exercise against organizational objectives and performance indicators; ○ perform an analysis of risks to determine their significance; and ○ determine appropriate solutions to minimize risks to objectives.
No compliance assessment policy	<ul style="list-style-type: none"> • Focus on compliance and non-compliance. • Use additional resources to manage data as opposed to goods. • Focus on post-clearance audits. • Implement trader (systems-based) audits to help identify capacity to comply with regulations. • Expand the enforcement of non-compliance to include administrative penalties. • Expand the recognition and benefits for good compliance (AEO/Trusted Trader).
Lack of client support to promote and support improved voluntary compliance	<ul style="list-style-type: none"> • Establish a formal consultation mechanism. • Provide clear and simple guidelines that describe what traders need to do to achieve and demonstrate compliance (e.g., practice statements). • Provide a binding rulings system to create certainty for traders. • Implement a meaningful and transparent appeals process. • Provide training in operational requirements.

Source: Study team's assessment based on principles of 'Risk-Based Compliance Management' (See, Widdowson and Holloway 2011).

⁶⁵ There is no globally accepted definition of a national single window, but for the purposes of this report, it is defined as an IT system that allows traders to make a one-time submission with all required information for border clearance. This information is then shared with all necessary government agencies and the trader receives one coordinated response. The objective is to streamline processing by removing the need to transact with multiple government agencies in clearing shipments. The establishment of a single window is also encouraged in the BRI action plan, and there is an agreement to establish the ASEAN Single Window.

the foreseeable future, it is unlikely that the LNSW will offer the kind of comprehensive functionality outlined in the LNSW Blueprint or be linked to the Lao Trade Portal.

205. The sharing of electronic customs data between Lao PDR and neighboring countries will be particularly important in the context of the new rail corridor. The pre-submission of manifest-level data for goods shipped via rail is the norm in China and other countries (e.g., manifests are often required two hours before arrival). International rail transport agreements have provisions for the electronic submission of consignment notes for operational purposes. Lao PDR should, therefore, create a capacity to collect this information and allow the electronic submission of pre-arrival declarations of goods, which would improve trade facilitation. Also, the electronic collection of customs data should be based on recommended international standards for electronic information exchange, as outlined in the World Customs Organization's Revised Kyoto Convention (RKC).

206. To further facilitate trade flows and reduce costs, the country should implement operational changes based on the key principles of the RKC.⁶⁶ For example, the opening hours of government agencies in Lao PDR and across the border should coordinate their opening hours and inspection of goods. Moreover, authorities should consider: (i) harmonizing and simplifying customs procedures, including limiting the requirements for supporting documentation; (ii) allowing all customs documentation to be submitted electronically; and (iii) creating a capacity to register or inspect the decelerations of goods and supporting documents prior to arrival.⁶⁷

207. Effective and efficient compliance management for cross-border trade requires the use of risk management strategies. Lao Customs is using the ASYCUDA World's risk module to select shipments for screening based on a standard risk profile applied against generic data elements. However, its capacity to more accurately target high-risk shipments by analyzing results and updating the risk profile remains limited. Also, Lao Customs' default practice is to inspect the majority of shipments, regardless of the risk profile generated by the system. Officer discretion, as opposed to established risk criteria, is frequently used to determine what will be inspected or examined, creating opportunities for customs officers to seek informal payments.⁶⁸ In Lao PDR, an estimated 60 percent of shipments were physically inspected in 2016, while 5-10 percent is sufficient if a customs agency uses a well-developed risk management system to efficiently target inspections, according to global best practices.

The Use of Non-Intrusive Inspection for Railways

NII technologies such as x-ray are employed at many major railway border crossings around the world and constitute an efficient tool to assess possible non-compliance.

For example, the x-ray scanner at Zilupe's (Latvia) railway border crossing checkpoint with the Russian Federation allows dynamic scanning when a train is moving between 7 and 25 km / hour. The use of x-ray at the Kena's (Lithuania) railway border crossing with Belarus is used together with a risk assessment. Customs authorities and border guards jointly define risk indicators, which are used to select containers to be x-rayed. Scans are done at the x-ray gate located on inbound railway tracks on moving trains at speeds between 10 and 20 km/hour. Moreover, x-ray scans are analyzed and subjected to physical controls, if necessary. Scanned images are also shared with inland customs offices, where cargo is sorted and redistributed for further destinations or cleared for import. Accordingly, inland customs offices also use the x-ray scans to conduct additional analysis and inform control decisions, if deemed necessary.

Source: European Commission. 2013. A Study on Common Border Crossing Points Management between Schengen Area and Russia/Belarus. Project No. 2011/277280 - Version 1. http://www.ndptl.org/c/document_library/get_file?folderId=16355&name=DLFE-1602.pdf.

208. To improve border management compliance in light of increasing volumes, authorities should implement an effective risk management process, establish a compliance assessment policy, and promote voluntary compliance. This will require authorities to (i) undertake risk identification exercises against clear objectives and performance indicators across all government agencies involved in regulating products; (ii) develop approaches to minimize risks; (iii) focus on compliance and non-compliance; (iv) expand the preferential treatment of compliant traders;⁶⁹ and (v) focus on post-clearance audits (Table 23: Steps to Improve Risk Management in Lao PDR). These measures would represent a shift toward managing information rather than goods. Moreover, authorities should consider supporting voluntary compliance (through better consultations with traders, clearer guidelines, and binding rulings) and establishing a meaningful and transparent appeals process. It is also important that the

66 Lao PDR acceded to the World Customs Organization's Revised Kyoto Convention on 16 July 2016. http://www.wcoomd.org/-/media/wco/public/global/pdf/about-us/legal-instruments/conventions-and-agreements/contracting-parties-and-instruments/lao-pdr/pg0257b1_notification-lao-pdr.pdf?la=en

67 Annex B lists key reforms and recommended practices. While these reforms are important for the railway, they would benefit all trade and improve the overall trade facilitation environment.

68 In March 2017, Lao Customs attempted to improve operational compliance with automated risk management by limiting the discretion of officers to select goods for inspection and improving accountability measures. However, the initiative has met with significant internal resistance within the agency, and the implementation of the initiative has been inconsistent.

69 Lao PDR has introduced the Approved Economic Operators scheme that will simplify procedures for trusted traders, but the system will likely not be operational for some time.

risk management system shares information between public agencies within Lao PDR and between countries to improve the creation of risk profiles and assessments. The implementation of these reforms will be especially important to facilitate trade along the rail corridor, given the expected increase in trade volumes within and between countries.

209. The use of non-intrusive inspection (NII) should be a key element of the country's risk-based control strategy.

To effectively process the volume of freight that will arrive by rail (an estimated sixty to eighty containers will arrive with each train) will require efficient solutions to avoid extensive delays. Even with the adoption of risk-based controls, cargo volumes are likely to overwhelm the capacity of existing infrastructure and systems. The use of NII technology such as x-ray is common around the world and can help customs authorities to efficiently and cost-effectively process cargo (Box 6). Chinese officials, for example, have announced plans to adopt NII at the Mohan terminal.⁷⁰

Transparency

210. The lack of regulatory transparency and consistency constitutes an important barrier to trade in Lao PDR. It is frequently cited as a constraint on business by both private firms and traders,⁷¹ and its importance is reflected in transparency-related provisions in the WTO-TFA and other trade agreements, as well as in regional initiatives like the Asia-Pacific Economic Cooperation. The government launched the Lao Trade Portal⁷² in 2012—the country's national trade repository⁷³—and has classified transparency and the publication of information as Category A⁷⁴ under the WTO TFA. However, it rated the opportunity for feedback, consultation, and dialogue with the trading community as Category B, meaning such mechanisms would only be implemented after a transition period.⁷⁵ Efforts to increase transparency are important not only to reduce the cost of information sharing but also to improve the accountability of public agencies involved in trade facilitation. Aware of their respective roles and responsibilities, traders can challenge requirements and decisions, which is important for an efficient and functioning grievance redress mechanism.

TABLE 24: THE LAO TRADE PORTAL MEETS MOST REQUIREMENTS OUTLINED UNDER THE WTO TFA.

WTO TFA Article 1.1 procedures and regulations to publish	Status in Lao Trade Portal
Procedures for importation, exportation, and transit (including port, airport, and other entry-point procedures), and required forms and documents	Available
Procedures for importation, exportation, and transit (including port, airport, and other entry-point procedures), and required forms and documents	Available
Applied rates of duties and taxes of any kind imposed on or in connection with importation or exportation	Available
Fees and charges imposed by or for governmental agencies on or in connection with importation, exportation or transit	Available
Rules for the classification or valuation of products for customs purposes	Available
Laws, regulations, and administrative rulings of general application relating to rules of origin	Available
Import, export or transit restrictions or prohibitions	Available
Penalty provisions for breaches of import, export, or transit formalities	General information
Procedures for appeal or review	Available, without detail
Agreements or parts thereof with any country or countries relating to importation, exportation, or transit	Available
Procedures relating to the administration of tariff quotas	N/A

Source: WTO Trade Facilitation Agreement

70 The cost of NII technologies is rapidly falling, and a suitable system with associated software and infrastructure could cost as little as US\$3 million—a small fraction of Lao PDR's infrastructure investment spending on the Vientiane-Boten Railway.

71 This applies to meetings with firms and traders on both sides of the Lao PDR-China border.

72 <https://www.laotradeportal.gov.la/>

73 Few Chinese traders appear to be aware of the portal.

74 Category A: provisions that the member will implement by the time the Agreement enters into force (or in the case of a least-developed country within one year after entry into force).

75 Category B: provisions that the member will implement after a transitional period following the entry into force of the Agreement.

211. The government has made significant progress in improving the transparency of trade regulations through the launch of the Lao Trade Portal, although it needs to ensure the portal is up to date. The portal includes all regulatory requirements for the import, export, and transit of goods and has a solid user base. The Department of Import and Export at the MOIC is the main public agency that gathers all the relevant information and maintains the portal, and there is a formal mechanism to encourage coordination between government agencies. Authorities recently launched a similar portal presenting information on trade in services. However, traders claim that information on requirements in the Lao Trade Portal are often outdated or incomplete and that operational practices in reality differ from processes described in the portal. Keeping information in the portal up to date (especially in English) has been a challenge, as transparency requires effective collaboration among government agencies and with the private sector, which has been an issue in Lao PDR. To improve trade facilitation, the government needs to ensure that the trade portal includes relevant, updated, and accessible information. Article 1 of the WTO TFA provides a useful list of what trade-related procedures and regulations should be published, and Lao PDR's trade portal meets most these requirements, although the government needs to keep the portal up-to-date as regulatory requirements evolve (Table 24).

212. Authorities need to prioritize reforms that improve regulatory transparency because they are needed for other, more ambitious trade facilitation reforms. For example, the implementation of the LNSW needs to build on the consolidation and publication of public and private trade-related information, as its functioning will require in-depth cooperation between government agencies and the private sector. Moreover, existing trade-related rules and procedures need to be integrated into the LNSW. Initiatives that improve transparency are also important for other initiatives that simplify procedures and remove duplication. The process of creating a national trade repository often identifies numerous duplicative and unnecessary procedures, which could be removed or streamlined to facilitate trade.

Coordination and Collaboration

213. Inter-agency coordination and cooperation in Lao PDR remains weak. There are around fifteen regulatory agencies in Lao PDR, and four agencies are present at the border (i.e., Lao Customs Department, Immigration, Department of plant and animal quarantine, and the Food and Drug Department). For Lao Customs to process customs declaration forms and release goods, traders often have to

submit a large number of supporting documents, many of which have to be approved and obtained in hard copy from other agencies in Vientiane. Therefore, a meaningful improvement in trade facilitation requires comprehensive whole-of-border reform initiatives and effective cooperation, information sharing, and genuine collaboration among all border management agencies. Additionally, government agencies in Lao PDR need to effectively collaborate and communicate with the private sector and foreign government officials, especially in China. A lack of coordination and cooperation between border agencies prevents the government from reducing transaction costs that arise from duplicative and cumbersome regulations.

214. While Lao PDR created a NTFC in 2018, a permanent, independent, and well-resourced secretariat for the NTFC is needed to improve collaboration. The success of an NTFC, especially regarding public-private collaboration, depends partly on the effectiveness of its operational and governance structure, which remains limited in Lao PDR. The creation of subcommittees or working groups can help facilitate reforms related to the railway and its broader mandate under the WTO TFA, but it will be essential to ensure that such committees remain active and relevant instead of existing only on paper as is frequently the case in Lao PDR. Moreover, a small, dedicated, and well-qualified secretariat could help to ensure the independence and sustainability of the committee and guide its work. A secretariat would also be important for coordinating the input from various technical working groups. Recent studies by the United Nations Conference on Trade and Development (UNCTAD) identify long-term funding and the engagement of participants as the top two challenges for a successfully functioning NTFC.⁷⁶

215. Since the private sector has a central role in trade facilitation, it needs better representation on the NTFC. The private sector has a large role to play in trade facilitation reforms, especially related to the Vientiane-Boten Railway. Research by UNCTAD shows that strong and effective representation by the private sector can help the NTFC identify priority reforms; support implementation and compliance; and monitor implementation progress.⁷⁷

Regulatory Practices in Other Government Agencies

216. The government needs to continue to streamline and simplify regulatory requirements, but efforts to overcome vested interests face strong resistance. Lao PDR maintains a complex regime of NTMs that affect many imports. NTMs such as import licenses that no longer serve their original

⁷⁶ UNCTAD. 2017. "National Trade Facilitation Committees: Beyond compliance with the WTO Trade Facilitation Agreement," http://unctad.org/en/PublicationsLibrary/dtlt1b2017d3_en.pdf.
⁷⁷ For more information on the role of the private sector in trade facilitation reforms, see Grainger Chapter 10 in McLinden et al. 2011. *Border Management Modernization*. Washington D.C.: World Bank.

policy objectives exacerbate regulatory complexity and result in additional transaction costs for traders. A number of NTMs implemented for statistical purposes remain in place, although the data they generate are not more accurate than existing customs statistics, according to the Ministry of Industry and Commerce. Resistance to change across regulatory agencies remains strong, as vested interests have benefited from ambiguity and a lack of transparency in the application of existing regulations, resulting in rent seeking at the expense of traders.

217. NTMs generate delays and costs for importers and exporters and damage export competitiveness, and these costs are unnecessary when they do not serve a legitimate purpose. The NTM Review Sub-Working Group, for which the Ministry of Industry and Commerce is the secretariat, has identified means of reducing and streamlining NTMs. While the working group has played a proactive role in evaluating the necessity and administration of existing NTMs, not all them have been reviewed in terms of their policy relevance or actual impact. The government should adopt additional methods to review, simplify, and streamline/eliminate NTMs—in particular those without a well-defined regulatory purpose—to reduce costs to the economy, which is especially important in the context of the new railway.⁷⁸

218. The development of the Lao-China Railway increases the urgency to streamline regulatory requirements and compliance documentation across all regulatory agencies. Traders often complain that documentary requirements related to health, sanitary and phytosanitary (SPS) measures, and other regulatory standards are excessive, uncoordinated, and lengthy, and they often overlap with documents required for customs clearance. While these standards are intended to meet legitimate health, safety, and other policy objectives, there is often little coordination between agencies and little willingness to permit Lao Customs to administer the standards of other agencies to improve the border management regime. Lao PDR needs to do more to integrate the work of all agencies involved in trade facilitation,⁷⁹ as a greater dialogue within and between agencies to streamline and, wherever possible, harmonize data requirements associated with regulatory approvals could have a significant impact on trade. Efforts to simplify regulatory requirements should be followed by the design of electronic systems that can facilitate the exchange of customs and trade-related documentation.

219. The international alignment of standards can further facilitate trade and accelerate economic growth throughout the region. Authorities from Lao PDR and neighboring countries need to improve the exchange of

trade-related information (e.g., by establishing a whole-of-corridor trade portal) and start aligning regulatory standards. Governments can start aligning standards that are most often used and frequently the source of delays, which could be followed by standards that are more challenging to align but have a higher impact on trade, such as the international or regional harmonization of documentary requirements and the mutual recognition of conformity assessment. The mutual recognition of conformity assessment is an increasingly common feature of trade agreements (e.g., APEC and the EU) and can significantly lower costs for traders while also reducing the cost of assessing regulatory compliance. The eventual goal should be to facilitate trade by going beyond the mutual recognition of procedures for verifying compliance to the mutual recognition of the standards themselves.

Procedures for Goods in Transit

220. Lao PDR needs to implement an efficient and appropriate international transit management and guarantee system. The current manual and non-guaranteed informal transit system is too resource intensive to effectively manage compliance or control revenue and other risks. Authorities should adopt a more contemporary system that evaluates actual levels of risk and includes appropriate control strategies.

221. Trade facilitation reforms related to transit are important for the effective functioning of transport corridors like the Lao-China Railway. In the context of trade facilitation, transit refers to the regulations and procedures that allow for the movement of goods through countries (nationally or internationally) that are not the final destination. A large share of traffic on the Vientiane-Boten Railway is expected to be related to transit trade between China and the rest of ASEAN. Therefore, transit-related trade facilitation is vital to fully leverage the railway to increase intraregional trade. Improving the transit system would also facilitate Lao imports and exports by allowing them to cross the border and be cleared at inland locations, decongesting borders.

222. Customs transit procedures are simplified along many rail corridors, as risks are generally low, and efforts to simplify them along the Lao-China Railway should be relatively simple. Transit guarantees are usually not required for railways. The railway consignment note is sometimes formally recognized as a customs transit document, or it serves as supplementary document in transit procedures, and this could be similarly used along this corridor. Customs authorities usually require the submission of electronic transit declarations

⁷⁸ Cadot, Malouche, and Saez (2012), Streamlining Non-Tariff Measures, World Bank, Washington DC, 72-81.

⁷⁹ Van der Meer and Ignacio (2011), Chapter 16 in McLinden et al, Border Management Modernization, World Bank, 2011.

or electronic transit manifests/transport documents. Also, transit controls at border crossings are generally simple, and only sometimes include physical controls at border stations. Moreover, separate customs declarations for temporary admission of laden wagons and containers are not required.

223. However, for the Vientiane-Boten Railway, third-country transit will require a mix of rail and road until the rail connection is completed beyond Vientiane. This makes transit arrangements more complex than transit that only takes place on the railway, as the movement of goods cannot be easily controlled. While a shipping container would likely maintain its integrity as long as the seal remains intact, even when loaded between different modes of transport, there are additional risks. Although limited, any physical intervention such as unloading or reloading will involve more risk.

224. There are several requirements for an effective transit regime, many of which are currently lacking in Lao PDR. Widely accepted policies and procedures for efficient transit regimes include: (i) freedom of transit should be the default, with restrictions only when necessary and permitted through regulation/procedure; (ii) there should be no controls for technical standards or SPS standards for goods in transit if there is no contamination risk; (iii) there should be simplified border clearance procedures and customs requirements, including no application of customs duties, no duties on accidentally lost merchandise, and no physical inspection unless strictly necessary and permitted through regulation or procedures; and (iv) streamlined and simplified guarantee mechanisms should be tailored for goods in transit.⁸⁰

225. To ensure multi-modal transit arrangements are managed effectively, all countries along the transit corridor should adopt a single guarantee and control system at all relevant border crossings. Since there are additional revenue risks associated with the increased chance of diversion/intervention of goods transported by road, arrangements should include some form of financial guarantee. The single guarantee and control system should include consistent and simple rules and documentary requirements. The system should preferably be managed through an automated information technology (IT) application, forming a module of the relevant national customs control and processing systems, such as the ASYCUDA transit module in Lao PDR. The European common transit system and the TIR carnet⁸¹ system maintained by the International Road Transport Union are two examples of this type of single guarantee and control system. However, attempts to develop region-specific carnet systems (e.g., in the GMS) have generally not been successful (Box 7).

Transit Lessons from the Greater Mekong Subregion

Regional connectivity initiatives like the GMS Customs Transit System (CTS) hold lessons for the BRI. Attempts to implement a transit scheme in the GMS demonstrate the challenges in facilitating transit trade and implementing regional transit instruments.

The GMS CTS aims to facilitate the movement of goods in transit from one country to another while transiting through a third country. A 2012 review by the Asian Development Bank (ADB) reveals that almost no private-sector operators used the transit system, despite an agreed upon pilot along the East-West Corridor between Myanmar, Thailand, Cambodia, and Vietnam. The ADB study finds that the GMS-CTS resulted in little savings in cost and time, with operators continued to transship goods between countries without using direct road transport along the corridor.

The ADB study reviewed two transit regimes in the EU to draw lessons for the implementation of the GMS-CTS. It found that several factors affect the low utilization of the GMS-CTS, including overly complex procedures; restrictions on routes and border crossings; challenges in obtaining documents for transit; limited transit tariff rights; and a lack of two-way demand for traffic on return trips, compounded by challenges in obtaining transit documents for return trips.⁸²

The experience of the GMS-CTS shows the risks of developing corridor- or region-specific approaches to transit, which can quickly become out-of-date or be perceived as excessively burdensome compared to more widely accepted transit procedures. It also suggests that the economics of transit are a major factor that affects the utilization of a transit regime. For example, transport operators are not likely to use a transit regime if it is not commercially viable to operate return trips along the same route.

⁸⁰ Arvis 2011.

⁸¹ A carnet system facilitates transit of goods through several territories. The carnet is a document that is carried with the shipment and is used by border agencies to verify that shipments comply with the various procedures required for transit.

⁸² Grimbale and Linington. 2012. "Chapter 4." in *Trade and Trade Facilitation in the Greater Mekong Subregion*. Asian Development Bank.

226. There is often a strong focus on technological solutions in the implementation of transit regimes. While solutions such as smart seals for containers or global positioning systems to track and monitor shipments can benefit a transit system, they are not a substitute for implementing widely accepted policies and procedures that, for instance, ensure the freedom of transit, simplify border clearance processes, and streamline guarantee mechanisms. Sometimes, the implementation of technological systems can be a distraction from the effective implementation of the basic requirements of a transit regime.

227. Based on international best practices, there are three overarching principles for the effective implementation of a well-functioning transit regime: First, the foundation of a transit regime should be based on widely accepted policies and procedures, including: (i) freedom of transit (unless regulatory restrictions exist); (ii) absence of controls for technical or SPS standards (unless there is a contamination risk); (iii) simplified border clearance procedures and customs requirements; and (iv) streamlined and simplified guarantee mechanisms tailored for goods in transit. Second, the transit regime should adhere to existing, internationally accepted transit policies and procedures rather than developing new. Third, transit procedures need to be efficient, which will be especially important for landlocked developing countries, and technological transit solutions should not be a substitute for the basic requirements of a well-functioning transit system.

5.4 CHALLENGES OF A RAIL CORRIDOR

228. Some of the challenges associated with the use of rail transport are related to the efficient processing of a large number of passengers and goods that simultaneously arrive at the border.⁸³ UNESCAP notes that, “border crossings are major bottlenecks for seamless international railway transport. Inefficient border crossing processes and procedures are one of the main causes for significant delays and increased transport costs, and they diminish the comparative advantages of the railway transport.”⁸⁴ Nevertheless, rail transport is not subject to the same security constraints and regulatory controls as air transport, and access to a railway network provides countries with an opportunity to overcome some of the most common trade facilitation issues. In particular, it offers the opportunity to adopt improved or contemporary border management strategies in a ‘green field’ regulatory environment unconstrained by existing procedures.

Measures such as joint controls and pre-arrival declarations could be implemented initially in a more controlled environment for rail traffic where no regulations exist, without changing procedures for the clearance of goods on roads. Lessons from the more controlled rail environment could then later be applied to other modes of transport. Improving trade facilitation at rail border crossings is vital to ensure the success of rail transport.

229. For Lao PDR, the rail corridor will pose new regulatory challenges, in addition to legacy issues related to trade facilitation. Freight imports by rail will place considerable stress on existing regulatory agencies in terms of technical and resource capacity. The large volume of freight in one consolidated load, coupled with regulatory complexity, increases the chance that an issue with one shipment delays an entire train. The government needs to continue to develop the country’s customs and rail-specific operational procedures.

230. For the efficient processing of declarations, it will be important for Lao PDR and China to discuss how to exchange and manage data on cargo shipments by rail. Data on rail freight transport are more similar to that of airfreight than road transport in terms of data availability and management. Manifest and transaction-level data will be available to the railway operator and could be shared with Lao PDR’s border control agencies prior to train arrival. This would allow authorities to analyze shipments and make decision before freight arrives at the border, reducing the likelihood of delays. Moreover, a regional whole-of-corridor portal with end-to-end information on not only regulatory processes and procedures but also rail operational procedures and freight rates would increase trade facilitation and increase transparency for traders.

231. Lao PDR’s current infrastructure is unlikely able to cope with the expected large volume on rail freight without significant delays. Each train will potentially deliver the equivalence of sixty to eighty truckloads at once, and the large number of transactions on a single manifest will test the country’s logistics capacity and put significant strain on operations. The government’s existing compliance strategies appear unlikely to be able to handle these large volumes of freight without significant delay. Pre-screening and risk-based interventions will be essential to handle large shipments, and coordination across government agencies will be important to avoid delays. Instead of sequential clearance of consignments, authorities will have to perform joint inspections and parallel clearances. To simplify procedures, the government could start to review current procedures and identify those that limit the amount of goods that can be listed on one declaration.

83 World Bank. 2014. *Improving Trade and Transport for Landlocked Developing Countries*. Washington DC.

84 UNESCAP. 2018. *Study on Border Crossing Practices in International Railway Transport*. Bangkok.

232. Similarly, the country is not expected to have sufficient capacity to handle the estimated large number of rail passengers (and their luggage) without significant delays. Assuming an average train size of eight cars with 80 passengers, as is the case in China, 640 passengers would have to be processed at the border. When a train crosses between China and Lao PDR, all train passengers have to first exit the train, with their luggage, to complete the emigration and customs process before they can board the train again and continue their journey.⁸⁵ The train will then continue to port of entry, where passengers will exit the train once again, with their luggage, and clear immigration and customs procedures. At both stops, the train needs to wait for all passengers. The government needs to adopt appropriate procedures and allocate sufficient resources to effectively manage arrivals and departures, which is especially important to attract foreign trains and visitors.

233. To facilitate the movement of cargo, the government will have to develop new control strategies and policies to allow customs clearance at locations far from the border. This is especially important to allow trains to continue to special economic or free trade zones (i.e., block-train movements) without reconfiguration at the border. Authorities should also prioritize the clearing of agricultural exports at the point of loading to avoid interventions that may not only cause delay but also impact the quality of the goods shipped.

Regulatory Controls

234. It remains unclear what type of regulatory controls will be used and where specific border controls will be physically located along the railway corridor. Consultations with private and public sector stakeholders were unable to identify what types of regulatory controls will be used for the railway. It is also unclear whether cargo will be cleared in Boten or Nateuy. The government should prioritize efforts to clarify regulatory requirements by various agencies, as civil engineering works are already ongoing at multiple locations and the answers to these questions will impact how locations should be designed.

235. Many officials in Lao PDR are unaware of operational and infrastructure plans related to the Lao-China Railway. Beyond the operational requirements of the railway and the control of passenger traffic, planning for freight operations appears to be an afterthought in Lao PDR. At the Boten-Mohan border, Chinese officials could identify plans for goods clearance facilities, including the potential for joint clearance operations and locations for x-rays, while officials from Lao

PDR were not informed about where and how clearance would take place. Moreover, there is a lack of plans to establish appropriate facilities at intermediate locations within Lao PDR (close to where agricultural products are produced or sourced) to support agricultural exporters. For efficient trade flows, it will be important that exporters do not have to transport produce long distances to access a railhead for freight loading with suitable inter-modal or appropriate storage facilities.

236. The government needs to clarify if facilities at intermediate locations will be able to clear the export and import of goods. If stations will have this capacity, which is recommended by international best practices, they need to be equipped with the necessary equipment and infrastructure. The private sector should also be involved in the planning of railway-related infrastructure, as it would allow private firms to provide feedback on the relevance of plans and incorporate set plans into their investment decisions. Being able to clear exports at intermediate locations (rather than at the border) would offer opportunities to reduce regulatory bottlenecks and avoid delays at the border, and this will require all relevant regulatory agencies involved in the clearance of exports to be present at these locations.

237. Authorities in Lao PDR also need to review and adopt international best practices for managing rail freight at the country's borders (Box 8). The most common best practices, which are generally aligned with the WTO-TFA and RKC, include:⁸⁶

- id) abandoning manual, paper-based, burdensome, and inefficient processes;
- ie) reducing excessive document requirements in terms of the number of and supplementary documents;
- if) limiting translation requirements of documents, especially for transit;
- ig) removing the need for paper-based documents in addition to electronic data;
- ih) eliminating extensive physical controls such as complete inspections;
- ii) targeting controls based on efficient risk management and distinguishing between transit and import risk;

⁸⁵ Based on discussions with Lao officials.

⁸⁶ Best practices b, c, e, f, g, and n are particularly important for transit trade and, in turn, the success of the entire trade corridor.

BOX 8

Best Practices for Border Control of Rail Freight

- ij) introducing modern equipment for automated transport/regulatory-related controls, the recognition of transport means, and the surveillance and tracking of movements;
- ik) ensuring the efficient exchange of information (electronic or otherwise) between railway authorities and regulatory bodies;
- il) ensuring that no new regulatory authorities move to the border;
- im) improving the coordination between authorities responsible for standardizing information and joint risk analysis/controls to reduce duplication;
- in) encouraging cross-border cooperation between control authorities;
- io) improving transparency and limiting changes in legislation and requirements for border crossings;
- ip) improving the capacity of control authorities to implement formalities; and
- iq) ensuring an efficient transshipment process for intermodal transport and reloading facilities and equipment at rail terminals.

252. Physical and non-physical barriers at rail border crossings result in excessive delays, high costs, and uncertainties around the entire transport process. A recent analysis of select railway border crossings by the Asian Development Bank shows that it takes an estimated average of 32.6 hours to cross a border by rail in Central Asia.⁸⁷ Research also shows that the main reasons for extended delays at rail border crossings are mainly due to customs and border control formalities, followed by technical errors and insufficient infrastructure (Figure 35).

253. Passenger train delays at border crossings can significantly reduce the appeal of using trains instead of other transport options. The need to swiftly and efficiently process a large number of passengers at railway stations throughout the day can generate an uneven workload and strain infrastructure, resulting in delays. Lengthy immigration and customs procedures for

- A train is usually not required by government authorities to stop when crossing a physical border between countries.
- Most customs authorities require information to be submitted before a train arrives at a border station to increase the efficiency of risk analysis and improve targeting and selective controls, which would contribute to a streamlined customs process.
- The use of modern and non-intrusive control technologies improves the capacity of control authorities and reduces the need for time-consuming physical inspections.
- Many customs authorities are able to recognize foreign customs seals and, therefore, do not need to reseal foreign containers.
- At many international rail border crossings, public authorities and railway operators try to simplify the processing of block container trains and reduce the time spent at the border by simplifying documentation, increasing the efficiency of transshipment of containers, and improving cross-border cooperation (e.g., by introducing green-corridor border crossings).
- Customs transit procedures are simplified at the majority of border crossings around the world. Railways usually do not have to submit transit guarantees, and the consignment note is sometimes formally recognized as a customs transit document, or it serves as supplementary document in transit procedures. Customs authorities usually only require the submission of electronic transit declarations (or electronic transit manifests/transport documents). Also, transit controls at border crossings are usually simple and only sometimes include physical controls.
- The level of coordination between customs and other government authorities differs between border crossings. National public authorities usually cooperate when necessary, although joint inspections are established at very few border crossings.
- At the cross-border level, cooperation between customs and other government agencies is often characterized by regular meetings (yearly or more often if necessary), where questions and joint initiatives are discussed. However, there is usually no cross-border coordination between government authorities at the operational level, unless specified in the bilateral agreement.
- Long delays at border crossings constitute one of the main challenges for cross-border and transit railway transport.
- Authorities need to continuously assess and analyze challenges and issues at border crossings to facilitate and streamline the processing of railway freight at border crossings while ensuring efficient regulatory and security control.

⁸⁷ ADB (2015), Central Asia Regional Economic Cooperation Program; CAREC Corridor Performance and Monitoring and Measurement (CPMM): Annual Report 2014.

Source: World Bank (2014), Improving Trade and Transport for Landlocked Developing Countries, Washington, D.C.

passengers and goods can also lead to significant delays. For example, according to the official schedule, the time to cross the border by train from Hanoi to Nanning takes five hours and twenty minutes, more than 40 percent of the total travel time. By contrast, trains between the United Kingdom and France do not need to stop when they cross the border, as border control takes place on the train. Significant delays due to immigration and customs procedures lower the benefits of using the train compared to other forms of transport such as the car. Simplifying procedures and ensuring that there is sufficient staff when trains arrive will be important to quickly process all passengers and their luggage.

254. It is more secure to transport freight by rail than by road, as it is more difficult at the local level to tamper with rail cargo. Rail transport is also less likely to be subjected to physical inspections and controls at border crossings due to a regulatory control environment that often allows shipments to be inspected or examined at freight depots or other intermodal facilities along the supply chain.⁸⁸ Additionally, many railways around the world automate their controls and data exchange with cost-effective, NII technologies (e.g., x-ray) and RFID smart seals.⁸⁹

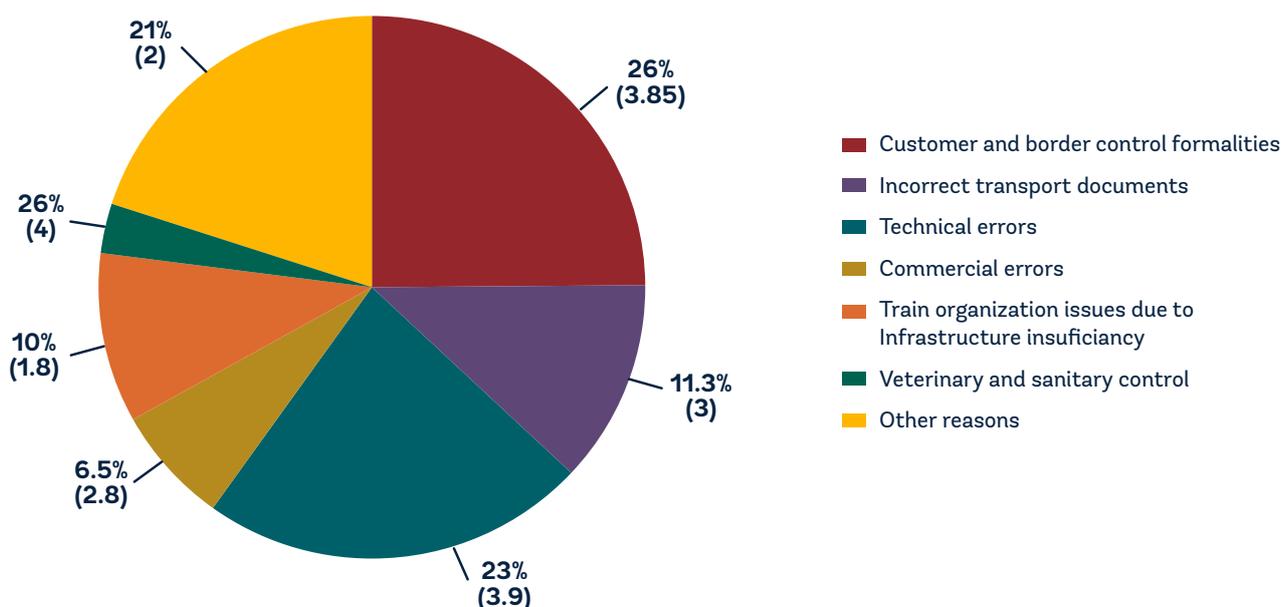
5.5 KEY POLICY RECOMMENDATIONS

255. To fully leverage the Vientiane-Boten Railway and its link to the BRI network, Lao PDR needs to implement comprehensive trade facilitation reforms. These reforms need to target not only the railway but also the overall trade environment, and they should be based on a clear strategy, improved planning and coordination, and updated operational practices and procedures.

Recommendation 1: Develop a Trade Facilitation Reform Plan and Improve Coordination and Collaboration

256. The successful implementation of trade facilitation reforms will require the identification of relevant trade barriers as well as the careful design, planning, and implementation of pragmatic reform efforts to address them. Authorities need to devise a concrete reform action plan that outlines planned reforms, how they are interlinked, and their relative importance, and it should include clear timelines and the sequencing of implementation. For example, some reforms may require external technical assistance or the

FIGURE 35: MAIN REASONS FOR EXTENDED DELAYS AT RAIL BORDER CROSSINGS



Source: ESCAP 2018.

⁸⁸ McLinden, Gerard McLinden, Enrique Fanta, David Widdowson, and Tom Doyle. 2011. *Border Management Modernization*. Washington, DC: World Bank.

⁸⁹ United Nations Economic and Social Commission for Asia and the Pacific. 2017. *Report on Information Technology for Seamless Rail-Based Intermodal Transport Services in Northeast and Central Asia*. http://www.unescap.org/sites/default/files/Information%20Technology%20for%20Intermodal%20Transport%20_edited_10022017.pdf (accessed 07 January 2019). For an example of such technology, see the 'VACIS® IR6500 Integrated Railcar Inspection System'. <https://www.leidos.com/products/security/vacis-ir6500-railcar>.

passage of legislation before than can be commenced. It is also critical to ensure that government agencies have the necessary capacity and expertise to manage the reform agenda, including a strategy to deal with potential resistance to reform from some stakeholders. This section examines the elements of developing a successful trade facilitation strategy, including the importance of monitoring the implementation of reforms.

257. In addition to developing a strategy, on-going planning and coordination will be necessary to manage the implementation of planned reforms. To ensure Lao PDR can fully leverage the railway, implementation efforts need to be coordinated between government agencies, the private sector, and Chinese officials. Authorities should prioritize the creation of a high-level rail corridor working group under Lao PDR's NTFC, which should include representation from the private sector and have appropriate authority to deal with all trade facilitation issues related to the railway. The working group should also be supported by a small permanent secretariat.

258. Data-sharing agreements between border agencies in Lao PDR need to include information on trade transactions and traders. In addition to regular transactional data gathered by Lao Customs and other public agencies through the usual clearance process, authorities need access to information that can inform intelligence gathering, which is important to improve risk management, as outlined in Article 8 of the WTO-TFA. Increased collaboration with Chinese authorities is also needed, as efforts by Lao PDR to improve its trade environment will have a limited impact if trains take two days to be cleared by customs and immigration in China.

FIGURE 36: DEVELOP A TRADE FACILITATION REFORM PLAN AND IMPROVE COORDINATION AND COLLABORATION

- **Develop a well-sequenced reform plan for trade facilitation reforms that has received input and approval from all relevant public agencies. For example, the plan could identify external technical assistance and required legislative changes.**
- **Establish a high-level rail corridor working group under the existing Lao PDR NTFC, with private sector participation and supported by a small permanent secretariat.**
- **Engage Chinese authorities to understand border processes and regulatory requirements and attempt to coordinate regulatory approaches and controls.**

Recommendation 2: Determine the Locations and Staff Levels of Locations for Customs Clearance

259. The government needs to clarify the location of border and customs controls and ensure sufficient staffing levels. This is especially important for private firms to be able to plan their operations and investments. Authorities in Lao PDR need to establish and equip transport facilities at intermediate locations along the rail corridor in the country to effectively support agricultural exporters. Imports and exports need to be cleared at these intermediate locations and connect with national transit to/from border points. Moreover, facilities need to be sufficiently staffed and equipped to effectively deal with the arrival of trains with a large number of passengers and/or shipments and minimize delays.

FIGURE 37: DETERMINE THE LOCATIONS AND STAFF LEVELS OF BORDER CONTROL STATIONS

- **Clarify the locations of border controls.**
- **Consider allowing the clearance of imports and exports at intermediate locations and ensure infrastructure can handle the expected demand.**
- **Review and adapt staffing levels to ensure facilities can provide the necessary services without delay.**

Recommendation 3: Reform and Modernize Operational Practices

260. Policymakers in Lao PDR need to continue to reform and modernize operational practices across all border agencies. The rail corridor will create additional pressure to improve the country's trade facilitation environment. Risk-based approaches to border management compliance will be essential to facilitate trade, the establishment of processes for approved economic operators should be continued, and the government should consider establishing one coherent risk management system for all agencies. Moreover, NII measures should be included in the country's examination and control strategy for the railway.

FIGURE 38: REFORM AND MODERNIZE OPERATIONAL PRACTICES

- Continue ongoing customs reforms in the areas of risk management and approved economic operators.
- Implement the Trade Facilitation Action Plan and supplement it with strategies that address any gaps in terms of the priorities listed in Table 22.
- Consider implementing modernized border management compliance practices in a trial linked to the management of rail corridor freight.

Recommendation 4: Increase the Transparency and Predictability of Regulations

261. Authorities need to increase the transparency of regulations and clarify their application. While the government has taken steps to improve regulatory transparency, additional efforts are needed. For example, it needs to ensure that the Lao Trade Portal remains up to date with information in Lao and English from all regulatory agencies. Lao Customs and other agencies should publish procedural documentation or practice statements that provide traders and the public with guidance on the import and export process, including operational requirements. The coverage of this information could be expanded to cover the whole rail corridor. Documentation and statements should at least cover the requirements of Article 1.1 of the WTO-TFA.

FIGURE 39: INCREASE THE TRANSPARENCY AND PREDICTABILITY OF REGULATIONS

- Publish procedural documentation or practice statements that provide traders and the public with guidance on the import and export process.
- Ensure the Lao Trade Portal is up to date with information in Lao and English from regulatory agencies.
- Explore options to expand the coverage of the portal to include whole-of-corridor information.

Recommendation 5: Increase the Use of ICT

262. Border agencies should transition from a paper-based customs clearance process to a system that allows for the electronic exchange of information. The government needs to support this transition to allow border agencies to effectively exchange data, as the use of ICT for trade facilitation varies drastically between border agencies. Removing the requirement of lodging the physical customs declarations before the clearance process begins could result in large efficiency gains. An electronic system is also needed because the electronic pre-submission of manifest level data is becoming common place for rail operations in China. While the recently launched LNSW could make it easier to facilitate the movement of goods along the corridor, it will require many of the functionalities outlined in the LNSW Blueprint, most of which are currently not yet available.

FIGURE 40: INCREASE THE USE OF ICT

- Enhance the automated customs system (ASYCUDA World).
- Introduce electronic customs declarations that do not require the submission of hard copies.
- Require the electronic submission of train manifests at least two hours before arrival.
- Examine options for making electronic pre-declaration mandatory for rail freight clearance.
- Ensure the LNSW contains all of the functionalities outlined in the LNSW Blueprint.

Recommendation 6: Reform the Regulatory Practices of All Relevant Public Agencies

263. All regulatory government agencies should streamline and harmonize their documentary requirements and consider facilitating the electronic exchange of relevant documents. Authorities should also continue to review the relevance and impact of NTMs in terms of their policy objectives and accelerate efforts to streamline or eliminate them. Beyond efforts to improve transparency, the government needs to encourage deeper cooperation between the country's agencies involved in setting national standards.

FIGURE 41: REFORM THE REGULATORY PRACTICES OF ALL RELEVANT PUBLIC AGENCIES

- **Adopt coordinated border management procedures to reduce interventions and documentary requirements.**
- **Review and streamline NTMs, including clarifying their requirements.**
- **Explore options to achieve the mutual recognition of permits and approval requirements with trading partners to minimize the need for sampling and testing.**
- **Examine options for making electronic pre-declaration mandatory for rail freight clearance.**
- **Ensure the LNSW contains all of the functionalities outlined in the LNSW Blueprint.**

Recommendation 7: Establish an Effective Transit Regime

264. The success of linking Lao PDR to neighboring countries and the broader BRI network will depend on the effectiveness of the transit regime. Customs transit procedures are simplified at a majority of border crossings along many railway corridors. However, Lao PDR does not currently have an effective transit regime. A transit system in Lao PDR could use the railway consignment note act as a transit declaration document, allowing it to be submitted electronically, and the railway company should not be required to submit a financial guarantee.

FIGURE 42: ESTABLISH AN EFFECTIVE TRANSIT REGIME

- **Adopt policy and appropriate legislation to allow the railway consignment note to act as a transit declaration document and allow it to be submitted electronically.**

SUGGESTED NEXT STEPS

265. Adopt a suitable transit system design. The Vientiane-Boten Railway will start operations in 2021, and the ability to provide smooth transit services will be key to fully leverage the railway and the entire trade corridor. The government could benefit from technical assistance to prepare and implement an efficient transit regime.

266. Identify and update rules, regulations, and laws related to the railway to improve trade facilitation. A priority for the government would be to review existing cross-border laws and regulations—both for freight and passengers—to determine what reforms are needed to improve the operations of the railway.

ANNEXES



ANNEX A

LAO PDR AND THE BELT ROAD INITIATIVE: KEY FACTS AND FIGURES⁹⁰

Background

BRI projects in Lao PDR. Lao PDR participates in projects of the China-Indochina Peninsula Economic Corridor (CICPEC), one of the six BRI overland economic corridors.⁹¹ Within the CICPEC corridor, Lao PDR is involved in two projects, namely the Kunming-Vientiane rail and the Bangkok-Vientiane rail, both of which are still under construction (Table 1). As part of CICPEC, Lao PDR is expected to develop around 457 kilometers of new rail.

Current state of transport infrastructure. In 2018, Lao PDR's WB Logistic Performance Indicator (LPI) of infrastructure quality was equal to 2.4 out of 5. According to this index, Lao PDR ranks lower than peer East Asian countries except Myanmar (Figure 1A).

Border management. In contrast, Lao PDR has shorter delays at the border than East Asian comparators (Figure 1B). According to the 2019 WB Doing Business indicators the time to comply with Lao PDR's border regulations for imports and exports amounted to 11 and 9 hours, respectively, in 2018, i.e. three times less than in Malaysia.

Trade policy. In 2016, Lao PDR's simple average MFN tariff rate was higher than that of most comparators, while the trade-weighted average MFN rate was the highest. In contrast, the effectively applied tariff rate, which includes preferential tariffs, was the lowest. (Figure 1C and 1D).

Estimated Impacts of the Belt and Road

The estimated impacts of the BRI are based on Computable General Equilibrium (CGE), Structural General Equilibrium (SGE), and Gravity models.⁹² The CGE and SGE simulations implement three scenarios: BRI railway and port infrastructure improvements only (Scenario A), infrastructure improvements and reduced border delays (Scenario B), and infrastructure improvements with reduced border delays and lower preferential tariffs (Scenario C).⁹³ All three scenarios assume full completion of all BRI projects.

Trade costs.⁹⁴ The BRI is estimated to reduce Lao PDR's export weighted trade costs by 0.61 percent, a gain that is the second lowest after that of Indonesia, among selected East Asian comparators. In contrast, the impact using import weights is equal to 2.56 percent, the second largest after Malaysia (Figure 2A).

Trade flows. Estimates based on a gravity model suggest the BRI would increase Lao PDR's exports of goods by 3.6 percent, surpassing the gains for Malaysia, Indonesia and the Philippines (figure 2B). Simulations based on a CGE model yield a 1.5 percent estimated increase in Lao PDR's exports of goods and services in Scenario A (BRI infrastructure improvement only); a 27.0 percent increase in Scenario B (BRI infrastructure improvement and reduced border delays); and a 27.4 percent increase in Scenario C (BRI infrastructure improvement, reduced border delays and reduced tariffs) (Figure 3A). Lao PDR's gains under scenarios B and C are the largest in the sample. Under the same three scenarios, the CGE-based estimated gains in imports of goods and services are of 5.7, 37.8 and 38.0 percent, respectively (Figure 3B). Thus, the CGE results point to significant benefits for trade when the infrastructure improvements are accompanied by reductions in border delays.

⁹⁰ Technical note by Cristina Constantinescu, Alen Mulabdic, Michele Ruta, World Bank, March 2019

⁹¹ The other 5 BRI overland economic corridors are: the China-Mongolia-Russia Economic Corridor; the New Eurasian Land Bridge; the China-Central Asia-West Asia Economic Corridor; the China-Pakistan Economic Corridor; the Bangladesh-China-India-Myanmar Economic Corridor.

⁹² The three models use data on the impact of the BRI on time and trade costs from de Soyres, Mulabdic, Murray, Rocha and Ruta (2018). The main data source for the CGE and SGE calibrations come from the Global Trade Analysis Project (GTAP) database version 10. See Baniya, Rocha and Ruta (2018), de Soyres, Mulabdic and Ruta (2018), and Maliszewska and van der Mensbrugge (2018) for details about data sources and data limitations.

⁹³ See enclosed "Notes on methodology" for details on how various methods differ (see the BRI report for details).

⁹⁴ Trade costs include tariffs, transport costs, and the cost of time. Time costs are calculated using estimates of the value of time from Hummels and Schaur (2013). See de Soyres, Mulabdic, Murray, Rocha and Ruta (2018) for details.

Foreign Direct Investment. Estimates of a gravity model suggest that the BRI transportation network could increase FDI flows to Lao PDR by 6.0 percent, i.e. about the same as the average for East Asia and Pacific, but less than the gains of at least 7 percent that may accrue to Thailand, Malaysia and Vietnam (Figure 3C).

Aggregate income. CGE-based estimates suggest that Lao PDR is expected to experience a 3.1 percent increase in real income compared to the baseline level under Scenario A (Figure 3C). Alternative scenarios allowing for complementary

reforms in addition to the BRI infrastructure improvements would increase the gains to 9.2 if infrastructure improvement is accompanied by reduced border delays (Scenario B) and 9.1 percent, if infrastructure improvement is accompanied by both reduced border delays and reduced tariff levels (Scenario C). Based on SGE estimates, Lao PDR's GDP gain would be 13 percent in Scenario A (the largest of all countries in the SGE sample), 21.6 percent in Scenario B and 22.2 percent in Scenario C (Figure 3D). Finally, the gains in FDI associated with the improvement in the BRI transportation network would lead to an increase in GDP growth by 0.12 percent (Figure 2D).

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TABLE 1. CHINA-INDOCHINA PENINSULA ECONOMIC CORRIDOR (CICPEC): PROJECTS DESCRIPTION AND STATUS

No.	Project	Improved Segment	Countries	Improvement Type	Status	Status Date
1.	Kunming-Vientiane rail	Kunming–Vientiane	China, Laos	New rail	Under Construction	22-Jul-18
2.	Bangkok-Vientiane rail	Bangkok–Vientiane	Thailand, Laos	New rail	Under Construction	11-Feb-18
3.	East Coast Rail Link (ECRL)	Kuala Lumpur– Kota Bharu	Malaysia	New hicap rail	Cancelled or postponed	13-Sep-18, 4-Nov-18
4.	Gemas-Johor rail upgrade	Gemas–Johor Bahru	Malaysia	Rail upgrade	Under Construction	30-Jul-18
5.	Bangkok-Kuala Lumpur HSR	Bangkok–Pedang Besar–Kuala Lumpur	Thailand, Malaysia	Rail upgrade	Proposed	7-Nov-18
6.	Kuala Lumpur-Singapore HSR	Kuala Lumpur–Seremban–Singapore	Malaysia, Singapore	New hicap rail	Cancelled or postponed	7-Sep-18
7.	Vietnam National HSR	Hanoi–Ho Chi Minh City	Vietnam	Rail upgrade	Proposed	8-Apr-18
8.	Vietnam-Cambodia rail	Phnom Penh–Ho Chi Minh City	Cambodia, Vietnam	New rail	Proposed	15-Feb-18, 28-Jun-18
9.	Burma railway	Nam Tok–Thanbyuzayat	Thailand, Myanmar	New rail	Planned	22-Jan-18
10.	Sihanoukville port	Phnom Penh–Sihanoukville	Cambodia	New rail	Under Construction	12-Sep-18
		Phnom Penh–Sihanoukville	Cambodia	New divided road		
		Sihanoukville	Cambodia	New seaport		
11.	Thai Canal	Satun–Songkhla	Thailand	New sea links	Proposed	6-Apr-18

Source: Reed and Trubetskoy (2018).

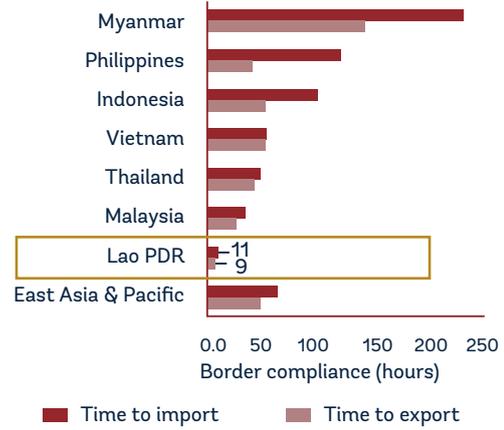
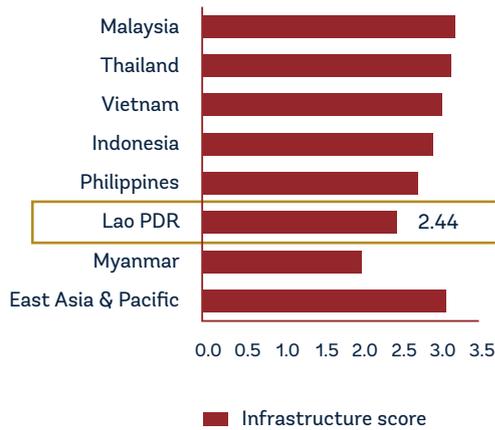
FIGURE 1: LAO PDR AND COMPARATORS: INFRASTRUCTURE QUALITY, BORDER DELAYS AND APPLIED TARIFFS

In Lao PDR, infrastructure quality is the second lowest in East Asia, after Myanmar ...

...yet border compliance is faster than in East Asian comparators

A. Score of perceived quality of transport infrastructure, 2018

B. Time to import and export

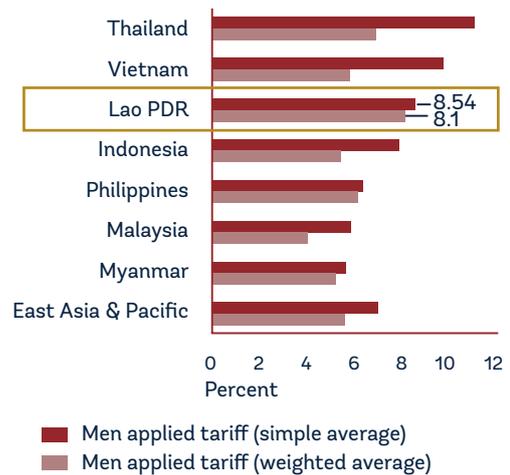
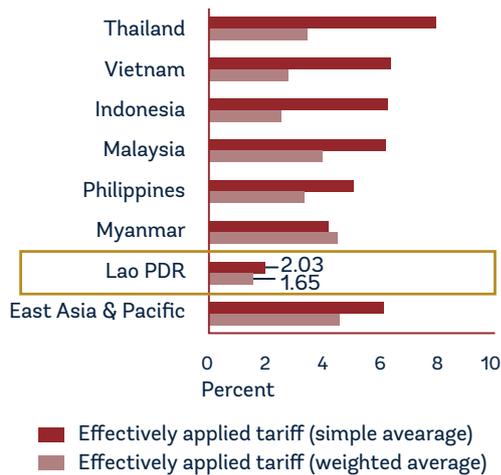


The effectively applied tariffs averages are relatively low compared to other East Asian countries, due to preferential rates...

...while the MFN rates remain high compared to those of regional peers.

C. Average effectively applied tariffs, 2016

D. Average MFN applied tariffs, 2016



Sources: A. World Bank Logistics Performance Index (LPI); B. World Bank's Doing Business 2019; C and D. TRAINS and staff calculations.
 Notes: Regional indicators are simple averages of country-specific measures. C and D. Effectively applied averages differ from the Most-Favored Nation (MFN) applied averages in that they also include preferential tariffs extended through unilateral or reciprocal preferential trade agreements.

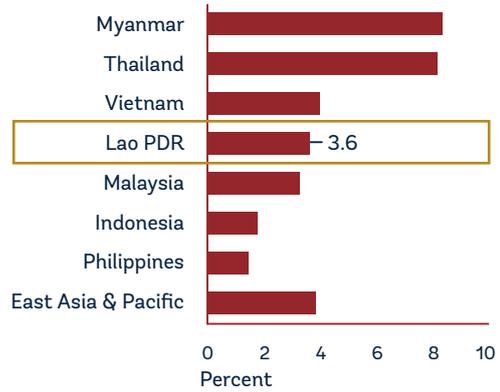
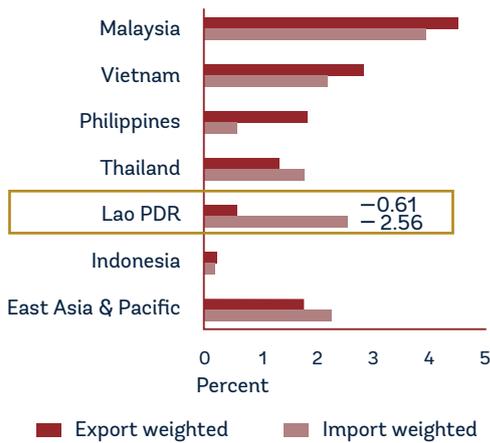
FIGURE 2: GRAVITY ANALYSIS AND OTHER ESTIMATION METHODS

While Lao PDR's estimated percentage reductions in export weighted trade costs are among the lowest in East Asia, ...

..., the percentage gains to goods exports are expected to be higher than those of Malaysia, Indonesia and the Philippines, according to gravity model estimates, ...

A. Trade cost reductions

B. Increases in goods trade

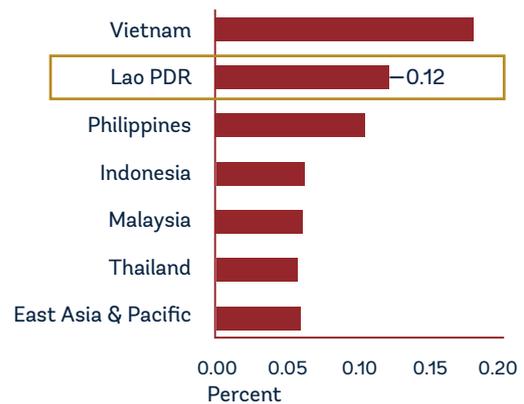
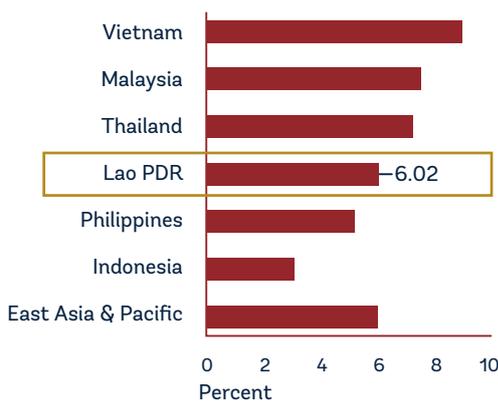


... and the gains in FDI flows would be the same as the EAP average, but less than those of Vietnam, Malaysia and Thailand...

...and would translate into an increase in GDP growth second only to Vietnam, among East Asian comparators.

C. Increases in FDI due to BRI transportation network

D. Increases in GDP growth due to FDI gain from BRI transportation network



Sources: A. Based on de Soyres, Mulabdic, Murray, Rocha and Ruta (2018). B. Based on Baniya, Rocha, and Ruta (2018). C and D. Based on Chen and Lin (2018)

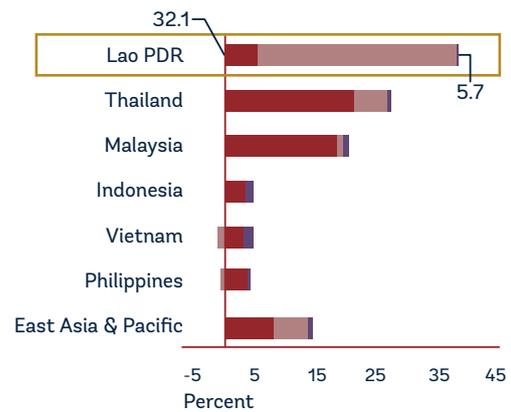
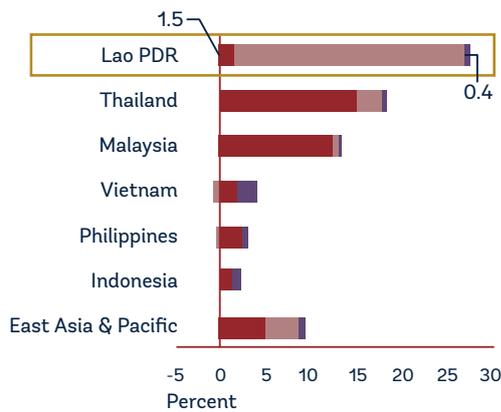
FIGURE 3: CGE AND SGE MODELLING

Lao PDR's CGE-based estimated gains in exports are the largest in East Asia, and accrue mostly from complementing infrastructure improvements with reductions in border delays...

...and the same is true of CGE-based estimated gains in imports.

A. Increases in exports of goods and services

B. Increases in imports of goods and services

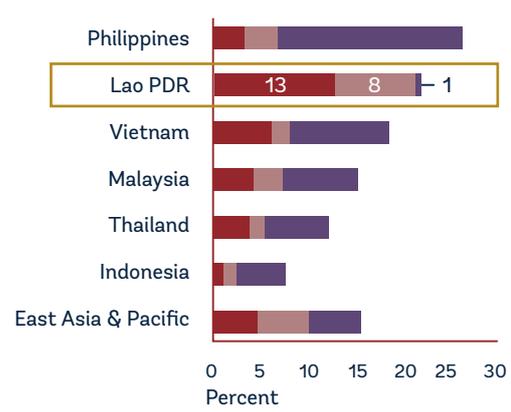
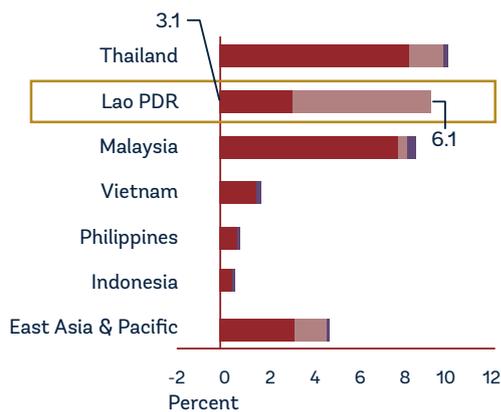


CGE-based estimates of Lao PDR's overall gains in income are lower than those of Thailand. They also point to the importance of reducing border delays.

In contrast, SGE-based estimated gains are smaller than those of the Philippines and derived mostly from infrastructure improvement.

C. Increases in GDP (CGE analysis)

D. Increases in GDP (SGE analysis)



■ Infrastructure improvement ■ Reduce border delays ■ Reduce tariffs

Sources: A-C. Based on Maliszewska and van der Mensbrugge (2018). D. Based on de Soyres, Mulabdic and Ruta (2018).

Note: Scenario A includes BRI infrastructure improvement only; scenario B includes BRI infrastructure improvement and reduced border delays; scenario C includes BRI infrastructure improvement, reduced border delays and reduced tariff levels.

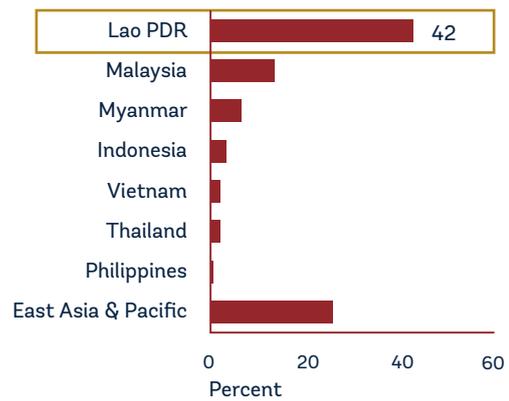
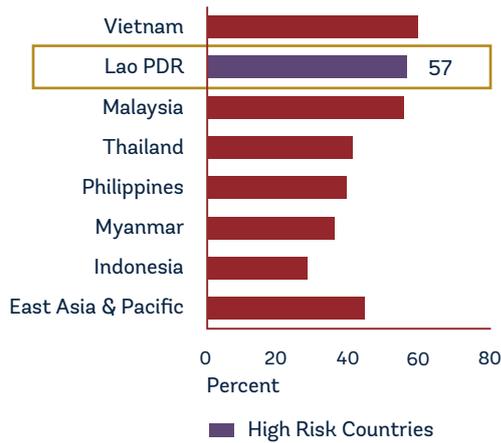
FIGURE 4: PUBLIC DEBT AND EXPECTED BRI COST

Lao PDR has a high public debt to GDP ratio, and is considered a High Risk country.

BRI investment as a share of GDP is larger in Lao PDR than in its regional peers.

A. Debt to GDP, 2016

B. Expected BRI debt financing to GDP, 2016



Sources: A-B. Based on Bandiera and Tsiropoulos (2018). A. World Economic Outlook (WEO) and World Bank and International Monetary Fund (IMF) Debt Sustainability Analyses (DSA); B. World Economic Outlook (WEO) and WIND Economic Database.
 Note: Regional indicators are simple averages of country-specific measures.

NOTES ON METHODOLOGY

The three models on which the estimates presented here are based differ in scope and underlying assumptions from each other, hence it is not surprising that the estimates themselves differ, and that these differences may at times be significant. The diverse approaches are useful in that they allow to obtain different perspectives on the effects of the BRI, thus offering a more robust quantification of the outcomes.

The computable general equilibrium (CGE) results are from Maliszewska and van der Mensbrugghe (2018). They are based on the ENVISAGE model which is a global, recursive dynamic CGE model developed at the World Bank. The model incorporates five different production factors, includes 28 sectors, and comprises 34 countries and regions. The CGE results are complemented with estimates from a static structural general equilibrium (SGE) model by de Soyres, Mulabdic and Ruta (2018). This is based on Caliendo and Parro (2015) – a Ricardian model with sectoral linkages, trade in intermediate goods and sectoral heterogeneity – which allows to include 107 countries and regions.

In addition to using different production functions and different trade elasticities, the CGE and SGE models differ in several respects. First, the CGE has a more detailed structure of the economy which allows for a more thorough investigation of the sectoral and dynamic effects. Second, disaggregation in the SGE model is larger, allowing it to capture the impact of lower trade costs associated with BRI transportation projects on trade flows for a larger number of countries. Third, the SGE models assumes strong complementarities between foreign and domestic inputs in production.

The effects of the BRI on trade between BRI economies and on FDI flows to these countries are investigated with a standard gravity model. This is a partial equilibrium approach, which does not account for the effects of BRI infrastructure on the economy as a whole, but it allows to include all BRI economies and highly disaggregated sectors into the analysis. Results are from Baniya, Rocha and Ruta (2018) and Chen and Lin (2018).

More details about the three models can be found in the BRI report.

ANNEX B

ANNEXES ON TRADE FACILITATION CHAPTER

LAO PDR'S ALIGNMENT WITH THE WTO TFA

Article	Measures	Scope	Lao Category
1	Transparency, the publication of information, information available on the internet and the establishment of enquiry points All border management agencies		A
2	Traders and other interested parties must be given an opportunity and reasonable time to comment on proposals for new trade-related and customs laws and administrative regulations	All border management agencies	B
3	Advance Rulings - Traders can obtain reliable "binding" information about the tariff classification, origin, or other customs treatment of his goods before importation	Customs	C
4	Appeal and review of decisions - The rights of traders to obtain review and correction of decisions	Mandatory for Customs and encouraged for other border management agencies	A
5	Notifications for enhanced controls or inspections	All border management agencies	A
6	Disciplines on fees and charges imposed on or in connection with importation and exportation and penalties	All border management agencies	A
7	Release and Clearance of Goods – Provides for pre-arrival processing, electronic payment, separation of release from final determination of duties, fees and charges, risk management, post clearance audit, publication of release times, authorized economic operators, expedited shipments and perishable goods.	All border management agencies	B
8	Border agency cooperation – Requires national border management agencies to cooperate and coordinate activities and encourages neighboring countries to cooperate to facilitate trade.	All border management agencies	C
9	Movement of goods intended for import under customs control – provides for declarants to be able to move goods from a customs office of entry to another customs office within the same customs territory.	Customs	A
10	Formalities connected with importation, exportation and transit – Provides for acceptance of copies, supports the adoption of international standards, the establishment of single window systems, discourages the use of pre-shipment inspection for customs classification and valuation, eliminates the mandatory use of customs brokers, mandates the use of uniform national documentation and procedures, the right of traders to return rejected goods, and supports temporary admission and inwards and outwards processing.	All border management agencies	C
11	Freedom of transit – Provides for strengthened disciplines over freedom of transit, transit fees and charges, non-discrimination, transit procedures and controls, guarantees and enhanced cooperation in transit matters.	All border management agencies	C
12	Customs cooperation – Supports enhanced provisions for the exchange of information between customs administrations.	Customs	C

Note: Category 'A' represents fully compliance when the TFA entered into force, 'B' areas where additional time for alignment is needed, and 'C' requires time and additional technical assistance. Where TFA Articles include sub-measures, an average has been calculated. Source WTO and authors.

REGULATORY TRADE FACILITATION REFORM PRIORITIES BASED ON WCO RKC

General Annex	Standard / Recommended Practice
Correlate the business hours and the competence of Customs offices located at a common border crossing	Standard 3.3.
Operate joint customs controls at common border crossings whenever possible	Transitional Standard 3.4.
Cooperate with neighboring Customs to establish a juxtaposed Customs office at common border crossings wherever possible	Transitional Standard 3.5.
The format of the electronically lodged Goods declaration should be based on recommended international standards for electronic information exchange	Standard 3.11.
Limit the data required in the Goods declaration only to such particulars deemed necessary (e.g. for assessment of duties and taxes)	Standard 3.12.
Limit requirements for supporting documents to the Goods declaration only to those necessary (e.g. to permit control of the operations)	Standard 3.16.
Permit lodgment of supporting documents by electronic means	Transitional Standard 3.18.
Do not require a translation of the particulars of supporting documents except when necessary to permit processing of the Goods declaration	Standard 3.19.
Permit the lodging of the Goods declaration by electronic means	Transitional Standard 3.21.
Provide lodging and registering or checking of the Goods declaration and supporting documents prior to the arrival of the goods	Standard 3.25.
Provide simplifications (e.g. release of the goods on the provision of the minimum information necessary to identify the goods; lodgment of the goods declaration by means of an entry in the records) for authorized persons who meet specified criteria (e.g. a satisfactory system for managing commercial records)	Transitional Standard 3.32.
Ensure coordinated (and if possible simultaneous) inspections of goods by the Customs and other competent authorities	Transitional Standard 3.35.
Specific Annex A - Arrival of goods in a Customs territory	
Limit information requirements to that available in carriers' normal documentation (based on relevant international transport agreements)	Specific Annex A; Ch.1 – Recommended Practice 9.)
Specific Annex E - Customs transit / Transshipment	
Goods being carried under Customs transit shall not be subject to the payment of duties and taxes (security may be required)	Specific Annex E; Ch.1 – Standard 3.
Accept any commercial or transport document setting out clearly the necessary particulars as the descriptive part of the Goods declaration for Customs transit	Specific Annex E; Ch.1 – Standard 6.
Accept adequate commercial or transport documents as the Goods declaration for Customs transit	Specific Annex E; Ch.1 – Recommended Practice 7.
Allow transfer of the goods from one means of transport to another without Customs authorization, provided that any Customs seals are not broken or interfered with	Specific Annex E; Ch.1 – Standard 20.

ANNEX C

POTENTIAL SOCIAL IMPACTS OF THE LAO-CHINA RAILWAY

The Lao-China Railway Corridor Development is expected to stimulate demand for long-distance trucking services across the Thai and China borders with Laos. Several studies have been done on the links between long-distance trucking routes, commercial sex work and health impacts in Africa as well as South Asia, but not in South East Asia, presenting an opportunity to learn from these experiences and avoid similar devastating social outcomes. According to the Southern African Development Community⁹⁵ increased cross-border movement in the region increases the risk of HIV infection - not just among high risk groups such as commercial sex workers and long-distance truck drivers, but also among migrant populations, communities close to border sites, and communities with high levels of in- and out-migration. Young working age adults are at particular risk, given that they make up the largest portion of mobile populations, as are young women involved in periodic transactional sex. Due to infrastructure challenges, and delays in customs clearance, long-distance truck drivers often spend days at border crossings waiting customs clearance. At the many truck stops along transport corridors and at border towns where long-distance truck drivers stop to rest, alcohol is served and social norms are not observed leading to high risk sexual behavior. Poverty and lack of income opportunities lead women into transactional and commercial sex with the transient drivers and labor who have disposable income. The lack of security and community leaves women and girls vulnerable to sexual abuse and exploitation and even trafficking from incoming workers and drivers. Furthermore, these conditions also lead to spread of HIV and AIDS⁹⁶.

A study on sexual risk behaviors of long-distance truck drivers in central India⁹⁷ revealed that 49 percent of them had commercial sex worker exposure in the previous 6 months. Most incidences of HIV and STI occurs in places where trucks are loaded and unloaded, or where truck drivers stop to have their documentation inspected (which can take a considerable length of time). Truck drivers, due to the itinerant nature of their occupation and being far away from their families for extended periods of time, tend to have multiple sexual partners and visit commercial sex workers, and thus are high risk group in the spread of HIV and AIDS.

The most common form of human trafficking (79 percent) is sexual exploitation, with victims predominantly being women and girls. Many of the Lao victims are taken to Thailand, Malaysia or China, with approximately 90 percent of Lao trafficking victims going to Thailand⁹⁸. Due to limited awareness among front-line officers and insufficient border security measures the risk of trafficking of women and girls is likely to increase in movement between China and Thailand through Laos that the new railway will bring.

Most traditional bilateral and multi-lateral development partners conduct an Environmental and Social Impact Assessment (ESIA) in line with Good International Industry Practice (GIIP) on all proposed projects prior to approval and implementation. For projects of this type and nature they should be informed by social and health impact assessments with particular focus on addressing on gender-based violence, and in particular sex trafficking and exploitation of women and children.

95 SADC HIV and AIDS Cross Border Initiative, no date.

96 The Global Fund, 2015.

97 International Journal of Research in Medical Sciences, Thakur A et al. Int J Res Med Sci. 2015 Jul;3(7):1769-1774, 2015.

98 Open Development Laos, October 2018.





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FOR THE LAO-CHINA RAILWAY TO
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LANDLINKED ECONOMY ...
BOLD POLICY REFORMS TO
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Kunming

CHINA

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WORLD BANK GROUP

**The World Bank Group Lao PDR Country Office,
East Asia and Pacific Region**

Xieng Ngeun Village, Chao Fa Ngum Road,
Chantabouly District, Vientiane, Lao PDR

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