

[Thailand]

Current Situation of the Laos-China Railway

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1. Introduction

On December 3, 2021, the Laos-China Railway began operations, the day after Lao National Day. Previously, the only railway in Laos was the Lao State Railway, which opened in 2009. It had a distance of 3.5 km, a gauge of 1,000 mm, and was a single-track, non-electrified system. However, with the introduction of the Laos-China Railway, a significant transportation route was established, connecting Kunming, China, to Vientiane, the capital of Laos. The Laos-China Railway covers approximately 420 km and operates as a single-track, electrified system with a gauge of 1,435 mm. Additionally, there are plans to connect the Laos-China Railway to the Thailand-China Railway, which is currently under construction within Thailand. The Thailand-China High-Speed Railway is projected to have a length of approximately 610 km and will operate as a double-track, electrified system with a gauge of 1,435 mm.

In landlocked Laos, road transportation has traditionally dominated domestic passenger transport (98%) and freight transport (86%). However, the introduction of the Laos-China Railway, which facilitates both passenger and freight transportation, is bringing about significant changes to the transportation and traffic environment in Laos. Against this backdrop, a field survey was conducted in October and November 2022 to examine how the Laos-China Railway was operated. This report provides an overview of the Laos-China Railway, its current operational status, and future prospects.

2. Overview of Laos-China Railway

In April 2010, the Laos government signed a memorandum of understanding with the Chinese government, expressing China's commitment to supporting the railway construction in Laos, after which surveys and designs were initiated. In November 2015, both countries' governments reached an agreement on the construction project for the Laos-China Railway, and a groundbreaking ceremony was held in December of the same year. Construction officially commenced in December 2016.

The construction work was primarily carried out by Chinese companies, including China Railway Group Limited. Over five years, the construction project encompassed various tasks, including 75 tunnels totaling approximately 198 km in length and 167 bridges totaling around 62 km. The railway officially commenced operations in December 2021. The key specifications of the Laos-China Railway are provided below.

- Section : Vientiane to Boten
- Project cost : 5,986,000,000 US dollars
- Gauge : 1,435 mm
- Length : Approximately 420 km
- Passenger services: 10 stations including
 - Vientiane Station
 - Vang Vieng Station
 - Luang Prabang Station
 - Muang Xai Station
 - Boten Station, etc.
- Maximum Speed : 160 km/h (Express Train), 120 km/h (Regular Train)
- Travel Time : 3 hours 40 minutes (Express Train),

5 hours 20 minutes (Regular Train) ^{Note 1)}

- Frequency : Initially 3 round trips per day, from December 2022 onwards 4 round trips per day, from April 2023 onwards 5 round trips ^{Note 2)}
- Operator : Laos China Railway Company Limited (LCR)



Source) rfa.org, Giant China, tiny Laos link up with launch of high-speed train

Figure-1 Laos-China Railway Route Map

3. Operation

3.1 Ticketing

As of October and November 2022, tickets could be purchased from manned ticket counters at the stations or manned ticket counters within the city, starting two days prior to the travel date. Starting from December 2022, the "LCR Ticket" smartphone application was launched, enabling passengers to buy tickets online. This application is available in three languages: Lao, Chinese, and English.

When purchasing tickets, passengers are required to present their identification documents, such as a passport. The ticket will display the passenger's name and identification document number (Image-1). In the case where a representative purchases the ticket on behalf of a passenger, they must present a copy of the

passenger's identification document or an equivalent proof. Ticket checks take place at three checkpoints: (1) upon entering the boarding station, (2) during the journey, and (3) upon exiting at the destination station. At checkpoint (1), the presentation of the identification document will also be mandatory.



Image-1 Tickets of LCR (The size is approximately 80mm in width and 150mm in length)

3.2 Stations

During the on-site survey, we visited Vientiane Station, Luang Prabang Station, and Boten Station. These stations are all ground-level stations, meaning that the station building and platforms are located on the same level. Additionally, they are designed with underground passageways to facilitate passenger movement between platforms.

Vientiane Station is situated approximately 15 km northeast of downtown Vientiane, in the suburban area, and can be reached by car in approximately 30 to 40 minutes. The station is not surrounded by commercial facilities or residential areas. There is a spacious parking lot located in front of the station (Image-2), but public transportation options, such as bus services, operate at low frequencies. For commuting between the city center and the station, private vehicles or taxis are convenient choices.

This station is the terminus for passenger trains, and its station building offers a generous amount of space. However, the majority of the interior is limited

to the ground floor. To provide seating for passengers, numerous rows of chairs are arranged throughout the station (Image-3, Image-4). There are no automated ticket gates at the entrance of the station building; instead, staff members verify tickets and inspect luggage. Within the station building, there is a shop measuring approximately 5m x 10m, where basic food, beverages, souvenirs, and other items are available for purchase. There are no barriers or fences on the platform, allowing passengers to access a train directly from the station building. The platform offers ample width (Image-5, Image-6).

(Google Map : <https://goo.gl/maps/PoRgCkrNoyZrzuSD6>)



Source) LCR Facebook page

Image-2 Vientiane Station Bird's Eye View



Image-3 Exterior of Vientiane Station



Image-4 Interior of Vientiane Station Building



Image-5 Passengers waiting to enter the platform



Image-6 Platform

Luang Prabang Station is situated approximately 12 km east of the UNESCO World Heritage site of Luang Prabang, amidst a mountainous region. The station can be reached by car in around 20 minutes. Notably, there is a difference in level between the station building and the parking lot (Image-7, Image-8). In front of the station, shared vans are available for transportation to the city center, with a fare of 35,000 Lao Kip (approximately 2 USD) per person (Image-9).

The design and structure of the station building and platforms resemble those of Vientiane Station. Within the parking lot, there is a modest shop, and near the parking lot entrance, several shops, including a dining area, are located (Image-10, Image-11).

(Google Map : <https://goo.gl/maps/PGEZtKJ7USc6VeWv9>)



Image-7 Exterior of Luang Prabang Station



Image-11 Interior of the dining area and shop



Image-8 Parking lot of Luang Prabang Station



Image-9 Shared van



Image-10 Exterior of the dining area and shop

Boten Station is located about 4km south of the China-Laos border, approximately a 10-minute drive away. A container yard is set up in front of the station, and there is a border checkpoint for cargo trucks alongside the railway, with numerous container trucks passing through the area (Image-12 to Image-14).

There is no public transportation available directly in front of the station, so taxis are used to visit the Boten Economic Zone, named as the Boten Beautiful Land, near the border with China. Within the Boten Economic Zone, although some constructions is still in progress, buildings and infrastructure have been developed to a certain extent in designated areas, and in some places, goods are sold and food and beverages are offered (Image-15, Image-16). As of October 2022, there weren't many visitors to this area, but with the relaxation of China's zero-COVID policy, an increase in travelers is expected in the future.

(Google Map : <https://goo.gl/maps/XRywlujBJtTvtMDQ6>)



Image-12 Exterior of Boten Station



Image-13 Container Yard in front of Boten Station



Image-14 Border Checkpoint for Freight Trucks



Source) The Phnom Penh Post, Dec. 20th 2021, Laos aims to attract 709 firms to SEZs over next five years

Image-15 Boten Special Economic Zone



Image-16 Conditions within the Boten Special Economic Zone

3.3 Roolling Stock

Regarding the passenger trains, a modified version of China's high-speed train "Fuxing Hao," known as the high-speed train "CR200J Lāncāng (Mekong) Express," has been introduced. The leading power car is equipped with two pantographs (Image-17). The second-class passenger cars have the following specifications: length of 26.4m, weight of 52.6t, payload of 8.9t, and a seating capacity of 98 passengers.

The seats are categorized into three types: Business Class, First Class, and Second Class. Power outlets and USB Type-A (2.0) ports are available at the seat's footwell (Image-18 to Image-20). Moreover, the connecting sections of the passenger cars are equipped with facilities such as toilets, washrooms, luggage spaces, kiosks, water dispensers, fire extinguishers, and other amenities.



Image-17 CR200J Lāncāng (Mekong) Express



Source) LCR Facebook page

Image-18 Business Class



Image-19 First Class



Image-22 Freight trains



Image-20 Second Class



Image-23 Seats on ordinary passenger trains

Ordinary trains and freight trains are hauled by China's HXD3C electric locomotive (Image-21 to Image-23).



Image-21 Ordinary passenger trains

3.4 Transport Volume and Other matters

After the railway's opening, the passenger transport volume for one year (December 2021 to November 2022) reached approximately 1,269,000 passengers, while the freight transport volume amounted to 1,995,500 tons, with cross-border traffic accounting for 1,570,000 tons.

Regarding passenger transport, considering the frequency of trains (typically 3 round trips per day, increased to 4-5 round trips during peak periods) and the train's capacity (approximately 700 people per train set), it can be inferred that the passenger occupancy rate is exceptionally high. During our visits, a substantial number of passengers were observed, especially between Vientiane and Luang Prabang, and some reports suggest that around 85% of visitors to Luang Prabang utilize the railway.

Regarding freight transport, the primary route entails cross-border transportation between Laos and China, facilitated by the interconnected railway systems. Commonly transported goods from China to Laos include consumer products, fertilizers, electronics,

textiles, and vegetables. Conversely, the main items transported from Laos and neighboring countries to China encompass iron and zinc ores, cassava flour, rice, charcoal, rubber, and fruits. On the other hand, due to the different track gauges between the Laos-China Railway and the State Railway of Thailand, transshipment between the two railways or truck transportation are still necessary for cross-border transport between Laos and Thailand.

It should be noted that the timetable for freight trains has not been published, thus the exact number and operation of freight trains remain unknown. Nonetheless, the number of freight stations is nearly equivalent to that of passenger stations, and a substantial quantity of freight cars were observed at these stations. Furthermore, there were instances where freight trains were seen awaiting clearance at intermediate stations or yielding to oncoming trains. Based on these observations, it can be inferred that there is a significant volume of freight train operations.

4. Future Outlook

In Laos, where road transport has traditionally played a major role in both passenger and freight transportation, the Laos-China Railway has achieved significant operational milestones in its first year of operation. There has been a notable rise in passenger demand since its opening, resulting in a steady increase in the number of passenger trains. Furthermore, effective April 13, 2023, direct passenger train services connecting Vientiane, Laos, and Kunming, China have been initiated, enabling travel between the two cities in approximately ten and a half hours.

However, in the future, if there is an upsurge in passenger demand resulting from enhanced exchange with China, the existing transportation capacity will face limitations, thereby prompting a reassessment of train compositions and operational frequencies. Additionally, as the main line operates on a single-track system, there are sections where regular trains must wait at

passing stations to accommodate express trains, necessitating close monitoring of future developments in operational planning.

Furthermore, in neighboring Thailand, the construction of the Thailand-China High-Speed Railway, which will link Bangkok to the Laos-China Railway, is presently underway, with an anticipated completion date around 2030. However, a decision has not yet been made as to whether the Thailand-China High-Speed Railway will cater exclusively to passengers or serve both passengers and freight. Consequently, the future development plans for stations near the Laos-Thailand border in both countries are being closely monitored.

Laos has achieved a significant milestone as the first country among the ASEAN-10 nations to establish a long-distance quasi-high-speed railway. At the railway stations, not only Laotians but also foreign tourists can be observed boarding the passenger trains, while freight trains can be seen waiting at intermediate stations or yielding to oncoming trains. This observation reflects the successful operational status of the Laos-China Railway, underscoring its vital role in both passenger and freight transportation. It remains captivating to witness the utilization of this major transportation artery and the transformation of Laos, previously considered landlocked, into a land-linked country.

Note:

Note1) Travel time from Vientiane Station to Boten Station.

Note2) During peak periods, additional special trains may be added.

References

- 1) JICA, dec. 20016, ラオス国 物流及び道路整備を中心とする東西経済回廊等の活用促進に関する情報収集・確認調査 報告書,
<https://openjicareport.jica.go.jp/pdf/12288312.pdf>,
Access date: 31st May 2023
- 2) IDE-JETRO, Aug. 2018, ラオス・中国高速鉄道プロジェクトこれまでの経緯, 進捗状況, 問題点,
<https://www.ide.go.jp/Japanese/IDESquare/Overseas/2018/I>

- SQ201830_012.html,
Access date: 31st May 2023
- 3) IDE-JETRO, Nov. 2021, ラオス・中国鉄道は何をもたらすのか?—両国にとっての意義,
https://www.ide.go.jp/Japanese/IDEsquare/Eyes/2021/ISQ202120_030.html,
Access date: 31st May 2023
- 4) People' s Daily Online 日本語版, 3rd Dec. 2021, 中国ラオス鉄道が全線開通 1千キロ以上を支える「復興号」技術,
<http://j.people.com.cn/n3/2021/1203/c94476-9928162.html>,
Access date: 31st May 2023
- 5) Vientiane Time, 21st Sep. 2022, Laos-China railway carrying more freight,
https://vientianetimes.org.la/freeContent/FreeContent183_laochina.php?fbclid=IwAR1TFIqGyyeR57S5tLNN5Hs4RNKmmq3mpDMvQgahYdyhQ9WL9TbcYc-yXHc,
Access date: 31st May 2023
- 6) Vientiane Time, 5th Dec. 2022, Laos, China celebrate one year of successful railway operation,
https://www.vientianetimes.org.la/freeContent/FreeContent235_Laoschinacelerate.php,
Access date: 31st May 2023
- 7) Facebook, Laos-China Railway Company Limited
<https://www.facebook.com/LaosChinaRailway>,
Access date: 31st May 2023