

[Thailand]

Progress of the Thailand–China High-Speed Railway

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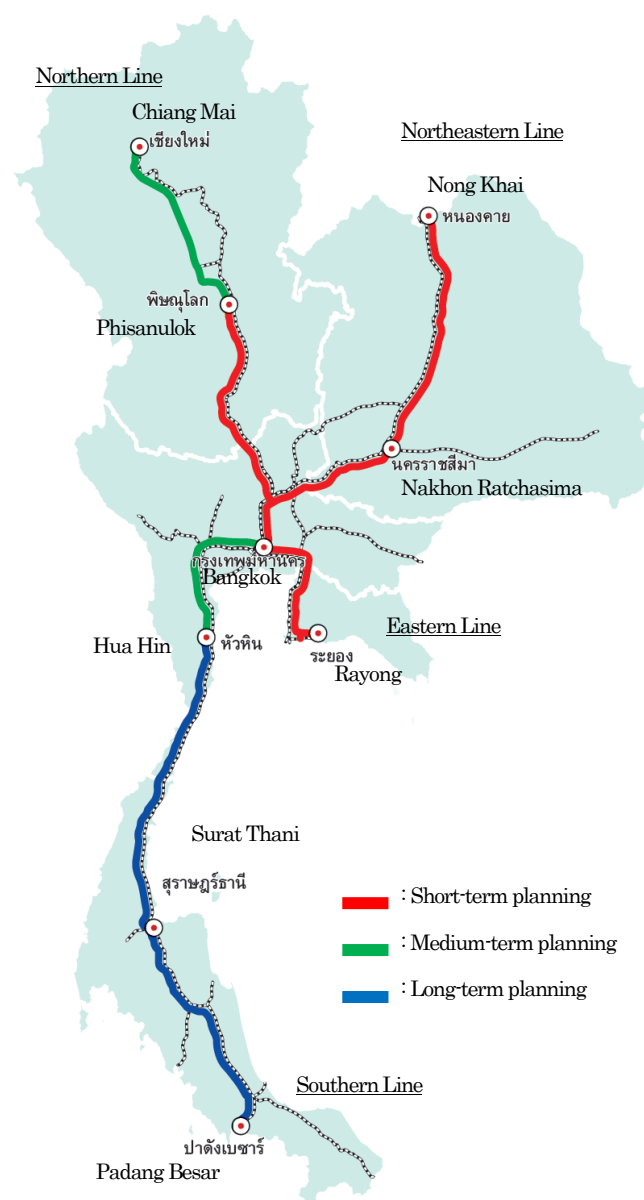
1. Introduction

Since 2009, Thailand has been planning the development of high-speed railways (HSR), with a total of 2,700 km of lines planned for four routes starting from Bangkok. The eastern line will run via through Rayong to Trat near the Cambodian border, the northeastern line to Nong Khai near the Laos border, the northern line to Chiang Mai, and the southern line to Padang Besar near the Malaysian border. Short-term planning covers 1,207 km of the routes, medium-term planning covers 702 km, and long-term planning covers 791 km (Figure-1).

The northeastern line, in cooperation with China, has been approved by the governments involved for development as the “Thailand–China HSR.” In 2017, the Thai government approved Phase 1 of the project, which includes a 250 km section from Bangkok to Nakhon Ratchasima, and construction by the State Railway of Thailand (SRT) has been underway since the end of that year. Preparation for Phase 2, which involves constructing a 357 km section from Nakhon Ratchasima to Nong Khai, is also currently underway.

As part of the Eastern Economic Corridor project, the 220 km section of the eastern line from Don Mueang station to U-Tapao station is planned to be implemented under the public-private partnership (PPP) scheme. The Cabinet approved this plan in 2018, and in 2019, SRT signed a business contract with Asia Era One ^(Note 1) for the project. Construction of the northern and southern lines has not yet begun. The Thai and Japanese governments have agreed that Japan will assist in the development of the northern line.

In September 2022, a site visit and hearing were conducted with the cooperation of SRT, the construction entity for the Thailand–China HSR (Phase 1). This report provides an overview of the project, including the progress of construction works and future prospects.



Source) SRT, รถไฟความเร็วสูง ขงนครราชสีมา-หนองคาย

Figure-1 HSR planning lines in Thailand

2. Overview of Thailand-China HSR

In December 2014, the Thai government signed a memorandum of understanding with the Chinese government, agreeing to jointly develop two double-track railways with a gauge of 1,435mm as a joint venture between Thailand and China (Figure-2). The apportionment of project costs was a topic of negotiation between the two governments. While the Thai government sought investment and low-interest loans from China, the negotiations proved difficult.

In March 2016, the Thai government announced its policy to fund the entire project cost and entrusted the implementation of the Thailand-China HSR to China as a Thai-funded project. In May 2016, a joint committee consisting of Thailand's Ministry of Transport and Ministry of Foreign Affairs, and China's National Development and Reform Commission, among others, agreed to commence the development of Phase 1 of the Thailand-China HSR between Bangkok and Nakhon Ratchasima (Figure-3).

In July 2017, the implementation of the Thailand-China HSR (Phase 1) was approved by the Thai Cabinet, and construction work commenced in December 2017.

The main specifications of the Thailand-China HSR (Phase 1) are as follows:

- Section: Bangkok to Nakhon Ratchasima
- Project cost: 179,412,210,000 Thai Baht
- Length: 250.77 km
 - Elevated section: 188.68 km
 - Embankment section: 54.09 km
 - Tunnel section: 8.00 km
- Number of stations: 6 stations
 - Bang Sue Station (Note 2)
 - Don Mueang Station
 - Ayutthaya Station
 - Saraburi Station
 - Pak Chong Station
 - Nakhon Ratchasima Station
- Gauge: 1,435mm
- Maximum operating speed: 250 km/h
- Travel time: Approximately 90 minutes (Note 3)
- Frequency: Approximately every 90 minutes

- Operating hours: 06:00 to 22:00
- Fare: 105 to 535 Thai Baht
- Rolling stock: Conforming to Fuxinghao (CR300/CR400 series)
- Number of trains: 6 trains (8 cars/train)
- Seating capacity: 594 seats/train
- Voltage: OCS 25 kV
- Signaling system: Conforming to CTCS Level 2



Source: Thai Transport Ministry

POSTGraphics

Source) Bangkok Post, Thailand to go it alone on Thai-Sino high-speed rail (24 March 2016)

Figure-2 Route map of the Thailand-China HSR (Initial)



Source) Prachachat, เปิดผลก “ฟู้ซิ่งฮ่า” รถไฟความเร็วสูงมดอินนำปากหมุสโตปิด ถนน-โคราช (27 October 2020)

Figure-3 Route map of the Thailand-China HSR (Current)

3. Progress of Construction Works

The Thai-China HSR (Phase 1) consists of 14 civil engineering works and 1 systems work, which include track, E&M (Electrical & Mechanical), EMU (Electric Multiple Unit), and training (Table-1). China is responsible for the design of the civil engineering works, which are constructed by Thailand under China's supervision. Meanwhile, China is responsible for both the design and construction of the systems work, with Thailand providing supervision for the construction process. Thailand is expected to undertake the project after gaining a thorough understanding of the specifications for both the civil engineering and systems works.

At present, Contract 1-1, the first civil engineering work, has been completed. This was a pilot project initiated by Thailand to gain a better understanding of the specifications and technologies involved in civil engineering works from China. It was carried out under the supervision of the Thai Department of Highways.

Additionally, there are currently 9 civil engineering works in progress, with Contract 2-1 making the most progress. Under the guidance of SRT, a site visit was conducted. The visit revealed that railway structures such as viaducts and embankments, as well as ancillary buildings such as offices and maintenance depots, were nearly completed (Picture 1-8). The Thai-China HSR (Phase 1) is planned along the existing railway lines of the SRT. Construction work is primarily

taking place on a vast area of land owned by the SRT, alongside the existing lines. The work is progressing relatively smoothly, without significant external constraints.

Contract 4-4, which includes a depot, has been delayed due to land acquisition issues and has not yet started, unlike other civil engineering works that are currently in progress.

There are three civil engineering works for which contracts have not yet been signed. Contract 3-1 is under dispute over the eligibility of bidding contractors. Contract 4-1, which runs between Bang Sue Station and Don Mueang Station, overlaps with the alignment of the Three Airports HSR. Negotiations are ongoing to entrust Asia Era One with the integrated development of the railway structures for both the Thailand-China HSR and the Three Airports HSR. Contract 4-5 involves the construction of a new station in Ayutthaya. A study is being conducted on its impact on the Ayutthaya World Heritage Site, with comments from UNESCO regarding the impact assessment on the archaeological site.

The systems work is currently in the design stage by China Railway International Co., Ltd. and China Railway Design Corporation, which have signed contracts with the SRT.

As of August 2022, the overall progress rate of the project was approximately 14%, and construction is progressing towards the planned completion in 2026 and opening in 2027.

Contract	Type of work	Length(km)	Section	Progress(%)
1-1	Civil	3.50	Klang Dong - Pang Asoke	100.00 (Completed)
2-1	Civil	11.00	Sikhiu - Kudchik	92.65
3-1	Civil	30.21	Kaeng Khoi - Klang Dong and Pang Asoke - Bandaima	(Uncontracted)
3-2	Civil (including Tunnels)	12.23	Tunnel (Muak Lek and Lamtakhong)	1.89
3-3	Civil	26.10	Bandaima - Lamtakhong	11.34
3-4	Civil	37.45	Lamtakhong - Sikhiu and Kudchik- Kokkruad	34.13
3-5	Civil	12.38	Kokkruad - Nakhon Ratchasima	2.35
4-1	Civil	15.21	Bang Sue - Don Mueang	(Uncontracted)

4-2	Civil	21.80	Don Mueang - Navanakhon	0.07
4-3	Civil	23.00	Navanakhon - Ban Po	3.65
4-4	Civil (including Depos)	–	Chiang Rak Noi Maintenance center	(Not started)
4-5	Civil	13.30	Ban Po - Prakaew	(Uncontracted)
4-6	Civil	31.60	Prakaew - Saraburi	0.11
4-7	Civil	12.99	Saraburi - Keang Khoi	26.18
2.3	Systems (track, E&M, EMU, training)	–	–	(In design)
	Overall	250.77	Bang Sue - Nakhon Ratchasima	14.14

Source) SRT, The Progress and Obstacles of The Cooperation between The Government of the Kingdom of Thailand and the Government of the People' s Republic of China on Bangkok - Nong Khai HSR Development for Regional Connectivity (Section 1 Bangkok - Nong Khai)

Table-1 The construction progress of the Thailand-China HSR (Phase 1) as of August 2022



Picture-1 Viaduct 1 (near SRT Sung Noen station) and rail track of SRT existing line



Picture-2 Viaduct 2 (near SRT Sung Noen station) with emergency stairs under construction



Picture-3 Viaduct 3



Picture-4 Embankment



Picture-5 Duct at a boundary between viaduct section and embankment section



Picture-6 Operations building



Picture-7 Indoor maintenance facility



Picture-8 Outdoor maintenance facility

4. Outlook for the Future

Firstly, as per the Thai government's announcement, the Thailand-China HSR (Phase 1) is expected to be completed, with test runs conducted, by 2026 and it is scheduled to officially open in 2027. The COVID-19 pandemic has caused disruptions in the supply chain, making it challenging to secure workers and construction materials, along with other challenges such as infrastructure relocation and archaeological impact assessment. However, steady progress is now expected. After the opening, a newly established entity will be responsible for operating and managing the HSR, while the land will continue to be owned by SRT. Currently, the Ministry of Transport of Thailand is considering the establishment policy for this entity, and details are yet to be determined. The existing railway lines will continue to be owned, operated, and managed by SRT, and how passenger and freight transportation will be apportioned between the parallel existing railway lines and the HSR will be subject to further study.

Moving on to the Thailand-China HSR (Phase 2), which is expected to be approximately 357 kilometers long, stretching from Nakhon Ratchasima to Nong Khai, with an estimated cost of 300 billion THB, the anticipated opening date is around 2029 to 2030. The civil engineering design for this section has been completed, and bidding for the construction is scheduled to start some time in 2023.

Finally, we would like to report on the connection between the Thailand-China HSR and the Laos-China Railway. Currently, the Nong Khai Station in Thailand

and the Thanaleng Station in Laos are connected by the first Thai-Lao Friendship Bridge across the Mekong River. Trains for passengers and cargo are operated by the SRT on a meter-gauge track, which is narrower than the standard gauge used for the Thailand-China HSR. However, as part of China's Belt and Road Initiative, a connection between the Thailand-China HSR and the Laos-China Railway, which opened in December 2021, is planned for the future. Since the first Thai-Lao Friendship Bridge is a combined bridge for road and railway, it is difficult to lay a new track with a gauge of 1,435 mm. Therefore, a new bridge across the Mekong River for railway use is planned, but specific plans have not been announced at this time.

5. Conclusion

Currently, the construction of the first HSR in Thailand is underway, which is expected to connect with the Laos-China Railway in the future, becoming a part of China's Belt and Road Initiative. Furthermore, with the development of routes that pass through major logistics hubs like the Eastern Line or connect with neighboring countries like the Southern Line, Thailand's HSR network has the potential to play a crucial role in the transportation network of the Mekong region in the future.

On the other hand, Thailand is also maintaining a certain level of autonomy in the development of HSR, with the Thai side providing full funding for the Thailand-China HSR (Phase 1) and sharing responsibilities for design, construction, and supervision with the Chinese side. While receiving

technical cooperation from China, the Thai side is considered the main entity in terms of infrastructure development projects, with the Chinese side seen as a contracting party.

The current development of the Thailand-China HSR can be seen as part of China's Belt and Road Initiative, as well as Thailand's "bamboo diplomacy" approach. There are concerns about the coexistence of multiple HSR systems in Thailand, including the China-supported Thailand-China HSR, the Three Airports HSR developed through PPP scheme, and the planned northern line with support from Japan. However, it is expected that practical measures will be taken to address these concerns during the adjustment of details leading up to their respective openings. In any case, it is crucial for Thailand to successfully complete these HSR projects, realize their benefits upon operation, and contribute to the country's development.

As Thailand continues to develop its HSR projects, it will be important to monitor how these developments will benefit the country in the future. In conclusion, ongoing monitoring of Thailand's HSR projects is warranted to ensure successful completion, capture of benefits upon operation, and contribute to the country's development.

Note

Note1) A consortium led by Thailand's major conglomerate CP Group.

Note2) Renamed Krung Thep Aphiwat Central Station in September 2022, but referred to as Bang Sue Station in this report for convenience.

Note3) Travel time from Bang Sue Station to Nakhon Ratchasima Station.

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