Development of Infrastructure to Facilitate Cross-border Rail Transport in Thailand

by

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Joint ESCAP – UIC Seminar on Facilitation and Costing of Railway Services along the Trans-Asian Railway
9 – 11 December, 2015
UNESCAP and Prince Palace Hotel, Bangkok
The Kingdom of Thailand

Capital: Bangkok
Population: 67,976,405
Area: 513,120 sq. km
GDP: $985.5 billion (2014 est.)
Currency: baht (1 US$ ≈ 36 THB)
Time difference: UTC+7

Source: The World Factbook
Timeline of Cross-border Rail Transport in Thailand

1890:
Royal State Railways of Siam (RSR) was founded

1892:
1st part of Northern Line (71 km) was completed

1903:
1st part of Southern Line (150 km) was opened

1918:
1st cross-border train to Malaysia

1950:
1st cross-border train to Cambodia (discontinued)

2009:
1st cross-border train to Lao PDR

…
Re-establish rail connection to Cambodia and Myanmar in future
Network Map

Rail Coverage:
47 provinces of Thailand

Trackage:
Meter Gauge (1,000 mm)

Route Length (km):
- Single Track 3,675 (91%)
- Double Track 252 (6%)
- Triple Track 107 (3%)
- Total 4,034

Border Stations:
- to Lao PDR at Nong Khai station (Northeast Line)
- to Malaysia at Padang Besar station (Southern Line) and Su-ngai Kolok station (Southern Line)
BS100A, Pre-stressed Concrete Monoblock Sleepers

BS80A or smaller, Wooden or Two-block Sleepers*

*being replaced with BS100A, PC sleepers under track renewal projects, to be completed by 2017

Source: Civil Engineering Department, SRT
Rolling Stock

New 20 t./axle locos

Manufacturer: CSR Qishuyan, China
Engine: CAT, USA
Max. speed: 120 km/h
Max. service power: 2,800 kW
Year in service: 2015

<16 t./axle locos
- GEA
- Hitachi
- Alstom
- GE
Total 206 Nos.
<table>
<thead>
<tr>
<th>Train Type</th>
<th>Frequency</th>
<th>Traffic Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger</td>
<td>246 trains/day</td>
<td>45.8 million passengers</td>
</tr>
<tr>
<td>Freight</td>
<td>75 trains/day</td>
<td>9.8 million tons</td>
</tr>
</tbody>
</table>

*Figures are approximated.*
Track Strengthening Projects Nationwide

- About half of rail network nationwide is under strengthening work.
- 22 track strengthening projects for mainline have been carried out in 2012 – 2015.
- Mainline track strengthening is to be completed in 2017, while siding rehabilitation is being carried out.
- Bridge strengthening is ongoing and is expected to be completed by 2018.

Source: SRT Civil Engineering Department
### International Cooperation: Standard Gauge Railway Development per MOU between Thailand – China (initial 180 km/h)

<table>
<thead>
<tr>
<th>Route</th>
<th>Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangkok – Kaeng Khoi</td>
<td>133</td>
</tr>
<tr>
<td>Kaeng Khoi – Map Ta Phut</td>
<td>246.5</td>
</tr>
<tr>
<td>Kaeng Khoi – Nakhon Ratchasima</td>
<td>138.5</td>
</tr>
<tr>
<td>Nakhon Ratchasima – Nong Khai</td>
<td>355</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>873</strong></td>
</tr>
</tbody>
</table>

Train operation is mixed between freight train and passenger train.

**Status:**
FS & Engineering Design expected to be completed in early 2016
The Railway System Cooperation between Thailand – Japan

<table>
<thead>
<tr>
<th>Routes</th>
<th>Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-speed Train (≥200 km/h) Bangkok – Chiang Mai</td>
<td>715</td>
</tr>
<tr>
<td>Kanchanaburi – Bangkok – Chachoengsao Jct. – Laem Chabang</td>
<td>574</td>
</tr>
<tr>
<td>Bangkok – Chachoengsao Jct. – Aranyaprathet</td>
<td></td>
</tr>
<tr>
<td>Railway project from Tak to Mukdahan</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,289</td>
</tr>
</tbody>
</table>

Status: Under FS and Engineering Design
- FS and DD were completed in June 2012.
- Now under process of EIA consideration

New Line Construction of Den Chai – Chiang Rai – Chiang Khong (326 km)
Construction of Dawai Port – Ban Phu Nam Ron – Kanchanaburi – Laem Chabang Port (440 km)

F.S. completed in April 2015.
The D.D. and EIA works in Thailand will be carried out in 2016-2017.

The study is expected to be completed in December 2015.

This section will be the electrified doubled track to connect to Malaysian railway network at Padang Besar.
Construction of Missing Link between Thailand-Cambodia

Track Strengthening from Klong Sip Kao Jct. to Aranyaprathet (169 km) to be completed in Feb. 2016.

Construction of 6-km missing link from Aranyaprathet to Klongluk (Thailand/Cambodia border) was completed in Aug. 2015.

Overall progress 88.31% As of 31 Aug., 2015.
Plan for Thailand-Cambodia Cross-border Rail Transport

- Cooperation on the cross-border traffic agreement between State Railway of Thailand (SRT) and Department of Railway, Ministry of Public Works and Transport (MPWT) of Cambodia is ongoing.

- In February 2015, Thai side established the committee to work on the draft of GMS cross-border rail traffic agreement (SRT and MPWT as focal points).
Some Engineering Design Elements to Accommodate Cross-border / International Rail Transport

- Axle Load on Track & Bridges
- Gradient & Curvature
- Track Gauge
- Structural & Loading Gauges
- Train Length
- Wheel & Rail Profiles
- Platform Height
- Traffic Control
- Etc.

The design criteria for these elements are considered in track doubling and new line construction projects.
1. Improve existing railway track and bridges to accommodate 20-ton axle load, max. speed of 120 kph (design speed for new lines is 160 kph)

2. Use more powerful locos, increase train length and wagon capacity to minimize costs and effects on schedule

3. Carry out track doubling projects for 6 priority routes (2015–2018) 903 km in total, thereby enhancing track capacity and safety

4. Adopt international standards on critical elements while considering interoperability

5. Work closely with neighboring railways to facilitate cross-border rail transport and related activities

6. Encourage policies to support the sustainable growth of railways as the backbone of regional land transport
Thank you for your attention