



DRT-AIRO

Railway Safety Management
in Thailand

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1. Rail Transport Players in Thailand

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1. Rail Transport Players in Thailand

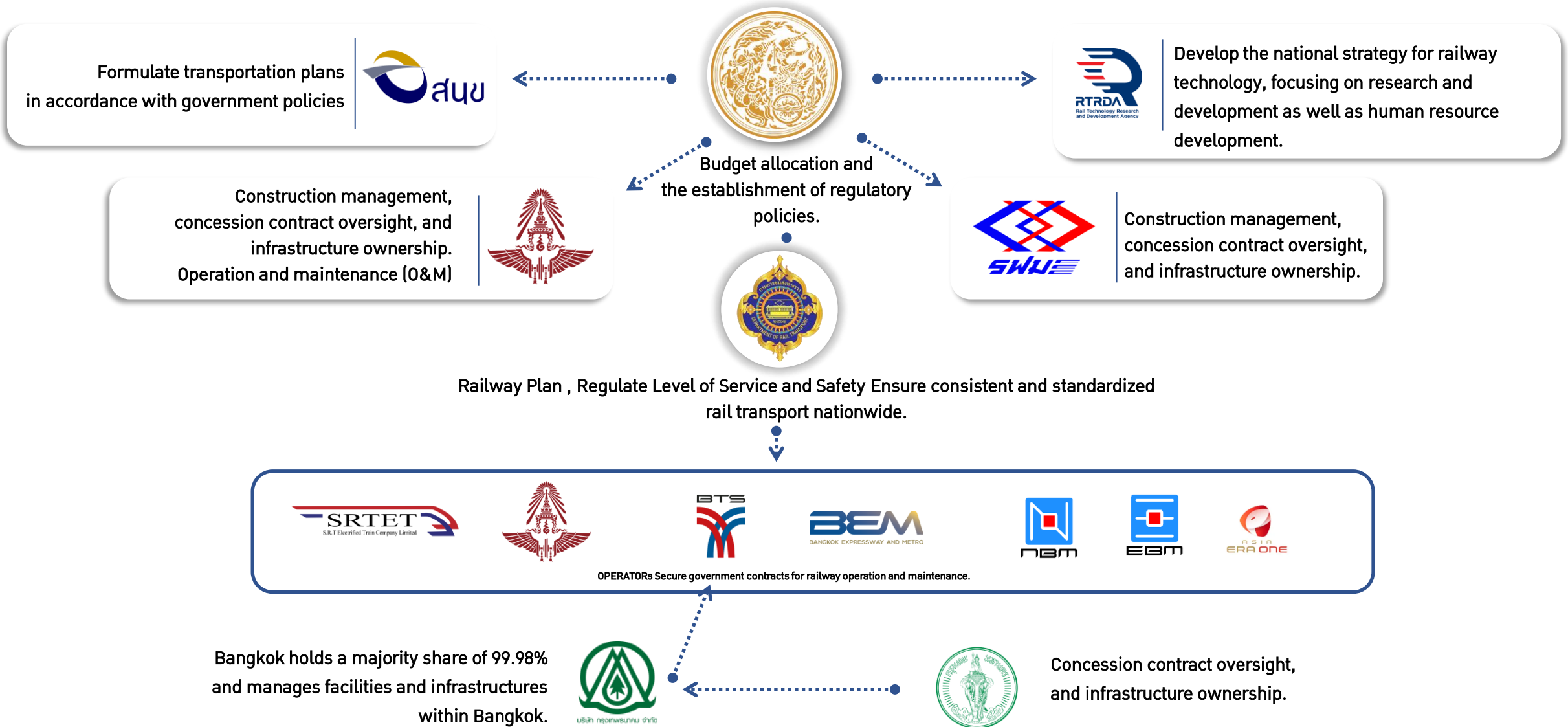
2. Railway Network

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Rail Transport **Players** in Thailand





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Existing > Future Railway Network

Railway type	Existing	2025	2028	2032
single track	3310	2403	924	924
double track	627	907	3063	3063
triple track	107	107	107	107
high speed	0	0	251	608
TOTAL	4044	3417	4345	4702

Unit (km)



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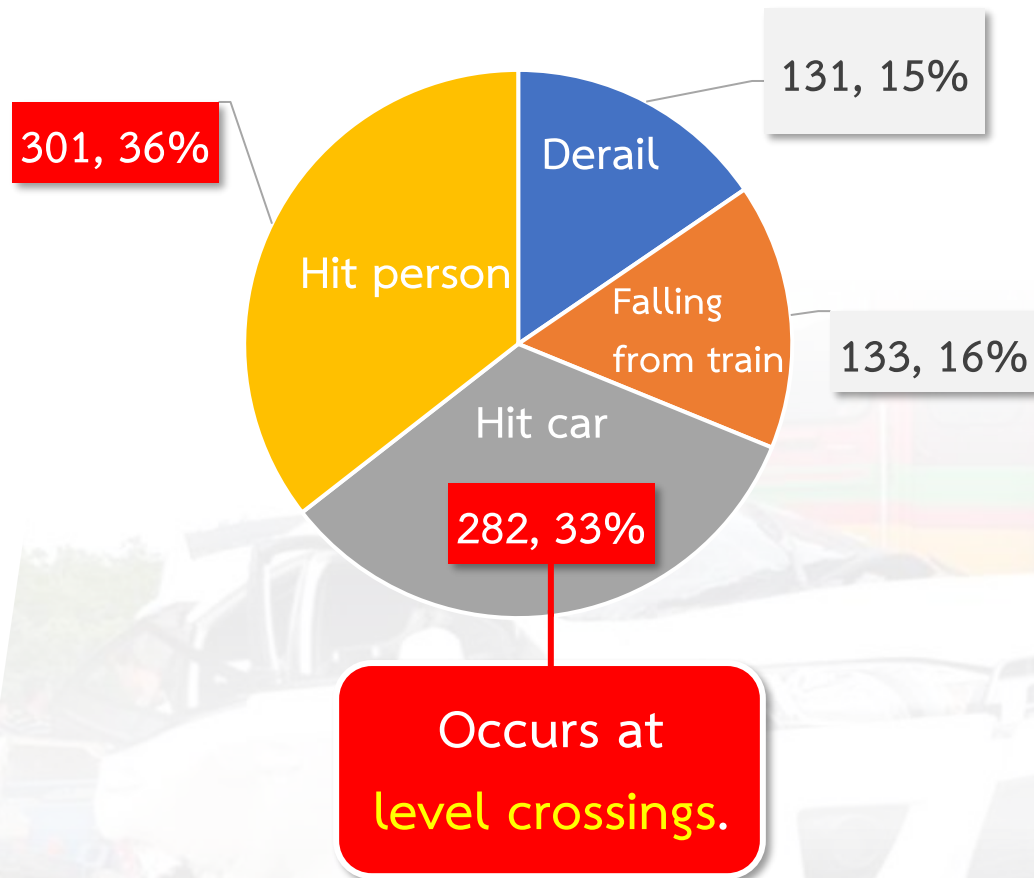
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Railway Accident Statistics 2020 – 2024



88 people died from rail transport accident in 2024

Crossing Type

Illegal crossing

688 crossings

26.05%

Grade separation

556 crossings

21.05%

level crossing

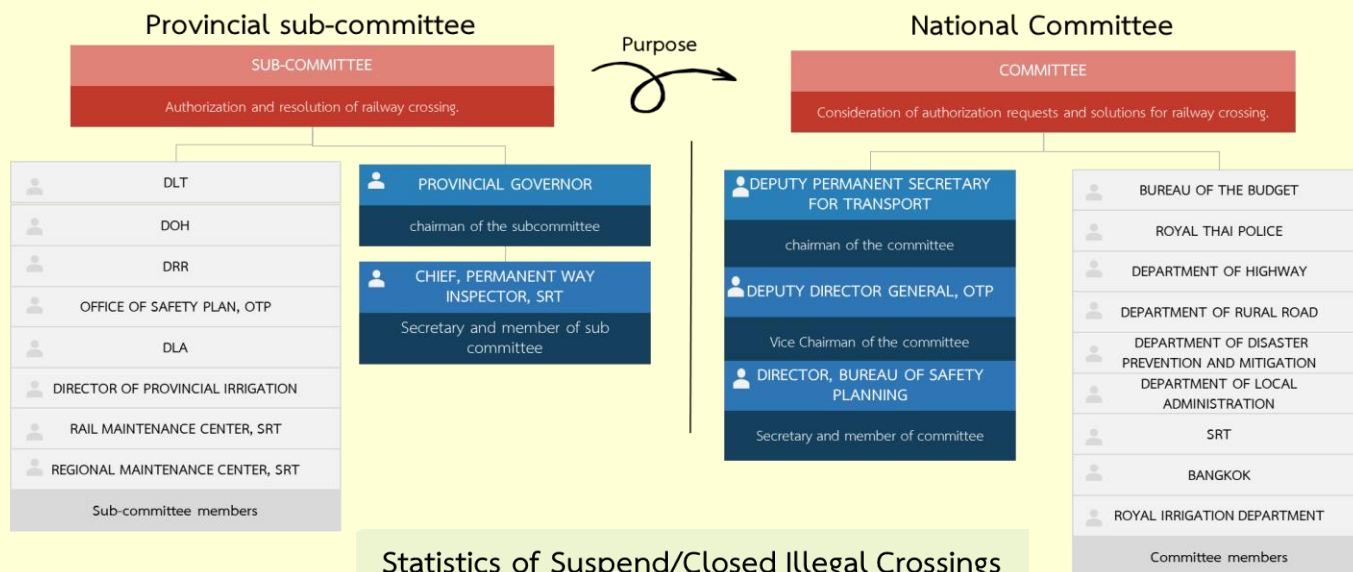
1,397 crossings

52.90%

How does Thailand manage level crossings?

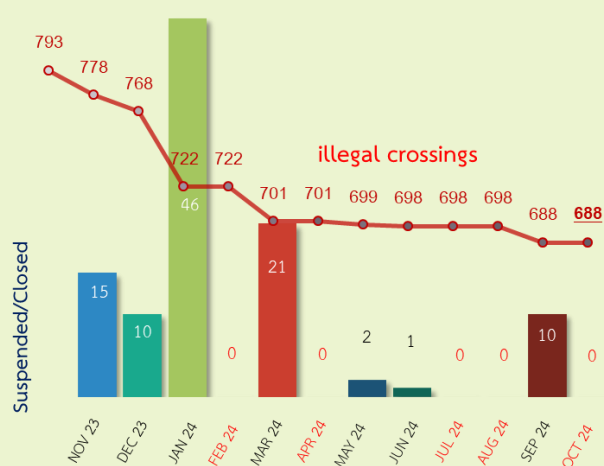


Railway Crossing Improvement Committee



Statistics of Suspend/Closed Illegal Crossings

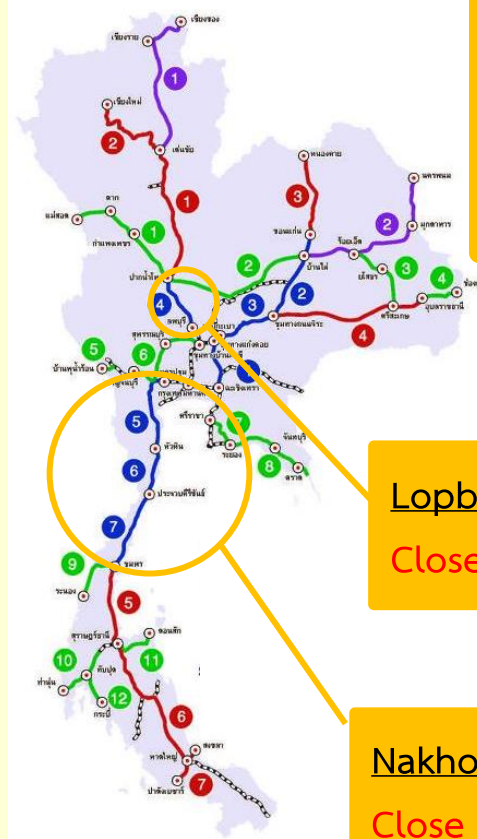
NOV 2023 – OCT 2024



Closed 105 out of 793 Illegal crossing, representing 13.24%

Double Track Construction Project

The double-track railway construction phase 1 project has built 202 grade-separated crossings.



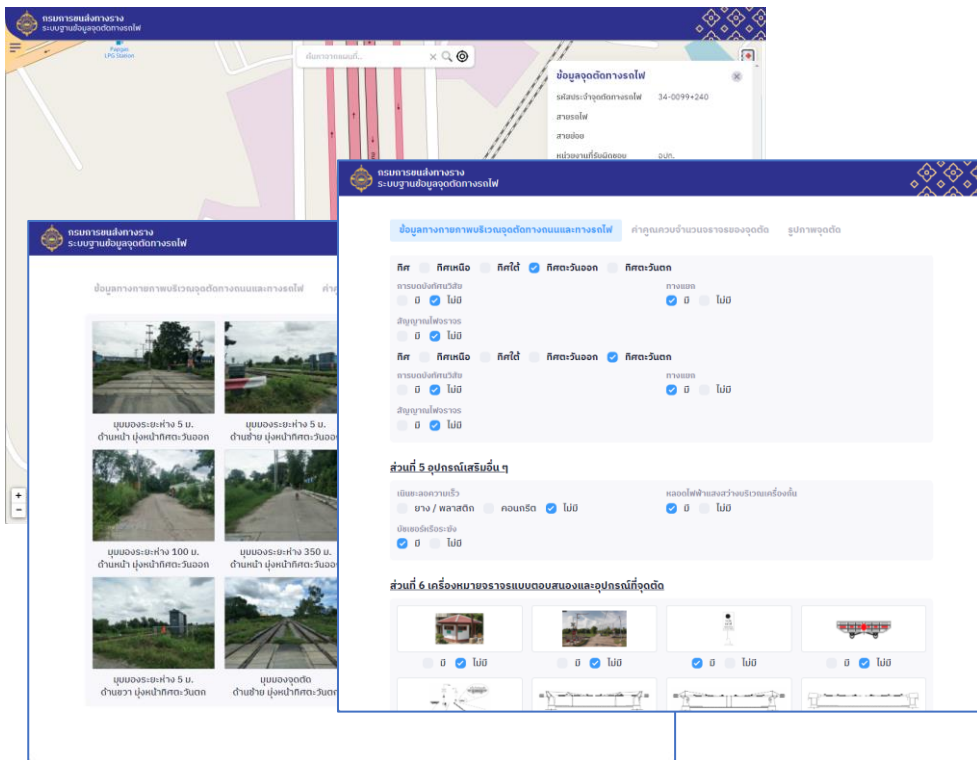
Lopburi - Pak Nam Pho	62
Map Kabao - Thanon Jira Junction	9
Nakhon Pathom - Hua Hin	59
Hua Hin - Prachuap Kirikhan	41
Prachuap Khiri Khan - Chumphon	49

Lopburi – Pak Nam Pho
Close illegal crossing: 4

Nakhon Pathom – Chumphon
Close illegal crossing: 33



DRT also published database on website and mobile application so that car drivers will know if there is any crossing ahead, and become aware of railroad crossings.



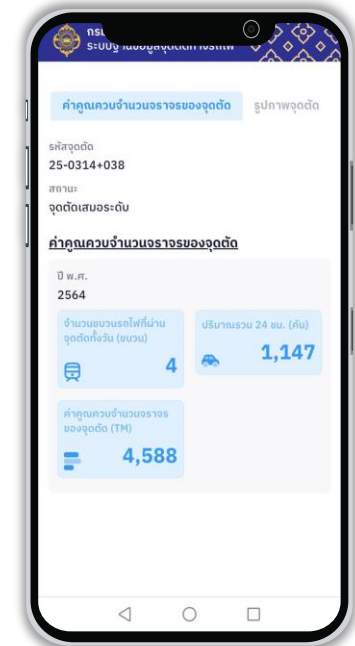
Crossing location



Crossing location



Traffic information



Next phase – DRT tries to sync crossing data with google map and other private companies so that crossing data will be displayed on navigation system in the cars.

Incident

- **Crossing Type:** Unauthorized Crossing/ No boom barrier
- **Vehicle involved:** Private Bus and Freight Train
- **Severity:** 19 dead & 30 injured
- **Cause of the accident :**
 1. Bus driver not familiar with this particular area.
 2. Bus turn on loud music, can not hear train horn.
 3. No boom barrier and warning sign.
 4. slope of the crossing is too steep
 5. Excess number of passengers on the bus

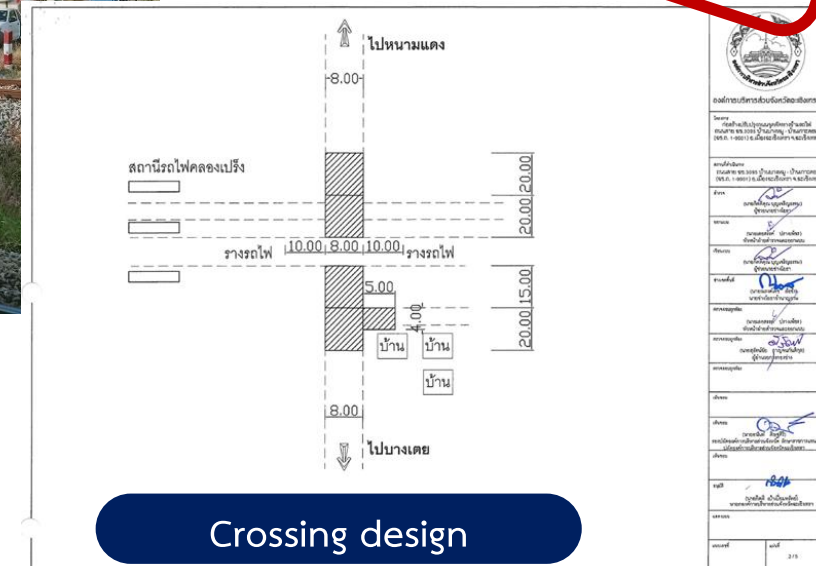


Solution :

- adjust slope and improve vision
- install automatic boom barrier



**Budget Approved
7 March 2023**



Illegal crossing

There have been no accidents since then.

Project to install AI-powered CCTV cameras at crossing

Select 3 intersection locations with a history of accidents for a pilot project.



- Detection cameras activate when the train warning signal illuminates.
- An alert is sent if a person or object enters the designated area.
- If an obstruction remains for over 10 minutes, a special alert is triggered.
- In case of camera malfunction or shutdown, a notification is sent to central control.

Location 1: crossing at Wat Phanan Choeng, Ayutthaya



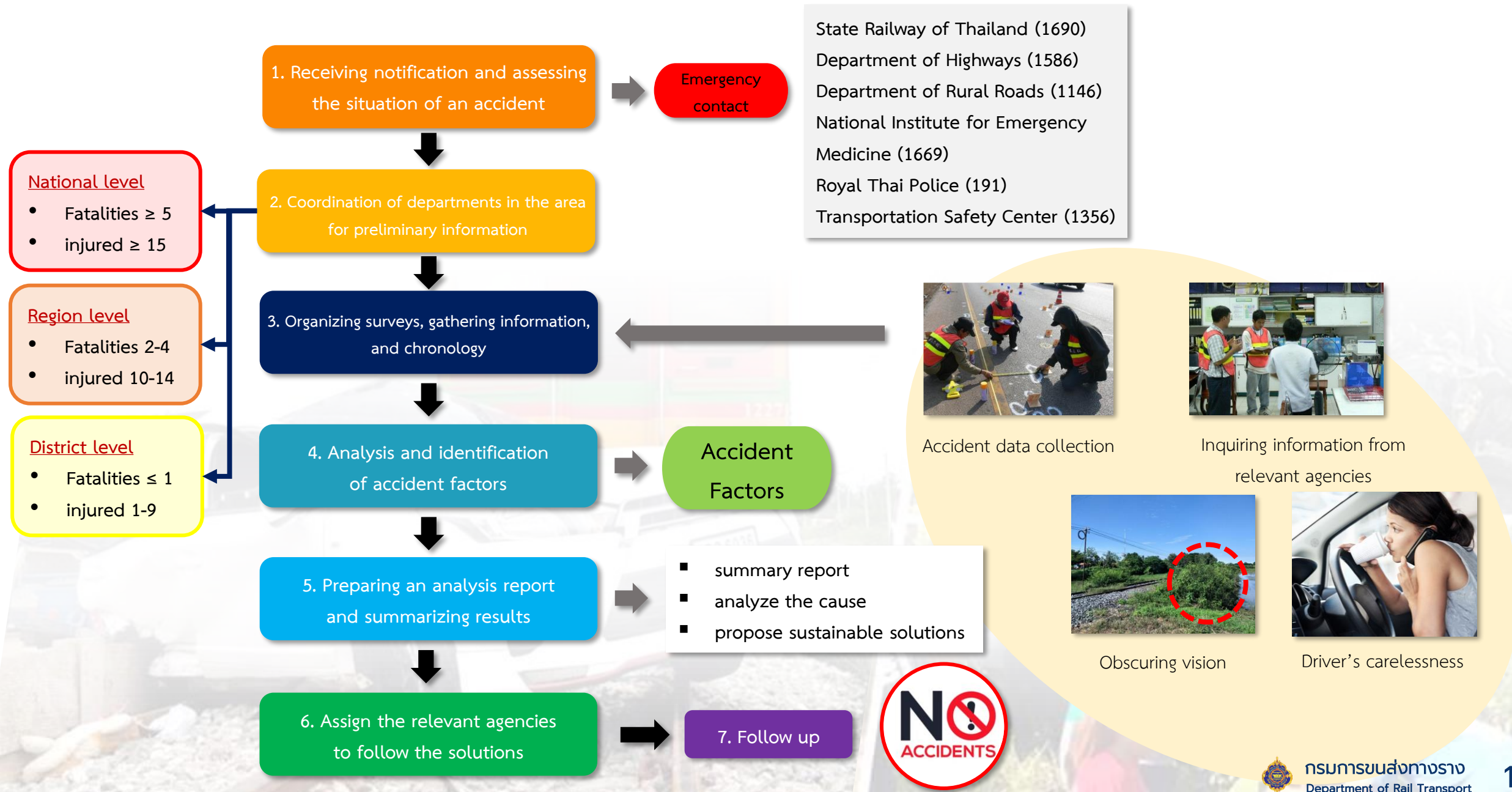
Location 2: crossing at Khlong Khwaeng Klan Canal, Chachoengsao



Location 3: crossing at Chum Saeng District, Nakhon Sawan



The Approach to Investigation and Analysis of the Causes of Accidents



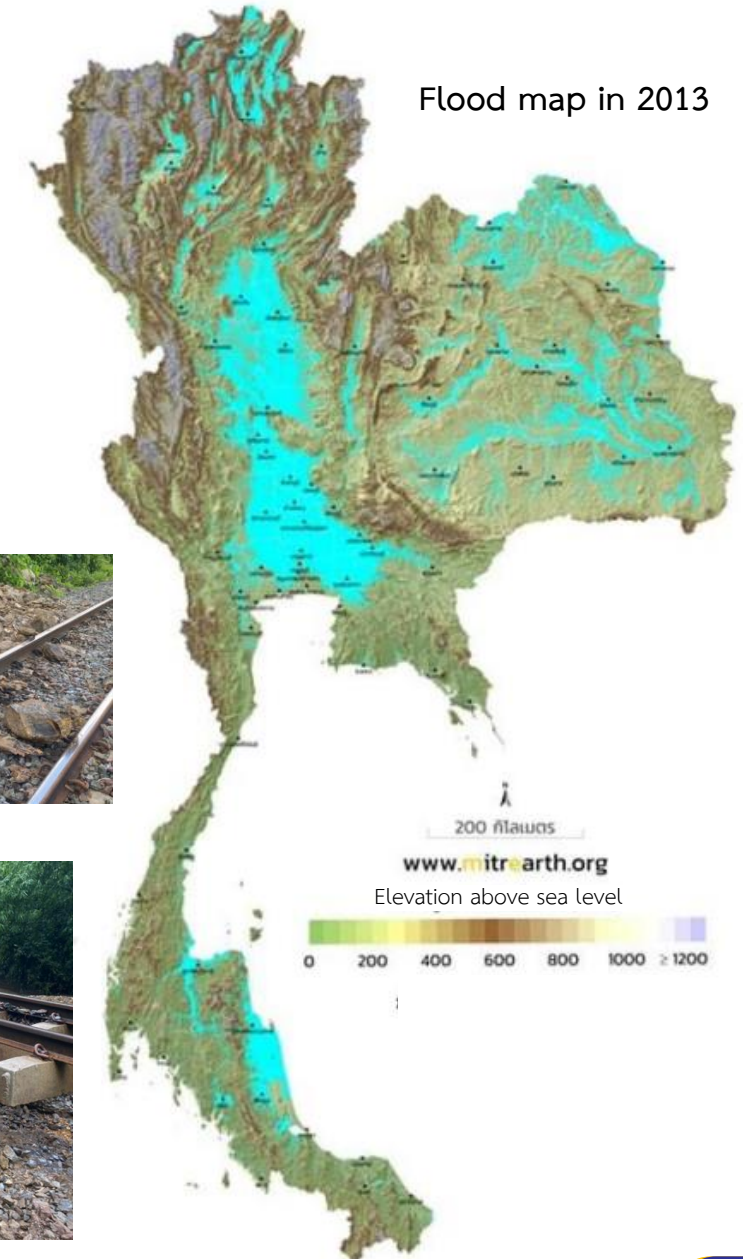
“Global Climate Risk Report 2020

Thailand is the 8th highest risk affected by climate change. In the past 20 years, there have been 147 natural disasters and most of them are flooding.”



Preventive measures

The study on developing standard for railway infrastructure drainage system and preparing risk reduction measures for railway systems



Phrae Province Flash floods flood railway tracks



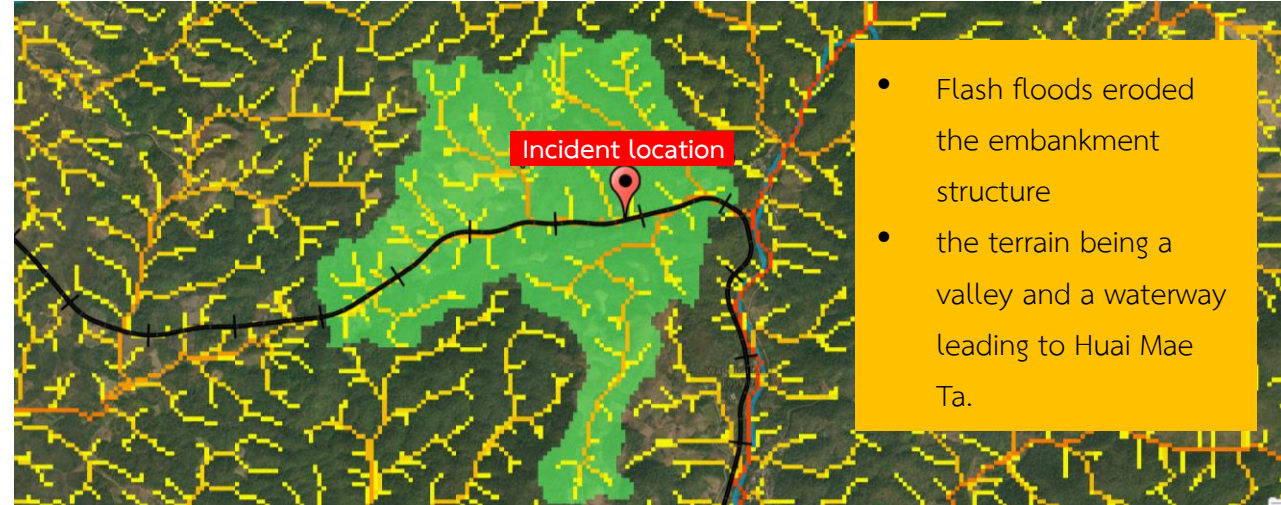
Prachatai (2023)



SRT (2023)



Watershed and Waterway Analysis: Identify causes



- Flash floods eroded the embankment structure
- the terrain being a valley and a waterway leading to Huai Mae Ta.

Flood Impact Prevention Measures for Rail Transport

Flood Management Due to Rainfall:

1. **Forecasting:** Use rainfall, river levels, and weather data for flood risk analysis.
2. **Threshold Diagram:** Set flood impact thresholds for rail structures.
3. **Flood Monitoring & Warning System:** Real-time alerts with sensors for quick response.
4. **Flood Management Plan:** Prepare for flood risks with alternative routes and emergency actions.

Geographical Measures to Prevent Flood Damage:

1. **Engineering Measures:** Improve rivers, build dams, and flood barriers.
2. **Policy Measures:** Use urban planning and early warning systems.
3. **Integrated Approach:** Combine engineering and policy for effective flood management.

Conclusion: Towards a Safer Rail Transport in Thailand

Rail Transport Growth in Thailand

- Government prioritizes rail transport.
- Rail freight transport averaged 12 million tons annually.
- Double-track railways extend over 1,070 kilometers.

Safety Challenges in Rail Transport

- Level and illegal crossings
- Insufficient safety awareness
- Weak law enforcement
- Climate change impacts

Key Solutions for Safer Rail Transport



Management

- Crossing committee
- Accident investigation committee
- Develop measures to address the impacts of climate changes on rail transportation.



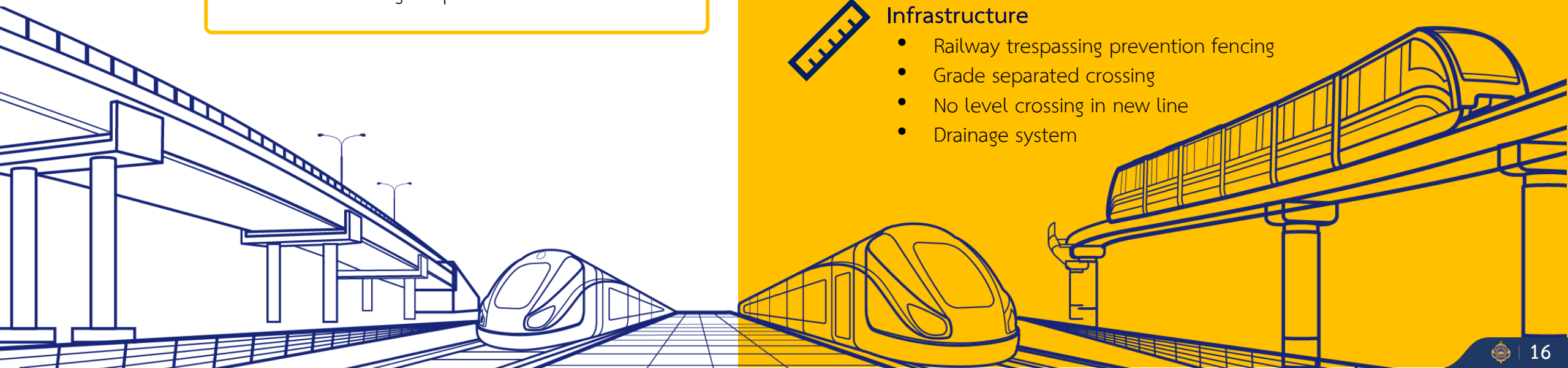
Technology

- Automated barriers and warning systems
- AI integration and smart monitoring to enhance safety and efficiency.
- Disaster and crossing database
- Railway apps



Infrastructure

- Railway trespassing prevention fencing
- Grade separated crossing
- No level crossing in new line
- Drainage system





DRRT

Department of **RAIL** Transport

Ministry of Transport
Department of Rail Transport