Keynote Speech JTSB

Fuminao Okumura

Chairperson of First Railway Accident Investigation International Forum

Board Member, the Japan Transport Safety Board

Contents

1. Overview of the railway accident investigation in Japan
2. Railway accidents in Japan
3. Present situations of Japan's Local railways
4. Gauge widening accidents

1. Overview of the railway accident investigation in Japan

Japan

- Railway was founded in 1872　Left-hand traffic
- Length 27,803km
- Length by gauge　2,997km(1435mm) , 24,806km(1067mm) , etc.
- Electrified length: 6,375km(DC1.5kV) , 3,427km(AC20kV)
  2,621km(AC25kV)

・Passenger/year : 9.142 billion , 25.98 billion passenger・km

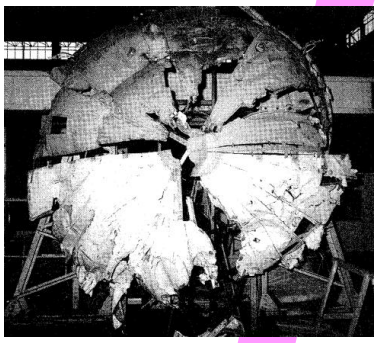
・ Freight/year : 29.99 million ton , 20.1 billion ton・km

＊Accident investigation body : Japan Transport Safety Board (JTSB)
It was founded in 1974 as AAIC (Aircraft Accident Investigation Commission).
Multi-modal. 180 employees
10 railway accident and serious incident reports were published in 2024.

History

June 1949 Establishment of Japan Marine Accident Inquiry Agency (JMAIA)

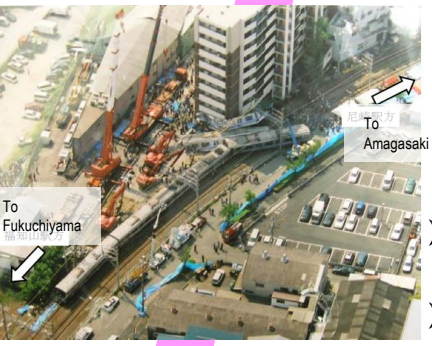
- July 1971 Crash of Toa Domestic Airlines aircraft in Mt. Yokotsudake, north of Hakodate, 68 fatalities
- July 1971 Midair collision between All Nippon Airways aircraft and Self-Defense Forces aircraft in Shizuku-ishi Town, Iwate, 162 fatalities



Jan. 1974 Establishment of Aircraft Accidents Investigation Commission

July 1985 Crash of Japan Airlines 123 aircraft in Mt. Osutakayama, 520 fatalities

- May 1991 Collision between Shigaraki Kougen Railway passenger train and West Japan Railway passenger train, 42 fatalities, 628 injuries
- Mar. 2000 Derailment and collision of Teito Rapid Transit Authority passenger trains on Hibiya Subway Line, 5 fatalities, 64 injuries



Oct. 2001 Establishment of Aircraft and Railway Accidents Investigation Commission (ARAIC)

Apr. 2005 Derailment of JR-West passenger train on Fukuchiyama Line, 107 fatalities, 562 injuries

- Mar. 2006 Diet resolution to expand scope of accident investigations, organization and functions
- May 2008 Amendment of Int. Convention for the Safety of Life at Sea (SOLAS)

Oct. 2008 Establishment o Japan Transport Safety Board (JTSB)

- Highly independent authority to cover three modes (air, train and ship)

Mar. 2022 Derailing of Tohoku Shinkansen due to an earthquake

Apr. 2022 Sinking of Sightseeing Ship “Kazu 1” at Shiretoko Peninsula, 20 fatalities, 6 missing

Jan. 2024 Runway Incursion and Collision at Tokyo International Airport (Haneda), 5 fatalities

Organization

The Board

Chairperson

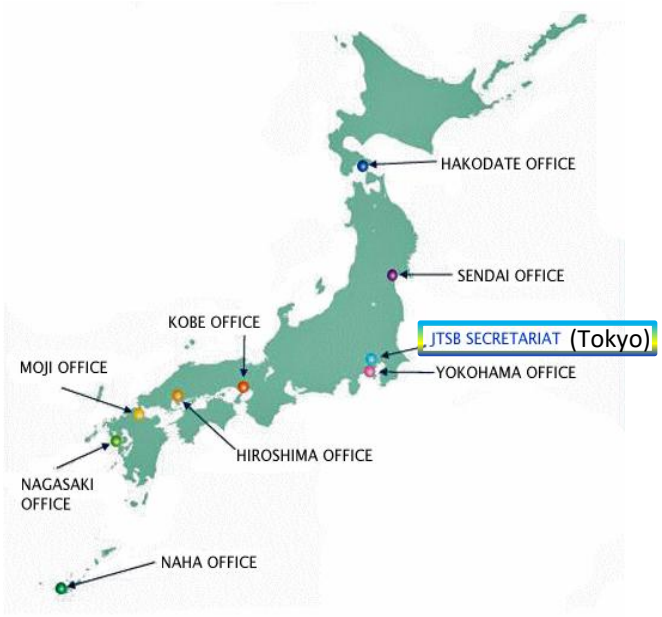
12 Board Members (Full-time 7)

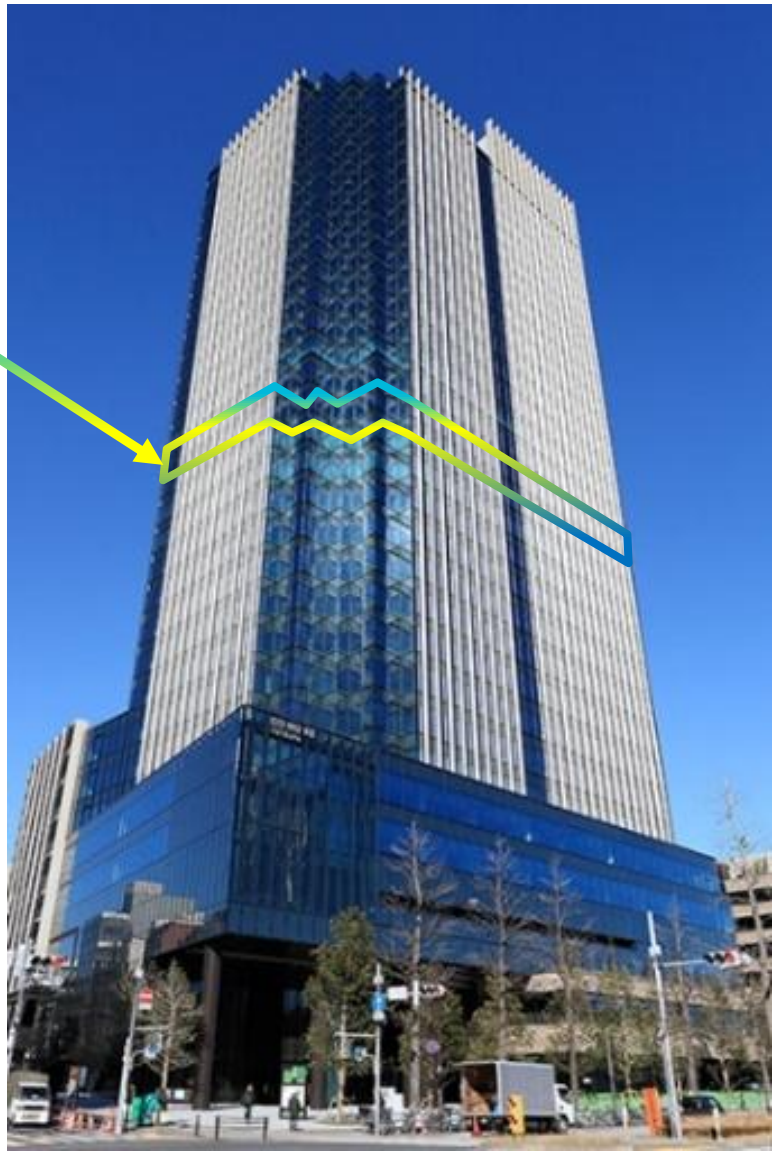
(General Committee)

- Aircraft Committee (Chairperson + 5 members)
- Railway Committee (Chairperson + 5 members)
- Marine Committee (Chairperson + 4 members)

JTSB in Tokyo

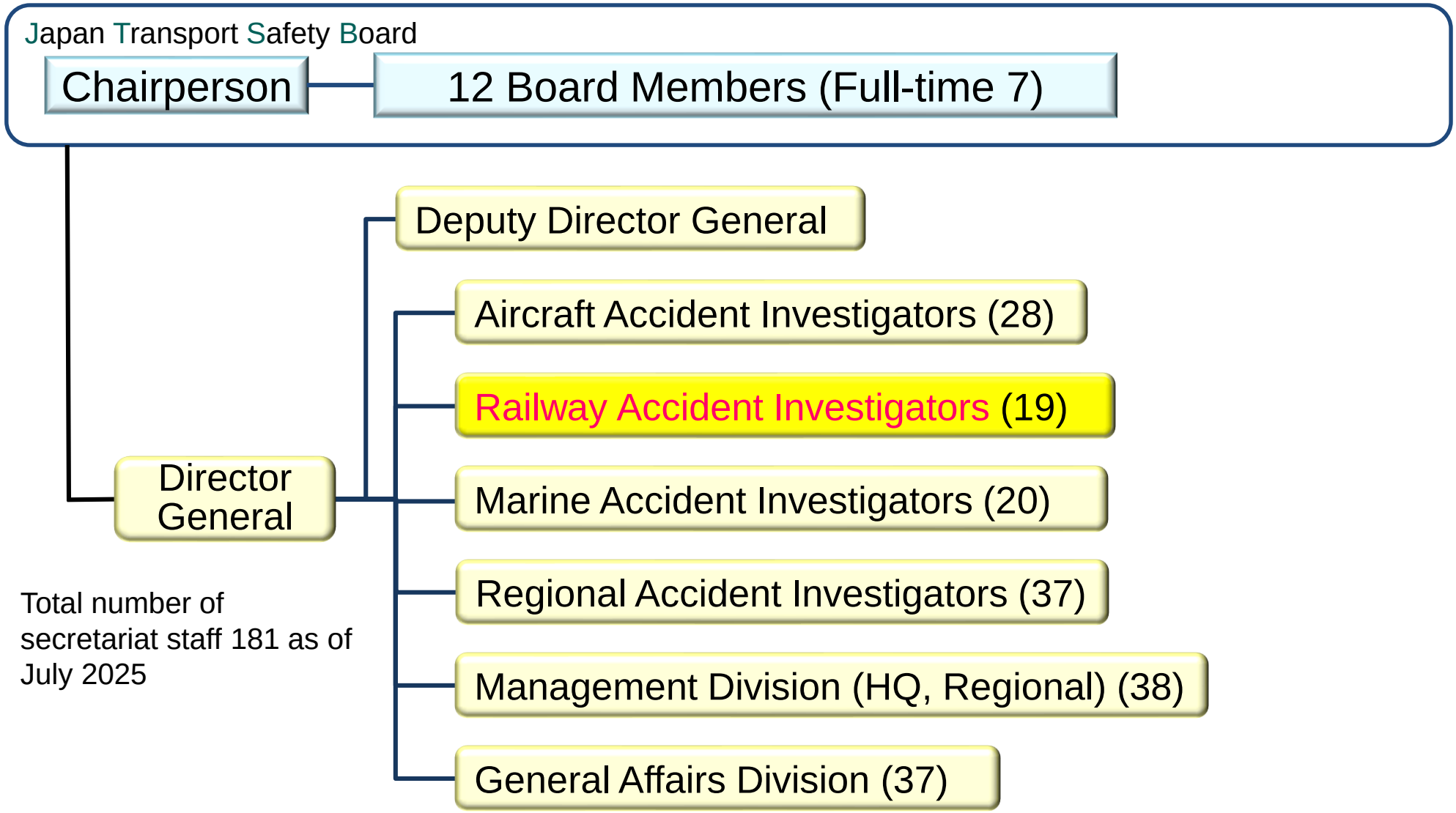
15F , Yotsuya Tower





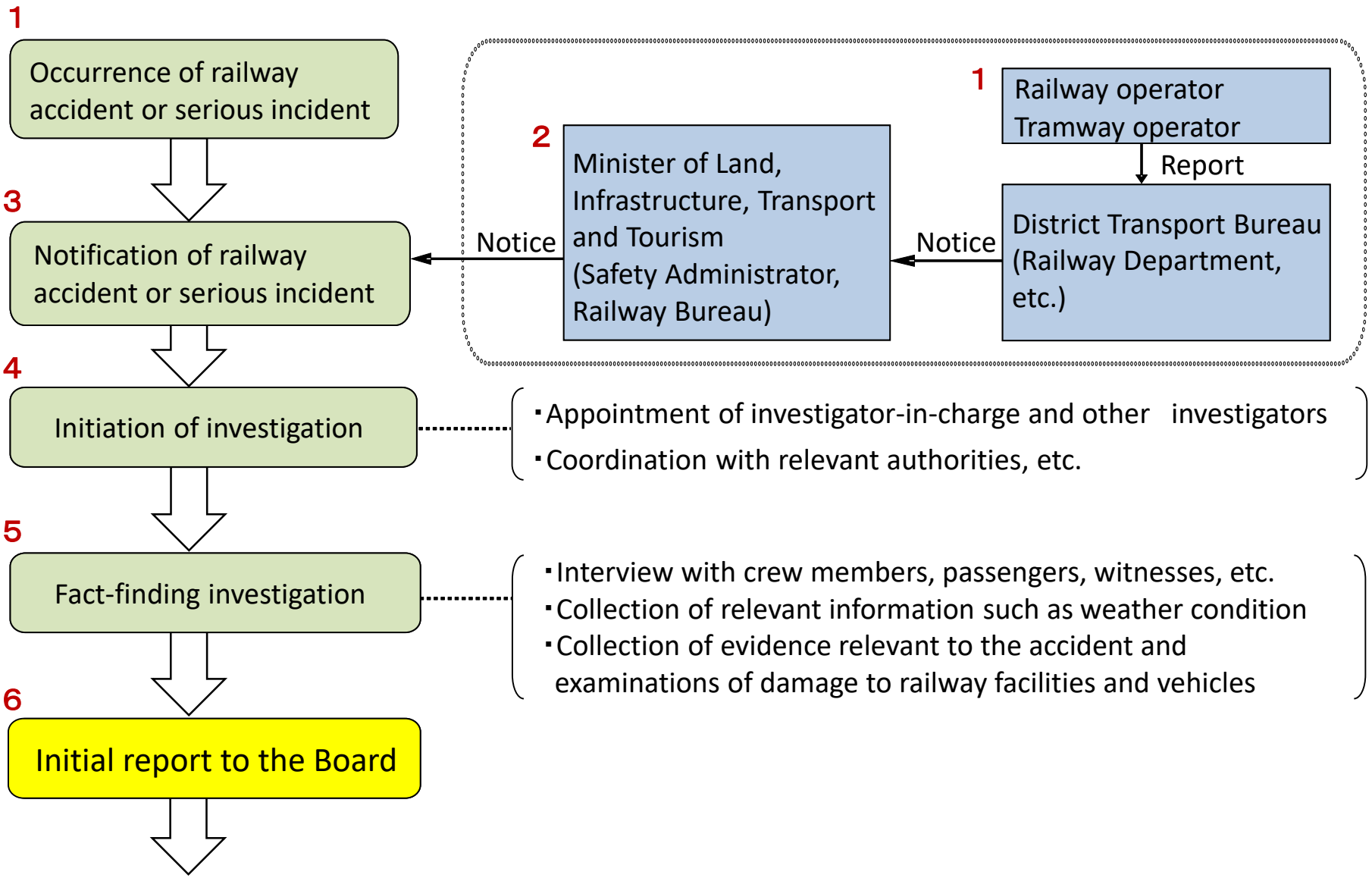
JTSB office in Yotsuya , Tokyo

Organizational Structure of the Japan Transport Safety Board



Total number of secretariat staff 181 as of July 2025

Procedure of railway accident/incident investigation（1／2）



Procedure of railway accident/incident investigation（2／2）

6

7 Examination, test and analysis

Assistance from RTRI (Railway Technical Research Institute)

8 Deliberation by the Board (Committee)

- Railway committee
- General Committee or the Board for very serious cases in terms of damage or social impact

【Public hearings, if necessary】

9 Comments from parties concerned

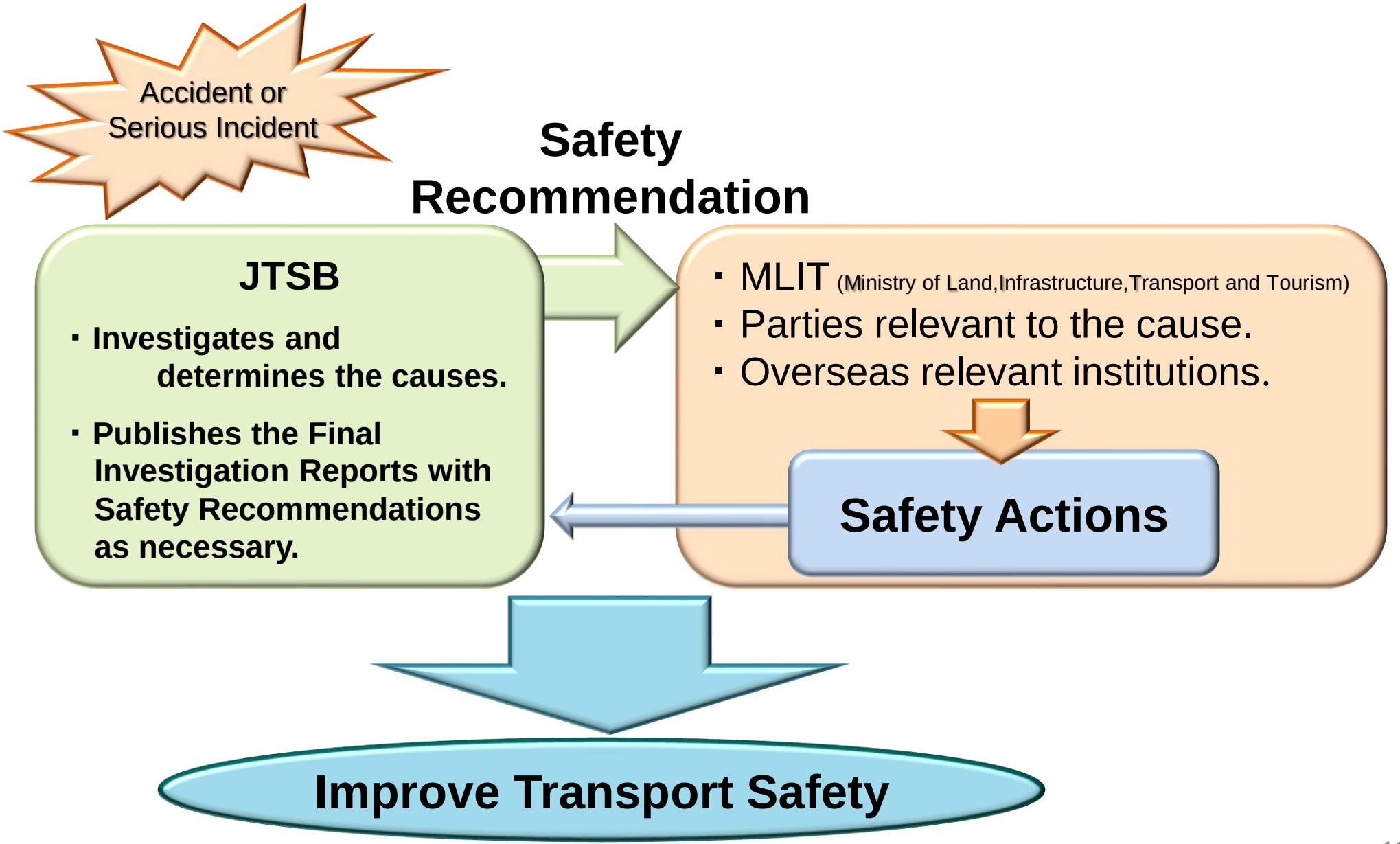
10 Deliberation and adoption by the Board (Committee)

11 Submission of investigation report to the Minister of Land, Infrastructure, Transport and Tourism

【Recommendations or Statement of opinions, if necessary】

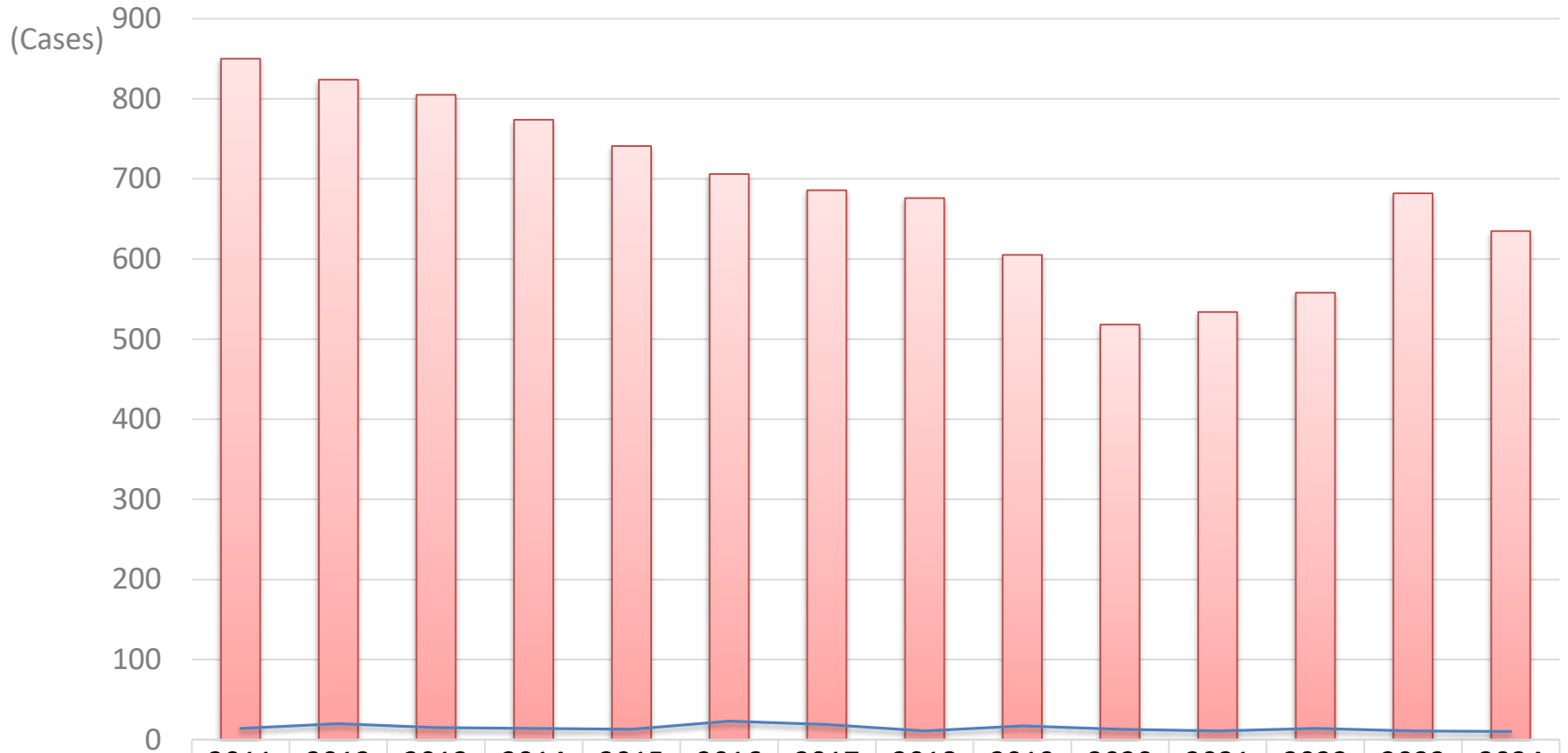
12 Publication

The Main Purpose



2. Railway accidents in Japan

Changes in the Number of Accidents and Investigations

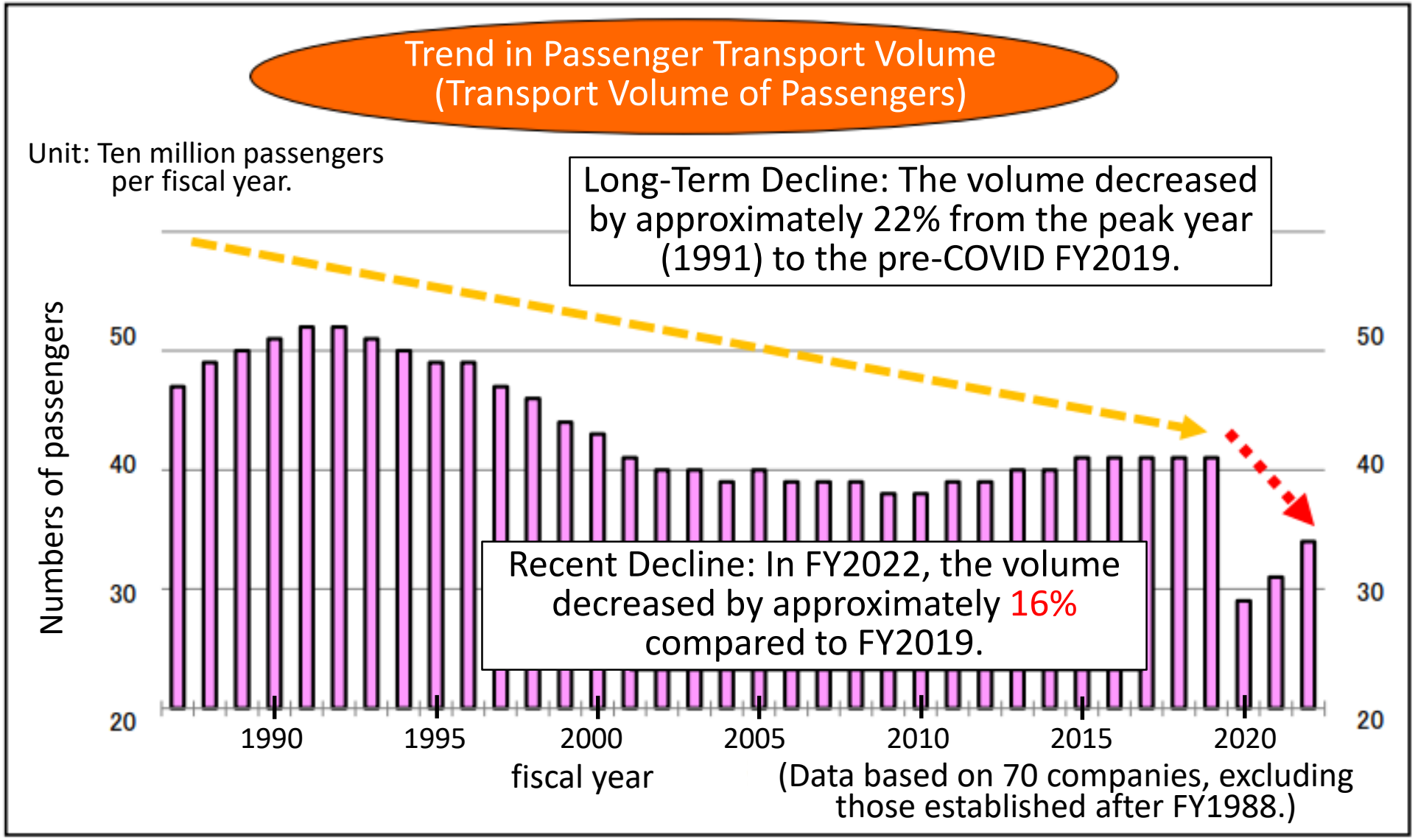


	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of accidents	850	824	805	774	741	706	686	676	605	518	534	558	682	635
Number of investigations	14	20	15	14	13	23	19	11	17	13	11	14	11	10
Number of Serious incident investigations	**2**	**5**	**2**	**1**	**3**	**2**	**1**	**2**	**2**	**2**	**1**	**2**	**2**	**5**

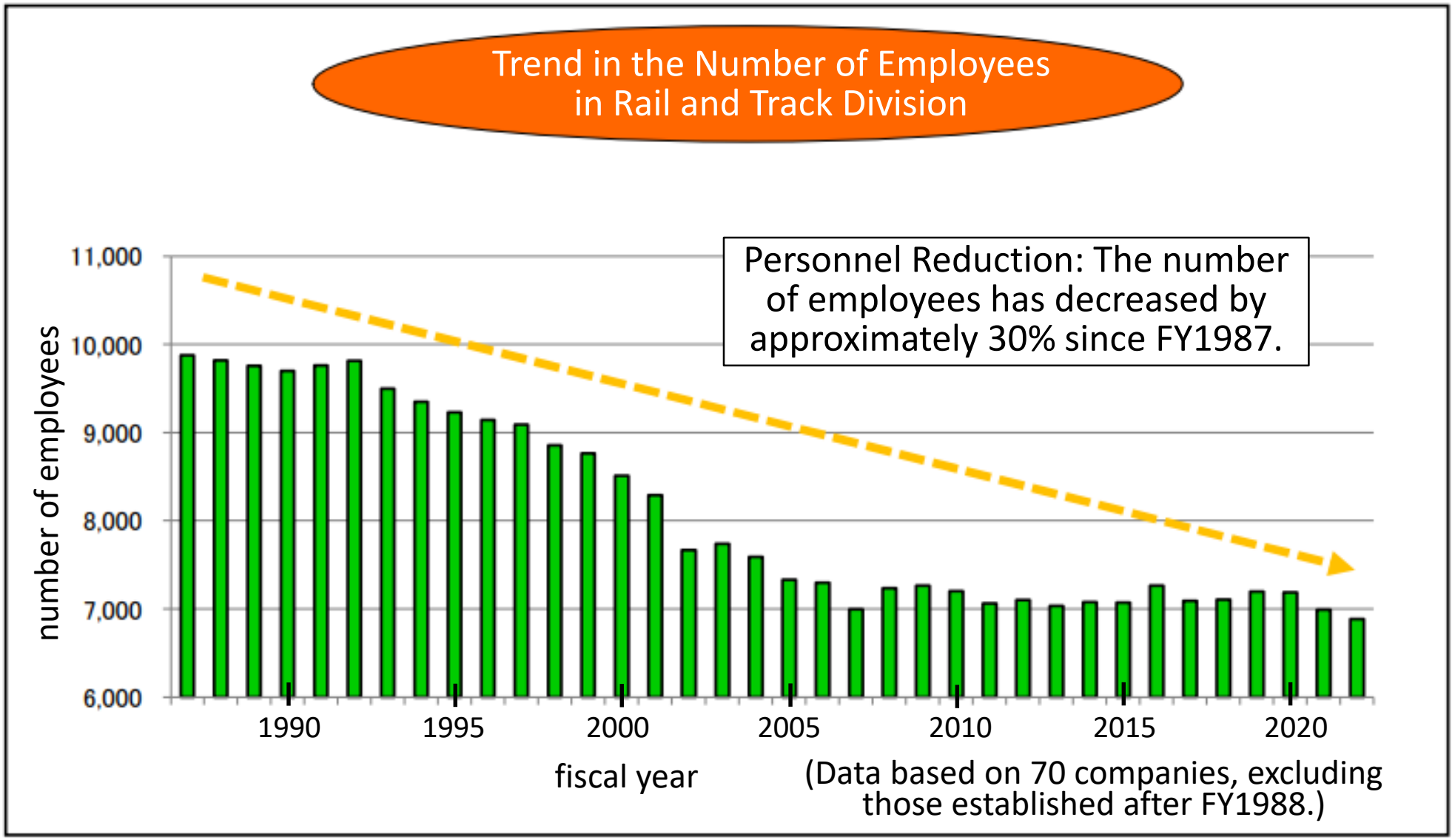
3. Present situations of Japan’s Local railways

Present situations of Japan's Local railways (1／5)

Trend in Passenger Transport Volume (Transport Volume of Passengers)



Present situations of Japan's Local railways (2／5)

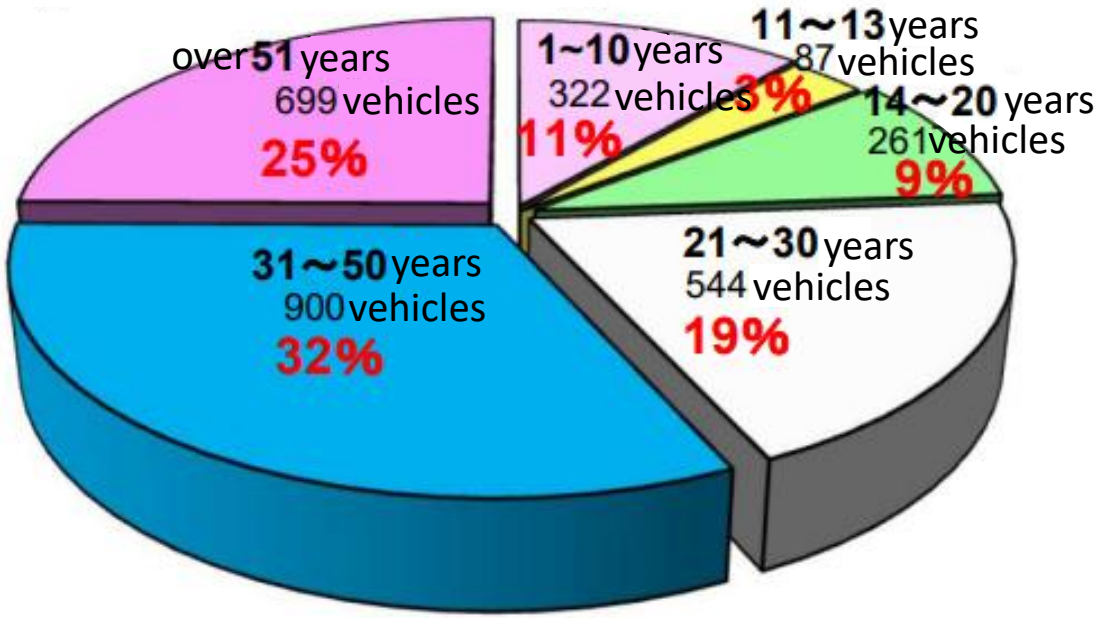


Present situations of Japan's Local railways (3／5)

Vehicle Age

Condition of Facilities

(Internal Combustion Cars (Diesel): Service life is 11 years
Electric Trains (EMUs): Service life is 13 years)



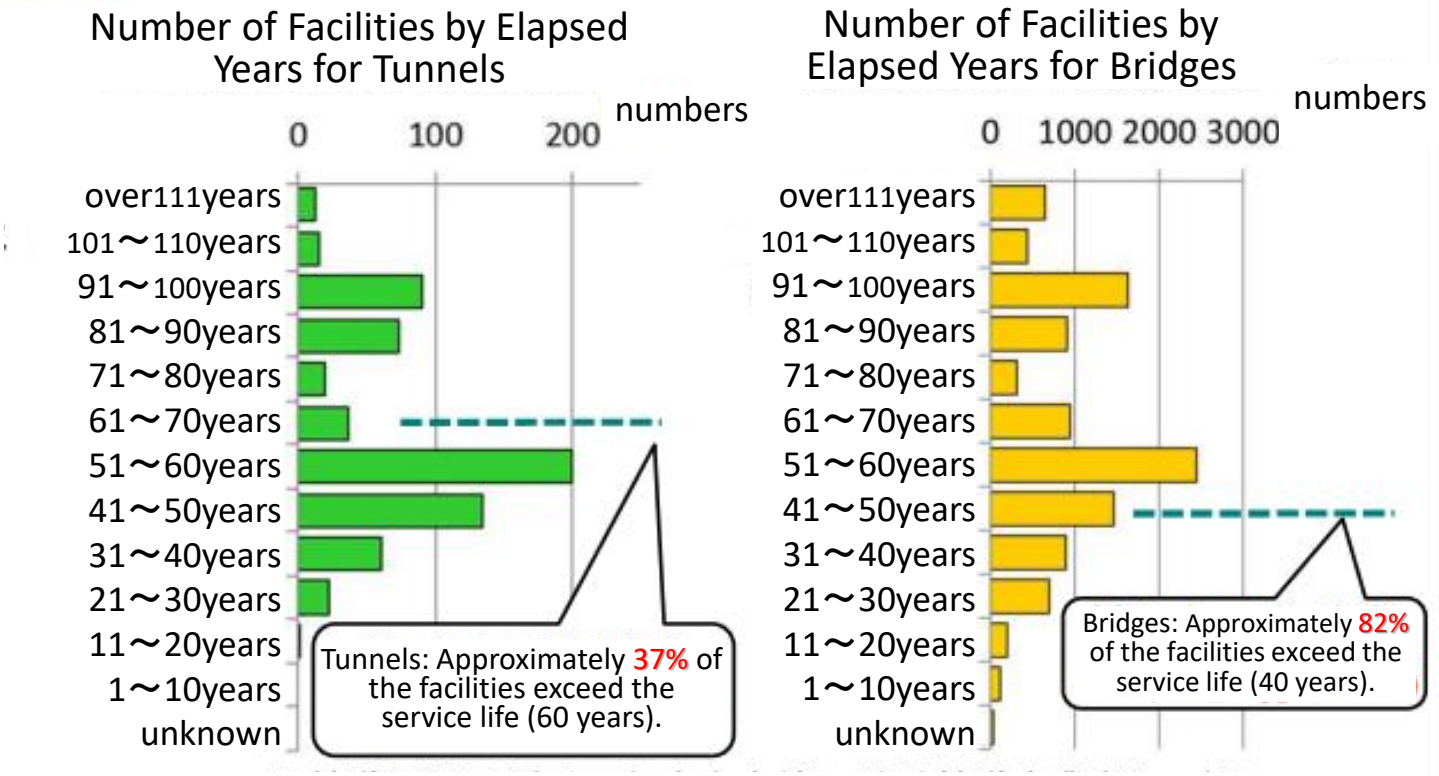
(Source: Railway Bureau survey, end of FY2022 results for 95 local railway operators.)

Aging Status: Aging is progressing, and the financial burden of updating safety equipment is a bottleneck for business continuity. Furthermore, meeting new needs such as improved safety and accessibility (barrier-free design) is difficult.

Present situations of Japan's Local railways (4／5)

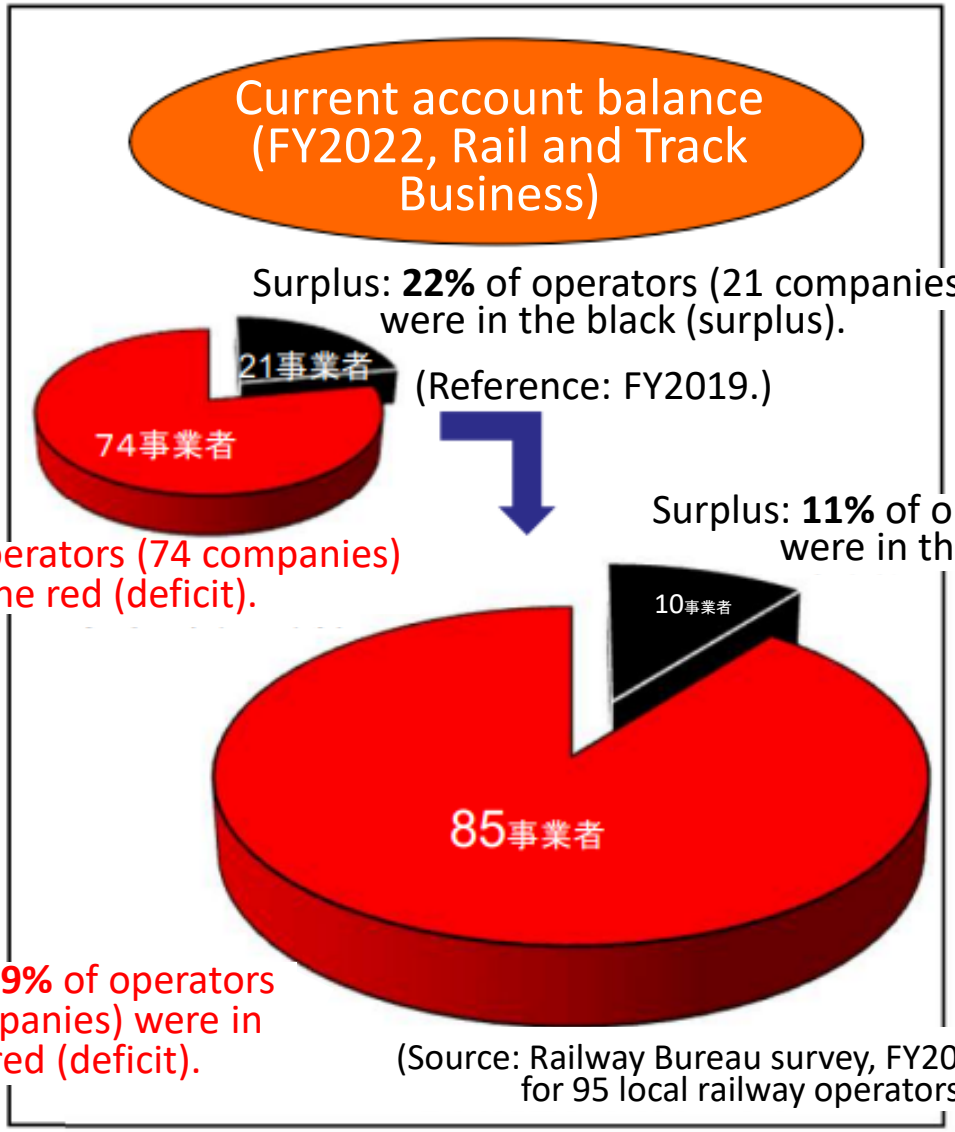
Condition of Facilities

Number of Facilities by Elapsed Years for Tunnels and Bridges



(Source: Railway Bureau survey, FY2022 results for 95 local railway operators. Percentages exclude unknown data.
Note: The service life for tunnels and bridges may vary depending on the material.)

Present situations of Japan's Local railways (5／5)



(Source: Excerpt from MLIT (Ministry of Land, Infrastructure, Transport and Tourism) material on local railway measures.)

Outlook for Accepting Foreign Workers

The maximum estimated number of foreign workers to be accepted into the Japan's railway industry for the five years starting from FY2024 is 3,800 people.

This number will be used as the ceiling for the acceptance period ending at the end of FY2028.

(Source: Excerpt from the material of the briefing session on the addition of the railway sector to the Specified Skilled Worker (Tokutei Ginou) program, May 2024.)

Example of National Support for Local Railways

Subsidy for Local Public Transportation Securing, Maintenance, and Improvement Project (Rail/Track Safety and Transport Equipment Maintenance Project) (Non-Public Budget)

This subsidy supports local railway operators in updating equipment that contributes to improving safety to ensure safe railway transportation.

1. Eligible Operators : Rail operators (Local Railways and Trams)
2. Subsidy Rate : Up to 1/3 of the cost covered by the national government, etc
3. Eligible Equipment : Rails, sleepers (railroad ties), rockfall prevention equipment, ATS (Automatic Train Stop), train radio equipment, windbreak facilities, bridges, tunnels, rolling stock (vehicles), track improvement, slope stabilization, etc.

track improvement

slope stabilization

ATS (Automatic Train Stop)

rolling stock (vehicles) renewal

(Source: Excerpt from MLIT (Ministry of Land, Infrastructure, Transport and Tourism) material on local railway measures.)

4. Gauge widening accidents

Opinion on Preventing Train Derailment Accidents Due to Track Gauge Widening

■ Overview of Four Derailment Accidents

Four train derailment accidents occurred between October 2016 and May 2017.

Date of Accident
Operator / Line Details
Fatalities or injuries
Location

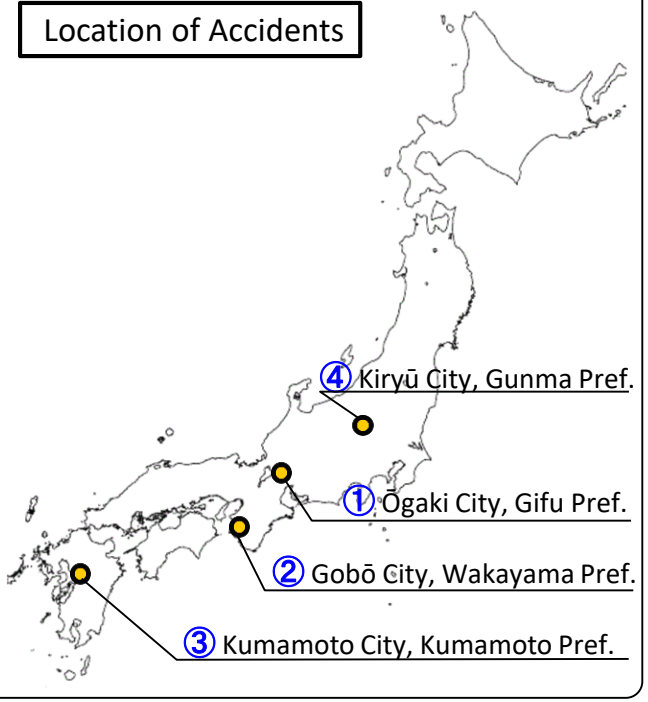
① Oct 6, 2016 Seinō Railway Co., Ltd., Ichihashi LineThe rear bogies of the 11th car and all axles of the 12th car of a 25-car freight train derailed. No fatalities or injuries to 1 driver and 3 other crew members. Ōgaki City, Gifu Pref.

② Jan 22, 2017 Kishū Railway Co., Ltd., Kishū Railway LineAll axles of the rear bogie of a 1-car train derailed.No fatalities or injuries to 1 driver and 5 passengers. Gobō City, Wakayama Pref.

③ Feb 22, 2017 Kumamoto Electric Railway Co., Ltd., Fujisaki Line. All axles of the front bogie of the 1st car of a 2-car train derailed. No fatalities or injuries to 1 driver and approx. 50 passengers. Kumamoto City, Kumamoto Pref.

④ May 22, 2017 Watarase Keikoku Railway Co., Ltd., Watarase Keikoku LineAll axles of the front bogie of the 2nd car of a 3-car train (an inspection car owned by JR East) derailed. No fatalities or injuries to 1 driver and 6 other crew members. Kiryū City, Gunma Pref.

Location of Accidents

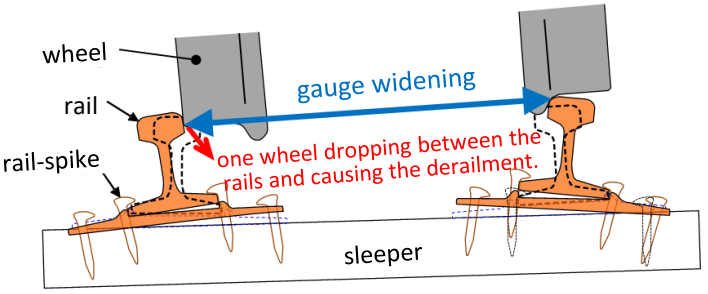


■ Common Cause of accidents

The cause of all four accidents was **track gauge widening** (the expansion of the distance between the two running rails), resulting in one wheel dropping between the rails and causing the derailment.

Underlying Factor: Many factors contributing to gauge widening are common among small-scale local railways with severe financial environments.

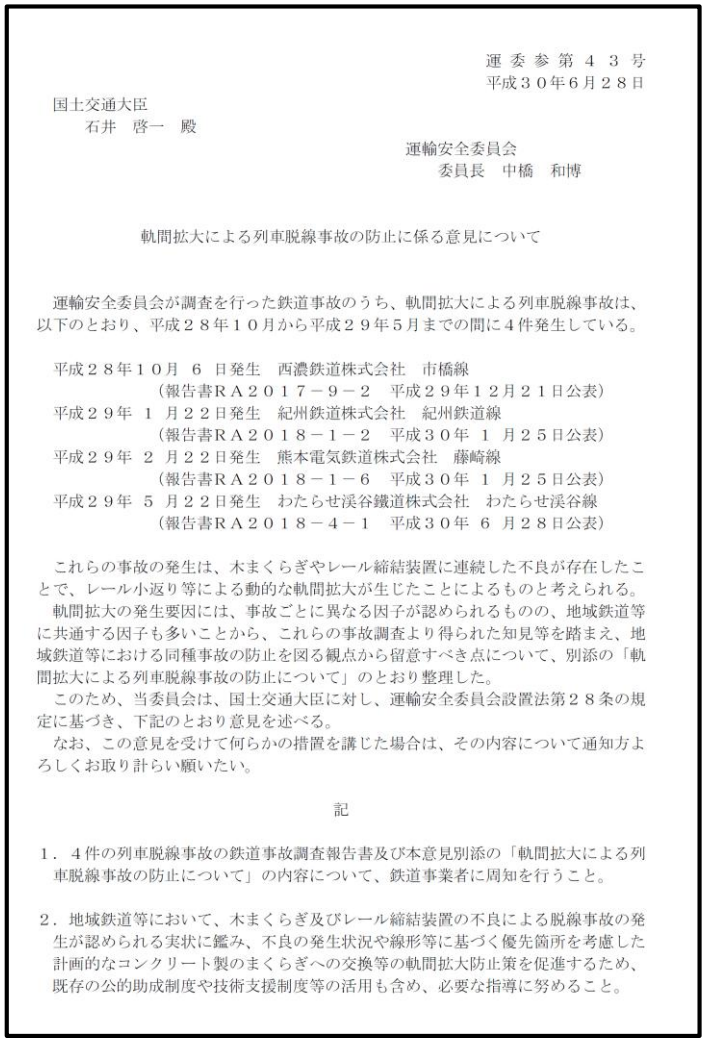
Schematic image of derailment by gauge widening



Cross-section vertical to rails

Opinion on Preventing Derailment Accidents

Following the four derailment accidents caused by track gauge widening on local railways between October 2016 and May 2017, the JTSB issued the following opinions to the Minister of Land, Infrastructure, Transport and Tourism to prevent recurrence.



運委参第４３号
平成３０年６月２８日

国土交通大臣
石井　啓一　殿

運輸安全委員会
委員長　中橋　和博

軌間拡大による列車脱線事故の防止に係る意見について

運輸安全委員会が調査を行った鉄道事故のうち、軌間拡大による列車脱線事故は、以下のとおり、平成２８年１０月から平成２９年５月までの間に４件発生している。

平成２８年１０月　６　日発生　西濃鉄道株式会社　市橋線
（報告書ＲＡ２０１７－９－２　平成２９年１２月２１日公表）
平成２９年　１　月２２日発生　紀州鉄道株式会社　紀州鉄道線
（報告書ＲＡ２０１８－１－２　平成３０年　１　月２５日公表）
平成２９年　２　月２２日発生　熊本電気鉄道株式会社　藤崎線
（報告書ＲＡ２０１８－１－６　平成３０年　１　月２５日公表）
平成２９年　５　月２２日発生　わたらせ渓谷鐵道株式会社　わたらせ渓谷線
（報告書ＲＡ２０１８－４－１　平成３０年　６　月２８日公表）

これらの事故の発生は、木まくらぎやレール締結装置に連続した不良が存在したことで、レール小返り等による動的な軌間拡大が生じたことによるものと考えられる。
軌間拡大の発生要因には、事故ごとに異なる因子が認められるものの、地域鉄道等に共通する因子も多いことから、これらの事故調査より得られた知見等を踏まえ、地域鉄道等における同種事故の防止を図る観点から留意すべき点について、別添の「軌間拡大による列車脱線事故の防止について」のとおり整理した。
このため、当委員会は、国土交通大臣に対し、運輸安全委員会設置法第２８条の規定に基づき、下記のとおり意見を述べる。
なお、この意見を受けて何らかの措置を講じた場合は、その内容について通知方よろしくお取り計らい願いたい。

記

１．４件の列車脱線事故の鉄道事故調査報告書及び本意見別添の「軌間拡大による列車脱線事故の防止について」の内容について、鉄道事業者に周知を行うこと。

２．地域鉄道等において、木まくらぎ及びレール締結装置の不良による脱線事故の発生が認められる実状に鑑み、不良の発生状況や線形等に基づく優先箇所を考慮した計画的なコンクリート製のまくらぎへの交換等の軌間拡大防止策を促進するため、既存の公的助成制度や技術支援制度等の活用も含め、必要な指導に努めること。

Content of Opinion

1. Thoroughly disseminate the contents of the Railway Accident Investigation Reports for the four accidents, along with the attached document "On the Prevention of Train Derailment Accidents Due to Track Gauge Widening," to all railway operators.

2. Promotion of Planned Gauge Widening Prevention Measures: In light of the fact that derailment accidents caused by deteriorated wooden sleepers and rail fastening devices are occurring on local railways:

Strive to provide necessary guidance, including the utilization of existing public assistance and technical support programs, to promote gauge widening prevention measures.

These measures include the planned replacement of wooden sleepers with concrete sleepers, giving priority to locations determined by the occurrence of defects and track geometry (line shape).

Train Derailment Accident on Isumi Railway Co., Ltd., Isumi Line（1／3）

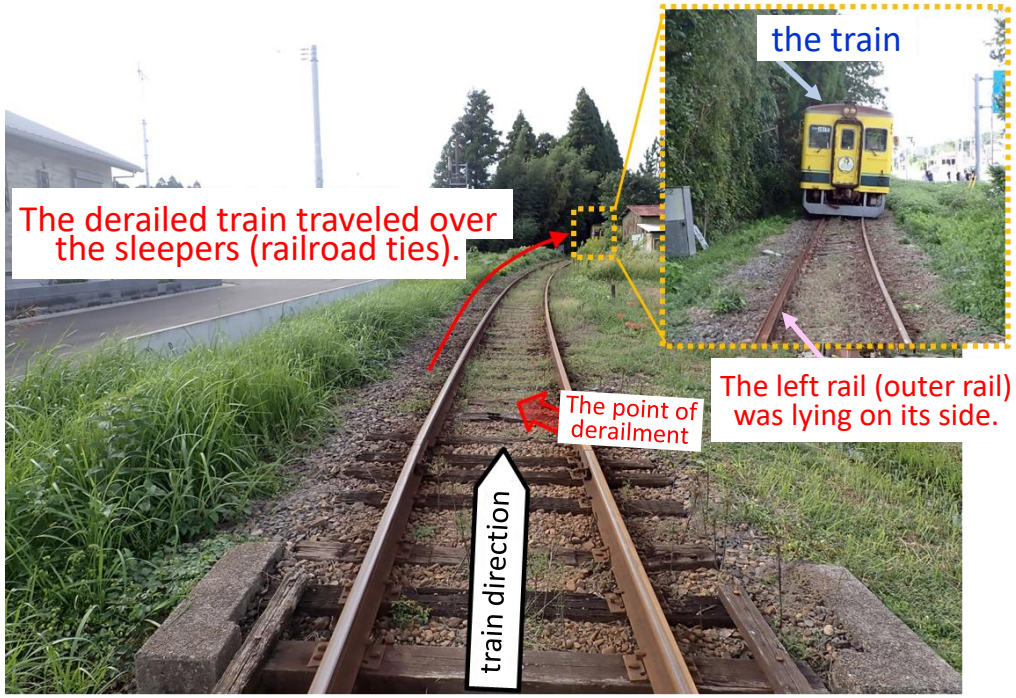
Accident Summary

◆ Date and Time of Occurrence: Approximately 08:06 AM, October 4, Reiwa 6 (2024).

◆ Location: Isumi Line, between Kuniyoshi Station and Kazusa-Nakagawa Station (Isumi City, Chiba Prefecture).

◆ Overview: A two-car train was traveling on a right-hand curve with a 300m radius at about 41 km/h when all two axles of the lead car's rear bogie and all four axles of the trailing car derailed to the left. The train carried 104 passengers and 1 driver, with no injuries reported.

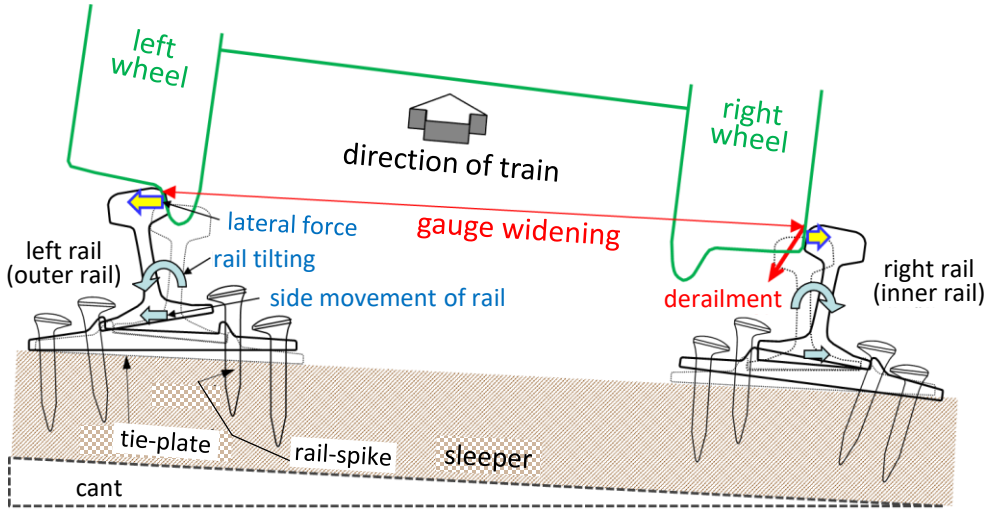
《 Accident Site Condition 》



Continuous sections of corroded and cracked sleepers were present where the track gauge displacement was large within the curve.

➡ The track gauge significantly widened, leading to a derailment within the gauge.

《 Schematic image of derailment by gauge widening in this accident 》



Train Derailment Accident on Isumi Railway Co., Ltd., Isumi Line（3／3）

Cause of the Accident

◆ The accident is considered to be caused by the significant widening of the track gauge while the train was running the right-hand curve. This resulted in the right wheel of the first axle of the lead car's rear bogie dropping within the gauge, with subsequent wheels following suit.

◆ The significant track gauge widening is believed to be due to dynamic expansion caused by lateral pressure during train travel (such as 'rail tilting'). This was exacerbated by:
Large static track gauge displacement on the curve.
Alignment deviation exceeding the track maintenance standard values.
The continuous presence of corroded and cracked sleepers.

◆ The large static track gauge displacement may be due to the possibility of errors during re-inspections yielding smaller measured values, resulting in the failure to perform necessary track gauge displacement repairs identified during regular inspections.

◆ The continuous presence of deteriorated sleepers is believed to be due to the failure to adequately identify consecutive deteriorated sleepers posing a derailment risk during regular inspections and the resultant lack of sufficient sleeper replacement or conversion to PC (Prestressed Concrete) sleepers.

Recurrence Prevention Measures and Recommendations

The Japan Transport Safety Board (JTSB) considers the necessary recurrence prevention measures to be the steady repair of track displacement, appropriate management of sleepers, and improvement of the track maintenance system.

Recommendation to Isumi Railway Co., Ltd.

① Establish a system to properly manage and repair track displacement based on regulations. This includes reviewing and revising the track maintenance standard values for repairing track displacement and investigating appropriate track displacement management methods.

② Formulate a plan to verify necessary recurrence prevention measures, including the conversion to PC sleepers, and implement them as early as possible. This must be based on the countermeasures described in the JTSB's opinion issued to the Minister of Land, Infrastructure, Transport and Tourism on June 28, 2018 (Attachment: "On the Prevention of Train Derailment Accidents Due to Track Gauge Widening").

Note: In implementing these policies, it is advisable to actively utilize technical assistance to obtain external expertise, while also seeking cooperation from the national government and relevant local authorities.

Concluding Remarks

・The condition of local railways' tracks (infrastructure) is deteriorating.

・ Concurrently, their financial situation is worsening.

・ There is also an ongoing decline in technical proficiency and a severe shortage of personnel (talent depletion).

・ Therefore, financial support from the national and local governments, as well as technical assistance from specialized companies, is necessary.

Thank you for your attention.