GOVERNMENT STATUS REPORT OF JAPAN

Kenji SATO
Director,
International Policy Planning Division,
Road Transport Bureau,
Ministry of Land, Infrastructure, Transport and Tourism of Japan (MLIT)

1. Recent change of Traffic Accidents in Japan and the Government Targets

In 2021, the number of fatalities (those who died within 24 hours) in traffic accidents in Japan was 2,636.

This is a significant decrease from the previous year, down to about one-sixth of the 16,765 fatalities in 1970, when the number of fatalities peaked.

Further, the numbers of accidents with casualties and the number of injuries have both decreased for 17 consecutive years since 2004, the year they were the worst.

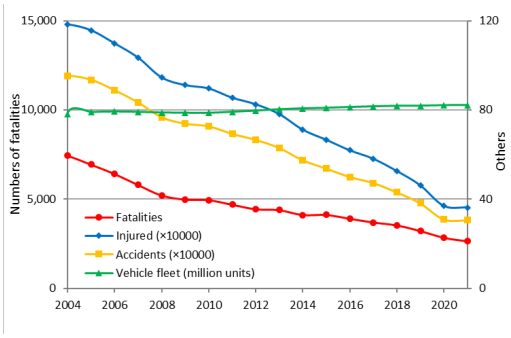

Figure 1. Recent trends in traffic accidents in Japan

As a further step, Japan announced in March 2021 the 11th Master Plan for Traffic Safety (2021-2025), which sets a new goal of reducing the number of fatalities (those who died within 24 hours) to less than 2,000 and the number of serious injuries to less than 22,000 by 2025.

Based on the 11th Master Plan for Traffic Safety, the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) announced on June 28 2021, the goals of reducing by 2030 the number of fatalities in traffic accidents within 30 days by 1,200 and the number of serious injuries by 11,000 compared to 2020 through vehicle safety measures.

In addition, MLIT set forth four priority areas as the directions for future vehicle safety efforts:

- Ensuring the safety of pedestrians, bicyclists and other road users
- Ensuring the safety of vehicle occupants
- Preventing certain types of serious accidents, which have become an important issue in light of the social background
- Promoting the creative and proper use of automated driving-related technologies

2. Effective Vehicle Safety Measures

The diffusion and development of active safety and other safety technologies require not only the update of the Safety Regulation but also a variety of rational measures.

These need to be examined after the

quantitative assessment of their effectiveness and performance.

MLIT is hence promoting vehicle safety measures by effectively linking safety regulations, the Advanced Safety Vehicle (ASV) project, and the New Car Assessment Program (NCAP).

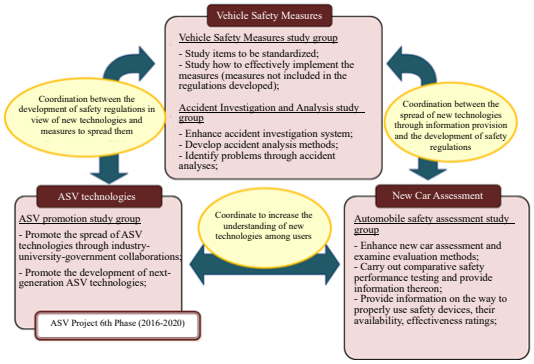

Figure 2. Vehicle safety measures promotion system

2.1 Enhancing the Safety Regulation

Regarding the enhancement of the Safety Regulation, MLIT has introduced UNRs and GTRs, focusing on advanced safety technologies, with the harmonization of international regulations in mind.

【Recent revisions of the Safety Regulation】

FY2022

- Enhanced the performance requirements for advanced emergency braking systems (AEBS) for heavy-duty vehicles
- Made mandatory the use of reverse warning sound systems for heavy-duty vehicles
- Expanded the regulation for automated driving systems (ADS)
- Enhanced performance requirements for pedestrian protection in the event of a collision

FY2021

- Made mandatory the use of devices (e.g., rearview cameras) to check immediately behind the vehicle when reversing
- Added requirements for AEBS for passenger cars, etc. (to protect bicyclists)
- Made mandatory the use of event data recorders (EDRs)
- Introduced regulation for risk mitigation functions (driver incapacity response systems)
- Improved regulation for battery electric vehicles
- Extension of the scope of frontal impact with focuson restraint systems

FY2020

- Introduced regulations for daytime running lights, etc. for motorcycles
- Introduced regulations for automated driving at Level 3 on expressways

FY2019

- Made mandatory the use of lateral collision warning systems
- Made mandatory the use of AEBS for passenger cars, etc.
- Introduced regulations for ADS
- Introduced regulations for cyber security software updates

Figure 3. Installation example of reverse warning sound systems

2.2. Advanced Safety Vehicle (ASV) Project

With regard to the ASV Project, which promotes the development and commercialization of advanced safety vehicles (ASV), MLIT worked on following during the 6th phase (FY2016-FY2020):

(i) Reviewed ASV design philosophy and Guideline principles ASV Technology Development with automated driving as a premise

(ii) Developed technical requirements of evolving emergency driving stop system for taking refuge on shoulder

(iii) Revised common definition and names of ASV technologies

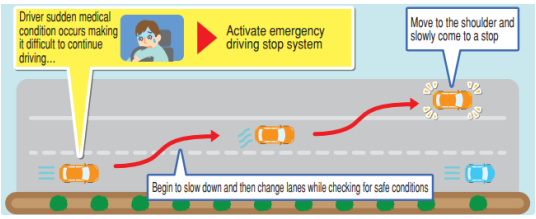

Figure 4. Technical requirements of evolving emergency driving stop system for taking refuge on shoulder

Into the 7th phase (FY2021-FY2025), we are working in four major areas, aiming to further promote ASVs for advanced automated driving.

(i) Helping people fully and correctly understand and use ASV, now a technology accessible to everyone, and diffusing them effectively on a solid strategy

(ii) Examining what safety technology should be that gives the system driving priority over the driver in certain situations.

(iii) Examining common specifications for the commercialization and dissemination of safety technologies using communications and mapping technologies

(iv) Exploring the scope and level of safety to be guaranteed to automated vehicles

In addition, for heavy-duty vehicles such as trucks and buses, MLIT is introducing advanced safety technologies such as Advanced Emergency Braking Systems (AEBS), Driver Incapacity Response Systems, and Lateral Collision Warning Systems through tax incentives and budget allocations.

2.3. Japan New Car Assessment Program (NCAP)

The Japan New Car Assessment Program (JNCAP), which assesses and publishes the safety performance of motor vehicles, has been in place since FY1995 to enable vehicle users to choose safer vehicles and to encourage automakers to develop such vehicles.

Since FY2011, the program has been assessing the performance of the vehicle both

in occupant and pedestrian protection, and publishing the results with a one- to five-star rating of passive safety performance.

Meanwhile, the assessment of active safety performance such as AEBS has been conducted since FY2014, the scope of assessment being gradually broadened with an increasing number of systems tested.

In FY2018, the program added the assessment of Acceleration Control for Pedal Error (ACPE), and in FY2019, started that of AEBS that avoid collisions with pedestrians in unlit situations at night.

From FY2020, we integrated the assessment and result publication of passive safety performance and active safety performance, which had been conducted separately.

To further reduce the number of fatalities and injuries, we started assessing AEBS for bicycles in FY2022. Furthermore, from FY2024, we plan to assess AEBS for intersections.

To increase consumer awareness of JNCAP, we will continue disseminating knowledge and information in corporation with the National Agency for Automotive Safety and Victims' Aid (NASVA), district transport bureaus, and other parties concerned.

Figure 5. Assessing AEBS for bicycles

3. Efforts toward the Realization of Automated Driving

Automated driving is expected to be highly effective in solving problems by reducing traffic accidents, relieving traffic congestion, providing a means of mobility to the elderly, etc.

The Japanese government has set such goals as achieving automated driving at Level 4 on highway by FY2025 and unmanned automated mobility services with only remote monitoring by FY2022.

To achieve these goals, MLIT is working to (i) improve the environment (regulations and legal systems), (ii) promote development and deployment, and (iii) conduct field operational tests and social implementation toward the realization of automated driving.

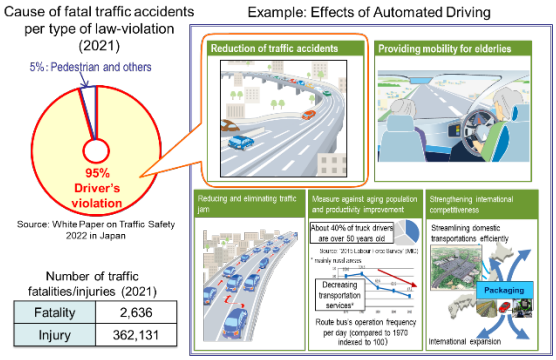

Figure 6. Importance of automated driving

3.1. Improving the environment for automated driving

Japan participates and plays an active role in discussions on international regulations for automated driving as a co-chair or vice-chair for various bodies at the UN ECE World Forum for

Harmonization of Vehicle Regulations (WP.29).

In June 2019, WP.29 agreed on a framework document on automated driving that outlines priority issues to be discussed and a schedule for the development of automated driving regulations.

Further, in June 2020, the Forum passed an international regulation for ADS, including automated lane keeping systems (ALKS) and cybersecurity measures.

In June 2022, it was also agreed to increase the upper speed limits for ALKS and add lane-change functions.

We will continue cooperating with other countries to discuss and establish international regulations for even more advanced automated driving.

At home, while taking into account of international discussions at WP.29, we established and enacted domestic regulations for ADS in April 2020.

Further, in November 2020, Japan became the first country in the world to grant a vehicle type approval for Level 3 automated driving.

Meanwhile, Acceleration Control for Pedal Error (ACPE), which is part of automated driving technologies, are expected to make a key issue in the future.

Japan is aging the fastest in the world and has seen accidents caused by elderly drivers become a serious social problem. By establishing international regulations for ACPE, which is already in widespread use in the country, we will promote its use to improve safety in many countries around the world, where the population is also rapidly aging.

3.2. Promoting the development and spreadof automated driving technology

To promote the development and deployment of automated driving technology, the government had set a new numerical target of increasing the percentage of newly registered passenger cars equipped with AEBS to 90% or more by 2020.

To achieve this target, MLIT has been promoting the spread of AEBS (as mentioned in 2.2).

In addition, in line with the international regulation established in WP.29, we made mandatory the installation of AEBS in new passenger cars (phased from September 2021).

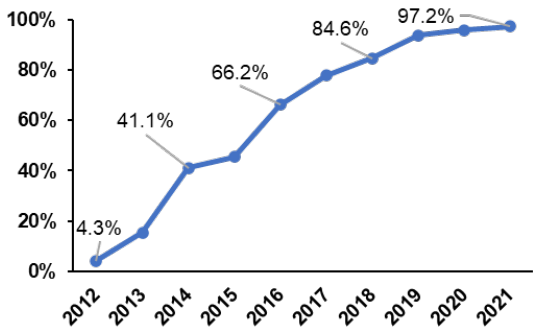

Figure 7. Percentage of newly registered passenger cars with AEBS

3.3. Field operational tests for automated and autonomous driving and their social

implementation

With regard to mobility services, the government realized Japan's first Level 3 unmanned automated mobility service in March 2021.

Currently, we are working to realize this mobility service at Level 4, and intend to use this experience to expand the unmanned automated mobility service nationwide in the future.

For logistics services, we realized in 2021 a platooning technology where trail trucks followed unmanned on expressways. Currently, we are studying how to run Level 4 automated trucks.

Figure 8. Unmanned automated mobility service and truck platooning

4. Promoting the International Harmonization of Vehicle Regulations in Cooperation with Other Countries

To help global distribution work smoothly, it is becoming more and more important to internationally harmonize vehicle regulations, which differ from country to country, and to promote mutual recognition of type approval between nations, by which they accept each other's certifications.

These activities are conducted by WP.29, the only world forum of its kind, and the Japan has been actively working there to promote the harmonization of vehicle regulations since the 1970s.

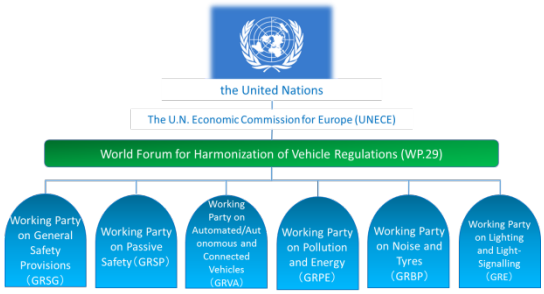

Figure 9. Structure of WP.29

4.1. Contributing to international discussions

In WP.29, MLIT, in cooperation with other countries, contributes to the development of international regulations on new technologies, such as automatic command, steering functions, AEBS, and other automated driving technologies, cybersecurity, and detection and warning systems for vulnerable road users in proximity.

In addition, MLIT contributes to the activities of WP.29 in terms of human resources, serving as vice-chair of various forums under WP.29 and working parties on automated driving-related technologies.

4.2. Promoting International Whole Vehicle Type Approval (IWVTA)

In 2017, WP.29 adopted an international regulation (UN R0), which entered into force in 2018.

In December 2019, Japan became the first country in the world to type-approve a vehicle under the IWVTA system.

Committed to the smooth operation of the IWVTA, MLIT promotes its active use.

Currently, the Informal Group on IWVTA under WP.29, chaired by Japan, is studying ways to further enhance the IWVTA in the future, including the expansion of the scope equipment concerned.

4.3. Promoting accession to UN Agreements in emerging countries

MLIT actively supports ASEAN and other emerging countries in joining UN agreements, participating in activities at WP.29, and introducing IWVTA.

In addition, building on its expertise and experience, MLIT helps these countries introduce appropriate traffic safety and environmental protection measures best suited to the traffic and environmental conditions of their own.

Conclusion

These are the measures being taken in Japan. In promoting them, MLIT collects and analyzes traffic data and runs PDCA cycles with the cooperation of various stakeholders.

Further, considering that motor vehicles are globally distributed products, it is essential, when considering and discussing regulations, to keep in mind the importance of international harmonization.

MLIT will continue actively making proposals based on technical evidence and help advance international discussions.