GOVERNMENT STATUS REPORT OF JAPAN

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TRENDS OF THE ROAD TRAFFIC ACCIDENTS IN JAPAN

The number of fatalities (those who died within 24 hours) resulting from traffic accidents in 2011 was 4,612. This represents the eleventh consecutive year that the number of fatalities has been decreasing. This number was below one-third the 16,765 fatalities in 1970, which was the year in which the number of fatalities reached a peak. In addition, the number of accidents resulting in injury or death and the number of injured persons decreased for the seventh consecutive year in a row since 2004, when the numbers were at their worst.

However, the number of fatalities and injured persons and the number of accidents resulting in injury remained high in 2011, as there were approximately 850,000 fatalities and injured persons, and approximately 690,000 accidents resulting in injury or death.

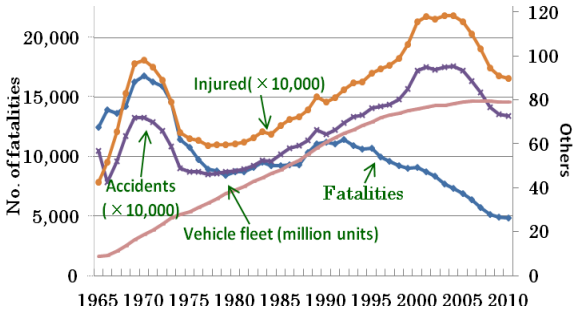

Figure 1. Trends of the road traffic accidents in Japan

New targets were established: to reduce the number of fatalities to below 3,000 (those who died within 24 hours) and to below around 3,500 (those who died within 30 days) by 2015 in the Ninth Fundamental Traffic Safety Program for 2011–2015.

The road transport environment is beginning to change greatly due to the change in types of traffic accident victims reflecting the aging society and the introduction of new technologies including electric vehicles for a low carbon society.

Therefore, on 1 June 2011 the Working Group on Technology and Vehicle Safety of the Council for Transport Policy of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) reported a new target for 2020 to reduce the number of fatalities by implementing vehicle safety measures and evaluating their effect, and setting the policy for reaching the new target.

Future direction of safety measures includes the following:

1) Correspondence to declining birthrate and a growing proportion of elderly people
2) Reduction of traffic accident victims for pedestrian and bicycle crew's
3) Correspondence to new mobility such as EV, micro mobility
4) Measures against grievous accident in which heavy duty vehicles are involved

FUTURE RESEARCH IN FINDING SOLUTIONS TO THE SAFETY PROBLEMS IDENTIFIED

To reduce the number of traffic accidents, approaches will be made towards the following measures upon speculating future changes in social structures, such as future developments in IT and the progression of declining birthrates and an aging society.

- Promotion of safety measures for pedestrians;
- Promotion of neck injury prevention measures;
- Introduction of standards on crash

compatibility;

- Research on advanced technologies, etc.

Concrete approaches regarding each of the measures are introduced below.

1. Promotion of safety measures for pedestrians

With regard to accidents involving pedestrians, which account for a high percentage of the number of fatalities caused by traffic accidents in Japan, it is necessary to implement popularization and promotion of pedestrian protection performance standards. As a result, with regard to measures for pedestrians, pedestrian head protection standards were introduced in 2004, and reviews are being conducted on the introduction of pedestrian leg protection standards. At the same time, a global technical regulation for pedestrian leg protection is now being discussed at GRSP under WP.29 and Japan continues actively contributing to those activities.

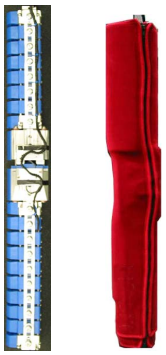

Figure 2. FLEX-PLI

According to rapidly spreading of hybrid cars, Japan judged that measures are needed to address the quietness of hybrid cars. And then the MLIT set up a study committee to investigate the problem of quietness.

In 2010, this committee reported to the MLIT on a future direction and specifically recommended that these vehicles should emit a sound. Based on these results, the MLIT published a guideline on Approaching Vehicle Audible Systems (AVAS) for short, which are designed to solve the quietness of HVs and similar vehicles.

WP.29 established a guideline in March 2011 based on Japan's guideline and now expects to develop it as a global technical regulation (gtr).

Figure 3. Demonstration of sound devices that could equip "silent cars"

2. Promotion of neck injury prevention measures (standardization of dummies)

Accidents involving neck injury account for more than half of the total number of accidents, and as there is an increasing trend in the number of such accidents in recent years, the enhancement of standards for headrests, etc. is being promoted as measures for neck injuries.

At the same time, with regard to assessments of whiplash injuries, which 80% of occupants in rear-end collisions suffer, the mechanism behind the occurrence of whiplash is complex, and as a result, there is not enough scientific clarification and it is also unclear as to which dummies should be used and what items to assess.

In particular, with regard to dummies, there are concerns regarding the consistency of assessments due to differences in structures, etc. of the dummies, and it is necessary for dummies to be standardized by having the research institutions, etc. of each country make approaches by contributing to efforts to elucidate the mechanism behind the occurrence of whiplash injuries and decide on assessment standards and indicators.

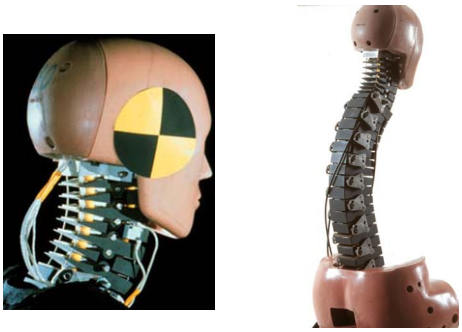

Figure 4. Standardization of dummies

3. Introduction of standards on crash compatibility, etc.

In addition to the above, crash compatibility measures for accidents involving frontal collision are also one of the passive damage mitigation measures for which approaches should be made. Japan considers measures for mini vehicles as being necessary. For the short-term, reviews are currently being conducted on the installation height of structural members so that the structural members interlock when there is a frontal collision.

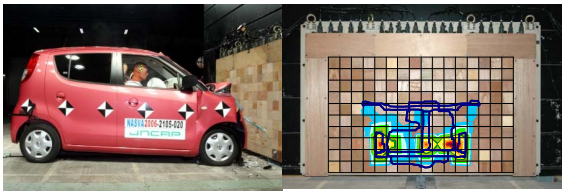

Figure 5. Crash Compatibility

Standards relating to performance for protecting occupants from electric shock after the collision of an electric vehicle or hybrid vehicle were introduced in 2007, and based on these regulations, UNECE regulations were established at WP.29 in 2010. Currently, a global technical regulation for electric vehicles is now being discussed at GRSP under WP.29 and Japan continues actively contributing to those activities.

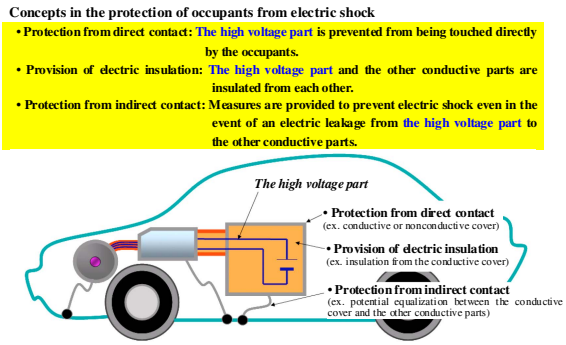

Figure 6. Concepts in the protection of occupants from electric shock

4. Research on advanced technologies

To prevent errors by drivers before they occur and decrease the number of accidents resulting in death and injuries, Japan has, with regard to ASVs, which are vehicles equipped with a system for assisting the driver to drive safely that makes use of advanced technology, established the ASV Project, which is a project to promote the development, practical application, and popularization of technology related to ASV, in 1991, and has been progressing with this project through joint efforts by industry, academia, and government.

For example, with regard to ASV technology that uses communications technology, technological developments are being promoted in the automobile industry through the implementation of experiments on public roads. In 2009, a Large-scale Field Operation Test on public roads using approximately 30 vehicles equipped with inter-vehicle communications was conducted based on cooperation between the public and private sectors. Based on this Test results, the MLIT will be planned to establish design requirements for practical system utilizing communications.

Figure 7. Communication-based driving assistance system for safety

From among the ASV technologies that are already mature, the lane-keeping assistance system and high-speed adaptive cruise control, have already been put to practical use, and are equipped in commercially-sold vehicles.

Furthermore, those with large effects in damage mitigation and accident reduction and those for which there are large social needs should be disseminated in an early manner, and thus, active dissemination measures that include means for incentives are necessary.

The MLIT established a technical regulation for the damage mitigation braking system for track and bus. Compulsory installation will be started from 2016 November. In addition, the MLIT decided to support for the car equipped with the ASV device, and established tax benefits for the track with the damage mitigation braking system.

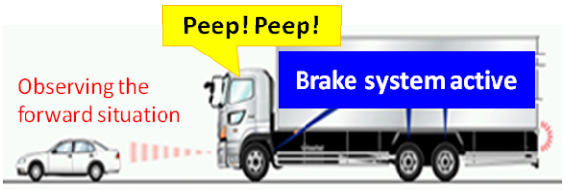

Figure 8. Illustration of activating AEBS

Thus MLIT has been examining the ideal way of the safety measures from the viewpoint that introduces regulations with high effect using the cycle of vehicle safety measures shown in the figure below.

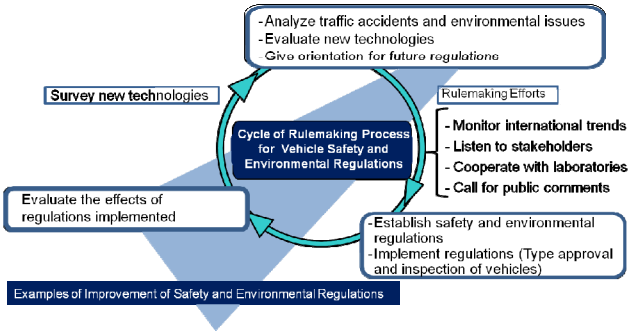

Figure 9. Study process before & after rulemaking

IDEAS FOR POTENTIAL COLLABORATIVE RESERCH INTER NATIONALLY

Japan would like to collaborate internationally to establish regulation against head restraint because accidents involving neck injury account for a high percentage of the number of fatalities in Japan as mentioned above. And also global technical regulations on new technologies like QRTV, AEBS and ITS in general could be established and in order to do so it would be needed to collaborate internationally by doing so, we could surely promote smooth diffusion of safe and convenient vehicles with equipments utilizing above mentioned advanced automotive technologies.

CONCLUSION

Measures that are being taken in Japan have been described above, but in order to promote international harmonization in the aspects of further advancing safe and environmentally friendly vehicles in the future, it is perceived that approaches made in coordination with the ESV Conference, WP.29, ITS World Congress, etc. will become increasingly important.