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 2010 was 4,863. This represents the tenth 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 sixth 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 2010, as there were approximately 900,000 fatalities and injured persons, and approximately 730,000 accidents resulting in injury or death.

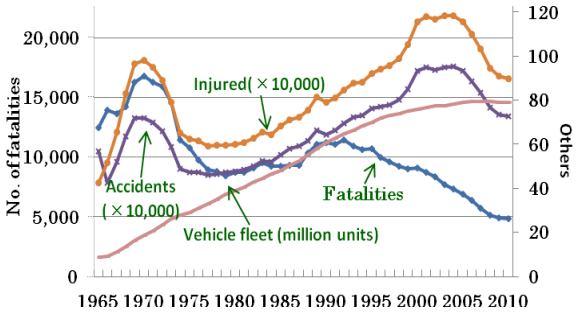

Figure 1. Trends of the road traffic accidents in Japan

With regard to reducing the number of traffic accidents, in order to achieve the national government's mid-term goal of "reducing the number of fatalities from traffic accidents to below 5,000 people by 2012" as indicated in the Prime Minister's policy speech in 2003, the targets of reducing the number of fatalities to below 5,500 and reducing the number of injured persons to below 1 million people by 2010 were established in the Eighth Fundamental Traffic Safety Program for 2006 to 2010.

This mid-term goal by the national government of reducing the number of fatalities to below 5,000 and the targets in the Eighth Fundamental Traffic Safety Program were reached two years in advance.

Based on these circumstances, the national government is now considering to set the new targets of reducing the number of fatalities to below 3,000 (those who died within 24 hours) and reducing the number of fatalities to below around 3,500 (those who died within 30 days) people by 2015 in the Ninth Fundamental Traffic Safety Program for 2011 to 2015.

The environment around road transport vehicles is beginning to change greatly because of the change of traffic accident victim group that is reflected from development of aging society and the introduction of new technologies including electric vehicles aiming at realizing of low carbon society.

Therefore, WG on the Technology and Safety for Vehicle of Council for Transport Policy of MLIT is now considering setting a new target that aims to reduce the number of fatalities by measures of vehicle safety until 2020 and to make a conclusion of measures and direction of policy to reach the new target.

Examples of measures are following,

(1) Reduction of injury by traffic accident in which senior citizen and pedestrians are involved

－Driving support system for senior driver

- Dissemination of ITS technologies that can detect pedestrian and other vehicles.

(2) Responding the development and dissemination of new technologies such as EV

- Securing of safety of battery and Measures against QRTV
- Safety measures against micro mobility such as application of collision safety and introduction of preventing safety technologies

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 that activities.

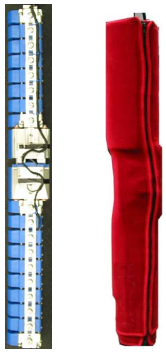

Figure 2. FLEX-PLI

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 2. Live demonstration of sound devices that could equip "silent cars" at UNECE

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.

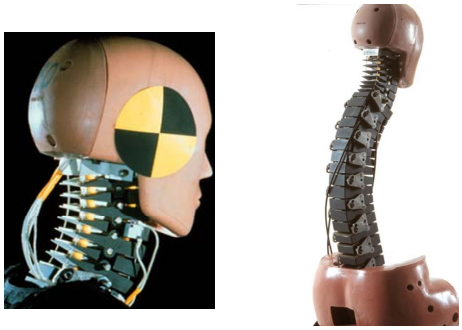

Figure 3. Standardization of dummies

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.

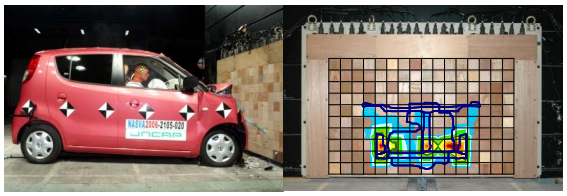

Figure 4. Crash Compatibility

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.

Regarding electric vehicle, establishing a safety regulation against Rechargeable Energy Storage System (RESS) is now being discussed at WP.29. Japan is going to contribute to this activity continually.

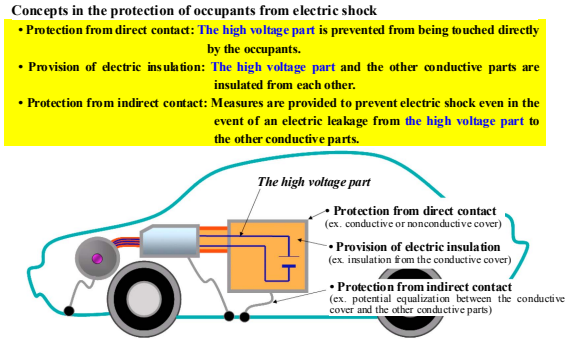

Figure 5. Concepts in the protection of occupants from electric shock

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 6. Communication-based driving assistance system for safety

From among the ASV technologies that are already mature, 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 guideline for the damage mitigation braking system in 2003, and reviews were conducted on this system regarding further measures that bring compulsory installation.

Regarding this technology, WP.29 is now discussing to establish a safety regulation as an ECE Regulation on Advanced Emergency Braking System (AEBS). Japan is actively contributing to this discussion.

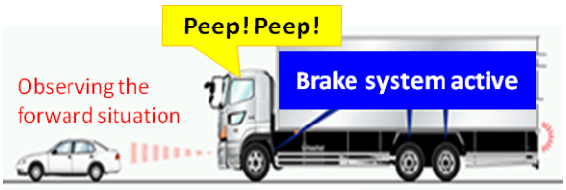

Figure 7. Illustration of activating AEBS

PUTTING SAFETY TECHNOLOGIES TO WORK

The following table is a list of ASV technologies that are being put to practical use. Several ASV technologies, such as 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.

Table 1. Commercialized technologies from ASV Project

Common Names of ASV Technologies	2007	2009
Variable light distribution (AFS)	212,575	206,129
Nighttime forward pedestrian advisory system (Nighttime pedestrian warning)	186	369
Zigzag driving advisory system (Zigzag warning)	113,772	286,597
Forward vehicle collision warning system (FVCWS)	9,243	35,437
Forward collision damage mitigation brake control system (Damage mitigation braking system)	23,334	35,961
Constant-speed cruising / following distance control system (ACC)	28,253	35.001
Lane keeping assistance control system (LKAS)	2,660	4,438
Electric stability control system (ESC)	395,559	705,939
Total annual production	4,175,007	3,788,552

The 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.

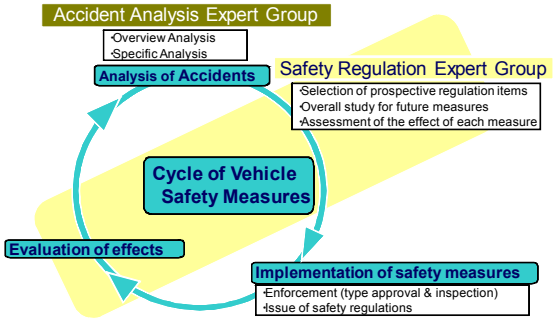

Figure 8. Study process before & after rulemaking

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, RESS, 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.