FINAL REPORT OF GROUP OF EXPERTS ON IMPROVING SAFETY AT LEVEL CROSSINGS GE1

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GE1 DEVELOPMENT AND FINAL REPORT

- First session Jan 2014: Culmination of over 3 years of work, 9 sessions & between 6-8 sub working groups developing each topic area

- Final Report:

- Part 1: An assessment of safety performance and contributing factors in UNECE member countries and other selected countries, with Recommendations from GE1

- Part 2: A strategic framework for improving safety, including a comprehensive approach of continued improvement in safety performance, with an Action Plan

SUMMARY OF TOPIC AREAS AND RECOMMENDATIONS: SAFETY PERFORMANCE

- The number of significant level accidents has declined overall

- Fatal accident numbers vary from 1 to 152 per year in UNECE member countries

- It is not practical to compare these statistics to road data because of the relatively small number of users and fixed points where accidents can occur

- A lack of harmonisation in data collected, making comparison and benchmarking problematic

- **Rec's focus on establishing an owner and protocols for data collection**

COSTS OF LEVEL CROSSING ACCIDENTS

- 67% of countries surveyed do not collect or calculate the costs of accidents
- Costs are compiled annually even if calculated at incident level
- Costs are used as inputs in Cost Benefit Analysis and National Safety Plans
- Different methodologies used and up to 11 different types of costs captured with most common being property damage and delays
- 7 countries provide a value for life input
- No systematic approach in UNECE member countries
- **Rec's focus on development of a consistent approach and Taxonomy of costs to be used**

LEGISLATION

- The domestic legal framework plays a critical role in the design, operation and management of level crossings

- Over 30% of respondent countries note a single rail body is responsible for safety at level crossings despite this being a joint interface between rail and road

- Few countries have legislation in place to claim costs for accidents

- Inconsistencies in warnings and signals and gaps in the use of signage for particular groups particularly vulnerable groups

- **Rec's focus on standardising good practice, sharing information more effectively and the introduction of a sign for breaking barriers when trapped inside a crossing**

RISK MANAGEMENT

- Few countries have adopted a sophisticated approach to Risk Management compliant with recognised tools and techniques set out in domestic or EU Regulation

- Two countries use risk models, identification, assessment, evaluation and quantification of risks at individual crossing levels. Producing a prioritised list of crossings in risk order

- **Rec's focus on developing the expertise to apply the tools and techniques of risk management across UNECE member countries**

ENFORCEMENT

- A survey of UNECE member countries showed that over 70% use different forms of enforcement

- The Police are responsible in most countries but resources are very limited

- Technology is used in some countries for automatic enforcement

- Not enough analysis has been completed on the impact of enforcement on user behaviours

- **Rec's focus on greater research and analysis to quantify benefits and the and development of low cost technology to remove the burden on local Police authorities**

EDUCATION

- Very few countries have dedicated education programmes

- Most rely on short campaigns and initiatives such as awareness days

- International events have generated very large take up with over 40 countries participating annually

- Some guidance and information has been produced for different user groups

- **Rec's focus on the introduction of targeted education for schoolchildren, the inclusion of level crossing specific awareness for learner drivers and a concerted effort to measure the effectiveness of education and awareness campaigns**

HUMAN FACTORS

- Human factors is concerned with the application of what we know about people, their abilities, characteristics, and limitations to the design of equipment they use, environments in which they function, and jobs they perform

- The Group of Experts found that there seems to be little experience and good practice in UNECE members in terms of addressing specific causative human factors. It was further noted that none of the existing solutions and tools are knowledge or research based. They are usually technology focused and implemented based on a trial-and-error method and often do not consider road user behaviour in a sufficient manner

HUMAN FACTORS RECOMMENDATIONS

- The Group of Experts agrees that human factors must be identified as a major issue in improving level crossing safety

- Assessment and solutions to human factors issues are essential. In-depth analysis of human factors so that human factor based solutions are worked out, tested and evaluated, including those necessary for the safe design and operation of level crossings is required. It should also facilitate location-specific risk assessment to identify the reasons why errors and violations might occur, so that the underlying systemic causes can be addressed

- The Group of Experts recommends that countries carry out a joint project that would lead to the development of a standardized toolbox for human factors analysis at level crossings. Such a toolbox should standardize the assessment of level crossing accidents in terms of human factors. Above all, the investigation of causative human factors should be mandatory for accident investigation bodies and be supported with human factors templates for accident analyses to enable adequate conclusions and derive appropriate countermeasures

TECHNOLOGY

- With funding limited technology development has been largely focused on level crossings and solutions where the possibility of derailing a train due to conflict with a vehicle, is greatest. Therefore, the numbers of crossings with no technology at all is high. This includes locations where trains frequently travel up to 160 km/h and sometimes at locations with trains reaching speeds of 200 km/h.

- The pace of development is too slow. The cost and time required to develop and approve new technological solutions that meet industry standards and achieve the safety integrity levels required is often not achievable

- **Rec's focus on the need for more innovation and a joint roadmap and vision for technological solutions to improve safety for all user groups**

ACTION PLAN

- There are national and international actions contained in the overall Action Plan that support the implementation of the safe system approach for level crossings. International Actions include:

- 169. (a) Establishment of an international working group on safety at level crossings

- 169. (b) Creation of an international online database on level crossing safety indicators

- 169. (c) Creation of an international online database on lessons learned from accident investigations

169 (A) ESTABLISHMENT OF AN INTERNATIONAL WORKING GROUP ON SAFETY AT LEVEL CROSSING

- This recommendation from the Action Plan is designed to build on GE1 recommendations made and to assist implementation and the development of capability to improve safety. It is also a platform for sharing good practice and monitoring and measuring progress in:

- Development of Risk Management expertise, understanding the effectiveness of education, enforcement and engineering solutions, standardising training and competence for staff involved in the management of level crossings, application of a cost Taxonomy for level crossing accidents, improving methods for understanding and quantifying societal and environmental costs of delays, congestion and accidents, developing qualitative tools for assessing asset condition and usability, developing a standardised toolbox for human factors analysis…

THE GROUP OF EXPERTS ON IMPROVING SAFETY AT LEVEL CROSSINGS REQUEST:

The Working Party on Road Transport is invited to endorse this report of the Group of Experts on Improving Safety at Level Crossings and to suggest a way forward with the establishment of an international working group