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## Economic Commission for Europe

### Inland Transport Committee

#### Working Party on Road Traffic Safety

##### Group of Experts on Improving Safety at Level Crossings

###### **Eighth session**

Geneva, 1-2 June 2016

Item 2 (a) of the provisional agenda

**Programme of Work – Development of a road/rail interface  
strategy with recommendations**

**Part I of the final report**

### **Description and assessment of the current safety performance at level crossings in UNECE member States and selected non-UNECE member States\*\***

#### **Submitted by France, Ireland, UK, ERA, UIC and Community Safety Partnerships Ltd**

This document submitted by France, Ireland, United Kingdom, European Railway Agency, International Union of Railways and Community Safety Partnerships Ltd (CSP) contains a proposal on indicators to be produced by UNECE member States for assessing safety performance at level crossings present on their territories.

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\* The present document was not edited before being sent to the United Nations translation services.  
\* This document was submitted late for document processing as clearances from relevant parties were received late.

## I. Proposed safety indicators

1. It remains desirable to adopt an existing suite of indicators that are already being used, for example those specified by the European Rail Agency (ERA) / Eurostat. However, the starting point for wider collection and analysis of safety indicators needs to be built around the data sets most likely to be available in all countries prepared to provide national data. Data already collected by ERA are indicated. Therefore, the proposed indicators have to allow easy aggregation and extraction of data in respect of those jurisdictions collecting more comprehensive statistics and not place an unacceptable burden on those presently collecting less complete data.
2. Clearly, there needs to be a set of baseline definitions against which participating jurisdictions are encouraged to report annually. Where possible, definitions and terms defined in UNECE Glossary for Transport Statistics should be used, complemented, where appropriate, with the definitions used by Eurostat/ERA/UIC. A glossary of terms and definitions is presented in the Annex. Where different definitions have been used for submitted data this should be explicitly stated by the party submitting data and covered by way of notes linked to any comparative analysis. Where a party does not collect the data needed to populate the benchmarking database, these fields should be marked with a dash.
3. The first voluntary submission of data should be in course of year 2017 for 2016 data. Should a country choose to provide retrospective time series data it should be submitted for any past years starting from 2010.
4. Accidents at level crossings on functionally independent transit systems should be excluded (e.g. tramways).
5. In so far as classes of user(s) are concerned, initially at least, this should be limited to differentiating pedestrian and cyclist from other transport. CARE/CADAS provide a comprehensive taxonomy of road users based on Eurostat/OECD/UNECE Glossary for Transport Statistics definitions.

### A. The proposed input data sets are:

6. The total number of fatal<sup>1</sup>, significant<sup>2</sup> and all railway accidents<sup>3</sup> at level crossings with the break-down per type of level crossing (as defined under 3).
7. The total number of persons killed<sup>4</sup> and seriously injured<sup>5</sup> in accidents at level crossings and a break-down (if possible) on the following types:
  - (a) Total level crossing users<sup>6</sup>, of which:
    - i. Pedestrians;
    - ii. Cyclists;<sup>7</sup>
    - iii. Motor-vehicle users;<sup>8</sup>
    - iv. Other level crossing users;<sup>9</sup>

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<sup>1</sup> As defined in EU Eurostat/OECD/UNECE harmonized glossary.

<sup>2</sup> As already collected by ERA for EU CSI (significant railway accidents).

<sup>3</sup> All accidents registered in a given jurisdiction (not necessarily comparable between them). Also used in UNECE road safety statistics.

<sup>4</sup> As already collected by ERA.

<sup>5</sup> As already collected by ERA.

<sup>6</sup> As already collected by ERA.

<sup>7</sup> An alternative would be to consider all vehicle users (including cyclists).

<sup>8</sup> A 'road motor vehicle' as defined in the UNECE Vienna Convention 1968 [Article 1 (n)].

- (b) Railway passengers;<sup>10</sup>
- (c) Railway employees;<sup>11</sup>
- (d) Other persons (excluding trespassers).<sup>12</sup>

8. The total number of level crossings at December 31st by type of protection and a break-down on the following types of level crossings (classified by type of protection)<sup>13</sup>

- (a) Passive level crossing;
- (b) Active level crossing:
  - (i) Manual;
  - (ii) automatic with user-side warning;
  - (iii) automatic with user-side protection;
  - (iv) rail-side protected.

9. The indicators 1 and 2 per

- Billion train-km;<sup>14</sup>
- 1,000 line-km;<sup>15</sup>
- 1,000 level crossings.<sup>16</sup>

10. Some data used for normalization (such as traffic volumes and network length) are already available under UNECE/OECD/Eurostat data collection.

11. As regards the potential regular data collection arrangements, one can make use of existing transport data collection structures (UNECE/OECD/ESTAT) – notably their common questionnaire.

12. Normalising the raw data to enable better comparisons of performance can be undertaken in a number of ways using the data set out above or other publicly available data (e.g. road safety statistics): A glossary of agreed terms and definitions to support the proposed indicators is provided as an annex to this paper.

## II. Holding and managing the benchmarking data

13. The organisation identified as appropriate data host is UNECE.

14. It is proposed that UNECE ask the relevant countries using notably its WP.6 to deliver data through a questionnaire addressing all indicators mentioned in paragraph I.A

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<sup>9</sup> Users of vehicle such as horse, ox and cart, agricultural vehicle.

<sup>10</sup> As already collected by ERA.

<sup>11</sup> As already collected by ERA; e.g. gate keepers, trackside workers and train crew members.

<sup>12</sup> As already collected by ERA.

<sup>13</sup> As already collected by ERA.

<sup>14</sup> As already collected by ERA.

<sup>15</sup> As already collected by ERA.

<sup>16</sup> As already collected by ERA.

## Annex

### I. Definitions

#### Accidents at level crossings and their outcomes (Common Glossary of transport statistics<sup>17</sup>)

##### Accident (railway) [A.VII-01]

Unwanted or unintended sudden event or a specific chain of such events which have harmful consequences. Railway accidents are accidents in which at least one moving rail vehicle is involved.

##### Level crossing accidents [A.VII-13]

Any accident at level crossings involving at least one railway vehicle and one or more crossing vehicles, other users of the road such as pedestrians or other objects temporarily present at or near the track.

##### Fatal accident [B.VII-02]

Any injury accident resulting in a person killed.

##### Person killed [A.VII-09, B.VII-05]

Any person killed immediately or dying within 30 days as a result of an (injury) accident, excluding suicides.

##### Person seriously injured [A.VII-10, A.VII-6]

Person seriously injured.

Any person injured who was hospitalised for more than 24 hours as a result of an accident.

##### Level crossing users [A.VII-16]

Persons using a level crossing to cross the railway line by any mean of transportation or by foot.

##### (Bi) cycle [B.II.A-05]

A road vehicle which has two or more wheels and generally is propelled solely by the muscular energy of the persons on that vehicle, in particular by means of a pedal system, lever or handle (e.g. bicycles, tricycles, quadricycles and invalid carriages).

##### Road motor vehicle [B.II.A-06]

A road vehicle fitted with an engine whence it derives its sole means of propulsion, which is normally used for carrying persons or goods or for drawing, on the road, vehicles used for the carriage of persons or goods.

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17 Illustrated common glossary for transport statistics (UNECE, OECD, Eurostat)  
<http://www.unece.org/fileadmin/DAM/trans/main/wp6/pdfdocs/glossen4.pdf>.

## **II. Convention on Road Signs and Signals, of 1968 (Vienna Convention)**

### **Motor vehicle [Article 1 (n)]**

Any power-driven vehicle which is normally used for carrying persons or goods by road or for drawing on the road, vehicles used for the carriage of persons or goods. This term embraces trolley-buses, that is to say, vehicles connected to an electric conductor and not rail-borne. It does not cover vehicles, such as agricultural tractors, which are only incidentally used for carrying persons or goods by road or for drawing, on the road, vehicles used for the carriage of persons or goods.

## **III. EU Commission Directive 2014/88/EU - Appendix to Annex I – Common definitions for CSIs**

### **Indicators relating to accidents**

#### **Significant accident [Item 1.1]**

Any accident involving at least one rail vehicle in motion, resulting in at least one killed or seriously injured person, or in significant damage to stock, track, other installations or environment, or extensive disruptions to traffic, excluding accidents in workshops, warehouses and depots.

#### **Train [Item 1.4]**

means one or more railway vehicles hauled by one or more locomotives or railcars, or one railcar travelling alone, running under a given number or specific designation from an initial fixed point to a terminal fixed point, including a light engine, i.e. a locomotive travelling on its own.

### **Indicators relating to technical safety of infrastructure**

#### **Level crossing [Item 6.3]**

Any level intersection between a road or passage and a railway, as recognised by the infrastructure manager and open to public or private users. Passages between platforms within stations are excluded, as well as passages over tracks for the sole use of employees.<sup>18</sup>

#### **Road [Item 6.4]**

For the purpose of Rail Accidents Statistics, means any public or private road, street or highway, including footpaths and bicycle lane.

#### **Passage [Item 6.5]**

Any route, other than a road, provided for the passage of people, animals, vehicles or machinery.

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<sup>18</sup> CSI definition of 'level crossing' includes a 'passage', so it is more universal than the Eurostat definition.

**Passive level crossing [Item 6.6]**

A level crossing without any form of warning system or protection activated when it is unsafe for the user to traverse the crossing.

**Active level crossing [Item 6.7]**

A level crossing where the crossing users are protected from or warned of the approaching train by devices activated when it is unsafe for the user to traverse the crossing.

Protection by the use of physical devices includes:

- half or full barriers;
- gates.

Warning by the use of fixed equipment at level crossings includes:

- visible devices: lights,
- audible devices: bells, horns, klaxons, etc.

Active level crossings are classified as:

- (a) **Manual:** a level crossing where user-side protection or warning is manually activated by a railway employee.
- (b) **Automatic with user-side warning:** a level crossing where user-side warning is activated by the approaching train.
- (c) **Automatic with user-side protection:** a level crossing where user-side protection is activated by the approaching train. This shall include a level crossing with both user-side protection and warning.
- (d) **Rail-side protected:** a level crossing where a signal or other train protection system permits a train to proceed once the level crossing is fully user-side protected and is free from incursion.

**Definitions of the scaling bases**

**“train-km” [Item 7.1]**

The unit of measure representing the movement of a train over one kilometre. The distance used is the distance actually run, if available, otherwise the standard network distance between the origin and destination shall be used. Only the distance on the national territory of the reporting country shall be taken into account.

**“line-km” [Item 7.3]**

The length measured in kilometres of the railway network. For multiple-track railway lines, only the distance between origin and destination is to be counted.

**“track-km” [Item 7.4]**

The length measured in kilometres of the railway network. Each track of a multiple-track railway line is to be counted.

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