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Traffic censuses in the United Nations Economic Commission for Europe region

2015 E-Rail traffic census

Note by the secretariat

I. Mandate

1. The present document is submitted in accordance with the mandate given by the Working Party on Transport Statistics (WP.6) at its sixty-third session (14–16 May 2012). The Working Party decided to discuss the methodology of the 2015 E-Rail traffic census during its next session. Member States were invited to include competent experts in their delegations for this purpose (ECE/TRANS/WP.6/163, para. 46).

II. Proposal

2. The secretariat reproduces below the draft recommendations to Governments on the 2015 E-Rail traffic census.

III. Coverage of the census

3. For purposes of the coverage of the 2015 E-Rail traffic census, the rail network to be considered consists of:

(a) Lines that are included in annex 1 of the European Agreement on Main International Railway Lines (AGC) of 1985 and in its amendments which come into force before 2015 (www.unece.org/trans/main/sc2/sc2.html);

(b) Lines that are included in the European Agreement on Important International Combined Transport Lines and Related Installations (AGTC) of 1991 and in

its Amendments which come into force before 2010 (www.unece.org/trans/wp24/welcome.html); and

(c) In the European Union countries, lines in the Trans-European rail network (TEN) (Decision 1692/96/EC of the European Parliament and of the Council and further amendments).

Lists of AGC and AGTC lines as at the beginning of the reference year will be made available by the UNECE secretariat.

4. Where an E-Railway line is not open to traffic (e.g., because it is closed for repairs, has not yet been built, or for other reasons), the census could, if possible, be taken on the railway line(s) used by the traffic which would otherwise use the E-Railway line.

IV. Purpose of the census

5. Internationally comparable data on main international railway traffic lines are of major and increasing importance in Europe, given the growing volume of international and transit traffic.

6. Every effort should be made within the framework of the 2015 E-Rail traffic census to arrive at data which are as comparable as possible at the international level and respond to new data requirements and changes in traffic patterns. Continuous efforts are, therefore, necessary to keep the scope and quality of the 2015 E-Rail traffic census data in line with user requirements.

7. In particular, rail traffic data are to be collected on the E-Rail network with the intention of facilitating international organization and planning of passenger and goods traffic between UNECE member countries.

8. Information on the extent to which various types of trains use different segments of the railway tracks enables improved land use management and better integration of rail traffic in the planning processes of the country itself, as well as at the international level, allowing for adequate maintenance, renewal and improvement programmes. This information also contributes to finding solutions to the problems raised by traffic congestion and facilitates the study of environmental issues, rail safety and energy consumption.

9. An additional objective of the 2015 E-Rail traffic census is the measurement of the train performance of the rail network, expressed mainly in train-kilometres, by the different categories of trains counted.

V. Scope of the census

10. As E-Railway lines constitute a relatively limited part of a country's national railway network, it is of particular interest to know the importance of traffic on main international railway lines in member countries.

11. For this comparison, train-kilometres are the most important statistical measure to express the volume and development of traffic in a country. Figures on train-kilometres are also indispensable in the context of calculations of traffic accidents and energy consumption. Accordingly, it is recommended that data be provided on train-kilometres on all E-Railway lines. These data should also be provided, to the extent possible, for all other lines of the total national rail network.

VI. Categories of trains to be counted

12. All trains mentioned in the following categories should be counted.

The train classification system is as follows:

Category A – Passenger train: A train mainly for the carriage of passengers composed of one or more passenger rail vehicles and, possibly, vans moving either empty or under load;

Category B – Goods train: A train mainly for the carriage of goods composed of one or more wagons and, possibly, vans moving either empty or under load;

Category C – Other trains: Other train movements (service trains, etc.) per year.

VII. Values to be calculated¹

13. It is recommended that for each E-railway line in a country the annual number of trains per network segment, by direction and by train category is recorded.

14. For the total railway network in each country, train-kilometres should be provided by different train categories for the year of the census.

15. It is necessary for the railway network to be divided into railway segments. The length of segments of the different lines should be defined in accordance with prevailing local conditions.

16. The local conditions need to be taken into account when determining the source of information in each country.

17. The necessary data may be obtained using any combination of the following sources:

- (a) Timetables;
- (b) Mandatory surveys;
- (c) Administrative data, including data collected by regulatory authorities;
- (d) Statistical estimation procedures;
- (e) Data supplied by professional organizations in the rail industry;
- (f) Ad Hoc studies.

18. Data need to be divided into three parts:

- (a) Data on the number of trains;
- (b) Data on train-kilometres;
- (c) Data on the infrastructure.

¹ In calculating the values and in designing the counting procedures, results obtained should be representative for the annual traffic.

VIII. Technical characteristics of E-Railway lines

19. Information about the volume and distribution of traffic on these railway lines would be of greater value if information about the characteristics of such lines could also be obtained. Governments are, therefore, requested to submit also information on the technical characteristics of the rail network.

20. Data should be provided for the stock situation at the end of 2015. If a country diverges from this date, it should report accordingly.

IX. Compilation and publication of the 2010 E-Rail traffic census

21. It is recommended that Governments supply to the UNECE secretariat a report on the 2015 E-Rail traffic census carried out in their country. Member States of the European Union and European Free Trade Association (EFTA) countries should submit data to Eurostat. Eurostat will pass on these data to the UNECE. The other member States should submit data directly to the UNECE secretariat. Since the usefulness of the publication of the census depends to a large extent on its timeliness, it is desirable that Governments try, to the extent possible, to furnish the data (including the map, if possible), as soon as possible and not later than 30 June 2017. The report should include data as presented in tables 1 to 6 to the present recommendations.

22. Data (and, if possible, maps) should be transmitted in an electronic format.

X. 2015 E-Rail traffic census tables

(a) Each country should provide data in accordance with the following tables for the census year 2015.

(b) Data transmission arrangements for European Union countries are similar to those applied to other Annexes of Regulation (EC) 91/2003.

Traffic flows on the rail network

Table 1

Goods train movements per year

Each country should provide data as informally exemplified below for the case of the Czech Republic.

<i>Network segment identifier*</i>	<i>AGC line** number</i>	<i>AGTC line*** number</i>	<i>TEN flag*</i>	<i>Number of trains*</i>
CZS10001			Yes/No	
CZS20001			Yes/No	
CZS10002			Yes/No	
....				
CZS2nnnn			Yes/No	

Table 2

Passenger train movements per year

Each country should provide data as informally exemplified below for the case of the Czech Republic.

<i>Network segment* identifier</i>	<i>AGC line** number</i>	<i>AGTC line*** number</i>	<i>TEN flag*</i>	<i>Number of trains*</i>
CZS10001			Yes/No	
CZS20001			Yes/No	
CZS10002			Yes/No	
....				
CZS2nnnn			Yes/No	

* See Table 7.

** In accordance with the AGC Agreement (www.unece.org/trans/main/sc2/sc2.html).

*** In accordance with the AGTC Agreement (www.unece.org/trans/wp24/welcome.html).

Table 3

Other train movements (service trains, etc.) per year – Optional

Each country should provide data as informally exemplified below for the case of the Czech Republic.

<i>Network segment* identifier</i>	<i>AGC line** number</i>	<i>AGTC line*** number</i>	<i>TEN flag*</i>	<i>Number of trains*</i>
CZS10001			Yes/No	
CZS20001			Yes/No	
CZS10002			Yes/No	
....				
CZS2nnnn			Yes/No	

Table 4

Train-kilometres per year – Optional

<i>Network</i>	<i>Train-kilometres</i>		
	<i>Passenger trains</i>	<i>Goods trains</i>	<i>Other trains²</i>
E-Rail (AGC/AGTC)			
Other national			
Total			

² Optional.

* See Table 7.

** In accordance with the AGC Agreement (www.unece.org/trans/main/sc2/sc2.html).

*** In accordance with the AGTC Agreement (www.unece.org/trans/wp24/welcome.html).

Table 5
Technical characteristics of the rail network segments in 2015

The following technical characteristics should be given for each network segment. The countries are free to choose the granularity of the segmentation so that the segments build up a network.

<i>Network segment identifier*</i>	<i>From</i>	<i>To</i>	<i>AGC line number**</i>	<i>AGTC line number***</i>	<i>TEN flag*</i>	<i>Track gauge</i>	<i>Length in km</i>	<i>Number of tracks</i>	<i>Is the segment electrified (Yes/No)?</i>	<i>Type of current (AC/DC) and voltage</i>
CZS00001					Yes/No					
CZS00002					Yes/No					
CZS00003					Yes/No					
....										
CZS0nnnn					Yes/No					

* See Table 7.

** In accordance with the AGC Agreement (www.unece.org/trans/main/sc2/sc2.html).

*** In accordance with the AGTC Agreement (www.unece.org/trans/wp24/welcome.html).

Table 6
Geographical co-ordinates of the rail network segments

<i>Network segment identifier</i>	<i>Points (geographical co-ordinates)</i>	
	X	Y
CZS00001	x1	y1
	x2	y2

	Xn	Yn
CZS0nnnn

Table 7
Description of variables

<i>Country name</i>	<i>Use ISO3166-alpha2 except the United Kingdom. For the United Kingdom use the UK.</i>
Network segment identifier	Use ISO3166-alpha2 except the United Kingdom. For the United Kingdom + "S" + indication of direction (1 or 2) + number on 4 positions. It is recommended that traffic in different directions is reported by designating a separate "network segment" for each direction. For example, "Praha-Plzeň" ³ could be "10001" and "Plzeň-Praha" "20001". In tables 5 and 6, the direction is coded 0 meaning no direction.
TEN flag (Rail Transport European Network)	0: No 1: Yes
Number of trains	Numeric
Geographical co-ordinates	Spherical co-ordinates are measured in latitude and longitude. If the earth is considered to be a sphere, latitude and longitude are angles measured from the earth's centre to a point on the earth surface. Latitude and longitude are measured in degrees, minutes and seconds. The equator has latitude 0°, the North Pole 90°, and the South Pole -90°. The Prime Meridian, indicating a longitude of 0°, starts at the North Pole, passes through Greenwich, England and ends at the South Pole. At least the coordinates of the starting and ending points of the segment should be reported.

³ Praha-Plzeň is used as an informal example only. It might be that the national authorities choose to divide this line into several sections, if there happen to be major junctions, stations or sidings between the two cities.

XI. Definitions

The definitions below are mainly taken from the Glossary of Transport Statistics (Fourth edition, 2009, UNECE-International Transport Forum-Eurostat) www.unece.org/trans/main/wp6/publications/stats_glossary.html.

A.I-01 Track

A pair of rails over which rail born vehicles can run.

Track gauge: Distance between a pair of rails measured between the inside edges of the rail heads.

The following track gauges are in use:

- Standard gauge: 1.435 m
- Large gauge: 1.520 m (example Commonwealth of Independent States)
1.524 m (example Finland)
1.600 m (example Ireland)
1.668 m (example Spain, Portugal)
- Narrow gauge: 0.60 m, 0.70 m, 0.75 m, 0.76 m, 0.785 m, 0.90 m, 1.00 m.

“Large gauge” is sometimes referred to as “broad gauge”.

A.I-06 Line

One or more adjacent running tracks forming a route between two points. Where a section of network comprises two or more lines running alongside one another, there are as many lines as routes to which tracks are allotted exclusively.

A.I-11 Railway line

Line of communication made up by rail exclusively for the use of railway vehicles.

Line of communication is an area equipped for the performance of rail transport.

A.I-12 Main railway line

Main railway lines comprise the high-speed railway lines and important major conventional railway lines as defined by national or international authorities.

Within the European Community for example guidelines define a specific main rail-network within the trans-European transport network (TEN), which is considered to be important at community level.

A.I-14 Dedicated high-speed railway line

A line specially built to allow traffic at speeds generally equal to or greater than 250 km/h for the main segments.

High-speed lines may include connecting lines, in particular connecting segments into town centre stations located on them, on which speeds may take account of local conditions.

A.I-15 Upgraded high-speed railway line

A conventional line specially upgraded to allow traffic at speeds of the order of 200 km/h for the main segments.

They include specially upgraded high-speed lines which have special features as a result of topographical, relief or town-planning constraints, on which the speed must be adapted for each case.

A.I-16 Length of lines operated

The total length of line operated for passenger transport, goods transport, or both.

When a line is operated simultaneously by several railway enterprises it will be counted only once.

A.I-17 Railway network

All railways in a given area.

This does not include stretches of road or water even if rolling stock is conveyed over such routes, e.g. by wagon-carrying trailers or ferries. Lines solely used for tourism are excluded as are railways constructed solely to serve mines, forests or other industrial or agricultural undertakings and which are not open to public traffic.

A.I-18 Railway network segment

Specific railway line connecting two or more geographical reference points. Each segment has a start and an end, being a track crossing, a country border or a railway station.

A.II.A Transport equipment (vehicle)

A.II.A-01 Railway vehicle

Mobile equipment running exclusively on rails, moving either under its own power (tractive vehicles) or hauled by another vehicle (coaches, railcar trailers, vans and wagons).

The following vehicles are included in the statistics for a railway enterprise:

- *All railway vehicles belonging to the railway enterprise and hired by it and actually at its disposal, including those under or waiting for repair, or stored in working or non working-order, and foreign vehicles at the disposal of the enterprise and vehicles of the enterprise temporarily engaged in the normal course of running abroad;*
- *Private owners' wagons, i.e. those not belonging to the railway enterprise but authorized to run for it under specified conditions, together with wagons hired out*

by the railway enterprise to third parties and being operated as private owners' wagons;

- *Statistics for a railway body exclude vehicles not at its disposal, i.e.;*
- *Foreign vehicles or vehicles not belonging to the railway enterprise circulating on the railway network;*
- *Vehicles which are on hire to, or otherwise at the disposal of, other railway enterprises;*
- *Vehicles reserved exclusively for service transport condemned or intended for sale or braking-up.*

A.II.A-02 High-speed railway vehicle

A railway vehicle designed to operate at a speed of at least 250 km/h on dedicated high-speed lines.

A.II.A-03 Tilting high speed railway vehicle

A railway vehicle with a tilting system designed to have an operating speed of 200 km/h or above on upgraded high speed lines.

A.II.A-04 Conventional high speed railway vehicle

Any railway vehicle not specially designed to run on dedicated or upgraded high speed lines but still being able to reach a maximum operating speed of approximately 200 km/h.

A.II.A-05 Trainset

Indivisible block of railcar(s) and railcar trailer(s) or locomotive(s) and passenger railway vehicle(s).

Included are trainsets that are technically divisible but are normally kept in the same configuration. One trainset may be coupled to another one. Each trainset may have more than one tractive vehicle.

A.II.A-06 Tractive vehicle

A vehicle equipped with prime mover and motor, or with motor only, intended either for hauling other vehicles (a "locomotive") or for hauling other vehicles and for the carriage of passengers and/or goods (a "railcar").

A.II.A-07 Locomotive

Tractive railway vehicle with a power of 110 kW and above at the draw hook equipped with prime mover and motor or with motor only used for hauling railway vehicles.

Light rail motor tractors are excluded.

Types of locomotives

- Electric locomotive

Locomotive with one or more electric motors, deriving current primarily from overhead wires or conductor rails or from accumulators carried on the locomotive.

A locomotive so equipped which has also an engine (diesel or other) to supply current to the electric motor when it cannot be obtained from an overhead wire or from a conductor rail is classed as an electric locomotive.

- Diesel locomotive

Locomotive, the main source of power of which is a diesel engine, irrespective of the type of transmission installed.

However, diesel-electric locomotives equipped to derive power from an overhead wire or from a conductor rail are classed as electric locomotives.

- Steam locomotive

Locomotive, whether cylinder or turbine driven, in which the source of power is steam irrespective of the type of fuel used.

A.II.A-10 Passenger railway vehicle

Railway vehicle for the conveyance of passengers, even if it comprises one or more compartments with spaces specially reserved for luggage, parcels, mail, etc.

These vehicles include special vehicles such as sleeping cars, saloon cars, dining cars and ambulance cars. Each separate vehicle of an indivisible set for the conveyance of passengers is counted as a passenger railway vehicle. Included are railcars if they are designed for passenger transport.

A.IV-01 Railway traffic

Any movement of a railway vehicle on lines operated.

When a railway vehicle is being carried on another vehicle only the movement of the carrying vehicle (active mode) is considered.

A.IV-05 Train

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.

A light engine, i.e. a locomotive travelling on its own, is not considered to be a train.

A.IV-06 Types of train

The main categories being considered are:

- Goods train: Train for the carriage of goods composed of one or more wagons and, possibly, vans moving either empty or under load;

- Passenger train: Train for the carriage of passengers composed of one or more passenger railway vehicles and, possibly, vans moving either empty or under load;
- Mixed train: Train composed of passenger railway vehicles and of wagons;
- Other trains: Trains moving solely for the requirements of the railway enterprise, which involve no payments to third parties.

A.IV-07 Train-kilometre

Unit of measure representing the movement of a train over one kilometre.

The distance to be covered is the distance actually travelled.

A.IV-08 Tractive vehicle-kilometre

Unit of measure representing any movement of an active tractive vehicle over a distance of one kilometre.

Tractive vehicles running light (without hauling a load) are included. Shunting movements are excluded.

A.IV-10 Tonne-kilometre offered

Unit of measure representing the movement of one tonne of capacity available in a wagon when performing services for which it is primarily intended over one kilometre.

The distance to be considered is that actually travelled. Shunting and other similar movements are excluded.

AGC – European Agreement on Main International Railway Lines (AGC) of 1985 as amended.

AGTC – European Agreement on Important International Combined Transport Lines and Related Installations (AGTC) of 1991 as amended.

TEN – Trans-European Rail Network (TEN) (Decision 1692/96/EC of the European Parliament and of the Council and further amendments).