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Working Party on Transport Statistics

Ad hoc Group of Experts on the E-Road Traffic Census

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Item 5 of the provisional agenda

**DRAFT RECOMMENDATIONS TO GOVERNMENTS ON THE E-ROAD TRAFFIC  
CENSUS OF MOTOR TRAFFIC AND INVENTORY OF STANDARDS AND  
PARAMETERS ON MAIN INTERNATIONAL TRAFFIC ARTERIES IN EUROPE IN  
2010  
("2010 E-ROAD TRAFFIC CENSUS")**

**I. COVERAGE OF THE CENSUS**

1. For purposes of the 2010 E-Road Traffic Census, the E-Road network referred to is that described in Annex I of the European Agreement on Main International Traffic Arteries (AGR) of 1975 and in Amendments 1-9 to the Agreement (ECE/TRANS/16/Amends.1-9) and in any other amendment which comes into force before 2010. Where an E-Road 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 road(s) used by the traffic which would otherwise use the E-Road.

**II. PURPOSE OF THE CENSUS**

2. Internationally comparable data on main international road traffic arteries are of major and increasing importance in Europe, given the growing volume of international and transit

traffic. The E-Road Traffic Census carried out under the auspices of the UNECE is the only existing international framework providing comparable data on traffic flows on main European roads on an all-European basis. In view of the fact that the E-Road Traffic Census is taken, not in isolation, but as a by-product of the respective national road traffic censuses, only marginal costs are involved in the compilation and transmission of the E-Road Traffic Census data by UNECE member Governments.

3. Every effort should be made within the framework of the E-Road 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 the quality of the E-Road Traffic Census data in line with user requirements.

4. The E-Road Traffic Census is undertaken to obtain data for improving and developing the E-Road system, in conformity with the standards set out in Annex II to the European Agreement on Main International Traffic Arteries (AGR) of 1975 (ECE/TRANS/16 and Amends.1-9).

5. In particular, census data are aimed at providing detailed data on the traffic on the E-Road network which will facilitate international passenger and goods traffic.

6. Information on the extent to which various types of vehicles use different sections of the E-Roads enables improved land use management and better integration of road traffic in the planning processes of the country itself and also 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, road safety and energy consumption.

7. An additional objective of the E-Road Traffic Census is the measurement of the vehicle performance of the Road network, expressed mainly in vehicle-kilometres, by the different categories of vehicles counted.

8. In this context, another purpose of the E-Road Traffic Census is to reflect the volume of night traffic, holiday traffic and peak-hour traffic on the E-Road network. These phenomena are increasingly important and thus more information on these types of traffic is required, despite the difficulty of obtaining such information.

### **III. SCOPE OF THE CENSUS<sup>1</sup>**

9. As E-Roads constitute a relatively limited part of a country's road network, it is of particular interest to know the importance of the traffic on these roads as compared with the traffic borne by the whole of the road network.

10. For this comparison, vehicle-kilometres are the most important statistical measure to express the volume and development of traffic in a country. Figures on vehicle-kilometres are also indispensable in the context of calculations of traffic accidents and energy consumption.

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<sup>1</sup> Tables are reproduced in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1.

11. Accordingly, it is recommended that data be provided in vehicle-kilometres on all E-Roads, as well as on all other roads of the total road network of the country to the extent possible.

#### **IV. COMPARABILITY WITH THE RESULTS OF THE CENSUS**

12. Governments should take the necessary steps to ensure that the results of the 2010 E-Road Traffic Census are as comparable as possible with the 2005<sup>2</sup> Census.

#### **V. CATEGORIES OF VEHICLES TO BE COUNTED**

13. All vehicles discussed in the following categories should be counted.

The revised vehicle classification system is as follows:

**Category A:** Motor vehicles with not more than 3 wheels (motor cycles with or without sidecars, including motor scooters, and motor tricycles);

**Category B:** Passenger and light goods vehicles (vehicles, including station wagons, with not more than nine seats, including the driver's seat, and light vans with a permissible maximum weight of not more than 3.5 tonnes). Passenger and light goods vehicles are recorded as such, irrespective of whether they are with or without trailers, including caravans and recreational vehicles;

**Category C:** Goods road vehicles (lorries with a permissible maximum weight of more than 3.5 tonnes, lorries with one or more trailers; tractors with semi-trailers; one or more trailers; tractors with one or more trailers and tractors without trailers or semi-trailers) and Special vehicles (agricultural tractors, special vehicles such as self-propelled rollers, bulldozers, mobile cranes and army tanks and other road motor vehicles not specified elsewhere);

**Category D:** Motor buses, coaches and trolley buses

14. Categories A and B constitute "light motor traffic"; categories C and D constitute "heavy motor traffic".

15. When there is doubt as to whether a vehicle should be assigned to category B or C, it should be assigned to category C, the category representing the heavier vehicles; the same rule applies when there is doubt as to whether a vehicle should be assigned to category B or D.

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<sup>2</sup> In the case of countries where no traffic census of E-Roads was taken in 2005, the results of the 2010 E-Road Traffic Census should be comparable as far as possible with those of the census closest to 2005. Countries which did not take a complete census in 2005 but which were, nevertheless, able to supply data for that year are deemed to have taken a census in 2005.

16. To facilitate the identification of the various vehicles, it is recommended that the recording staff be given descriptions of the appearance of vehicles and a list of vehicle outlines.

17. Those countries which are developing non-manual counting systems can fit the results to the classification of the categories of vehicles without being obliged to specify more than is technically possible. These simplified data should at least distinguish between light motor traffic and heavy motor traffic. Nevertheless, for the network as a whole, a division into four vehicle categories is recommended.

## **VI. VALUES TO BE CALCULATED<sup>3</sup>**

18. For each E-Road in a country, it is recommended that the average annual daily traffic flow (AADT) be calculated. In addition, night traffic, holiday traffic and peak-hour traffic should be calculated. Night traffic is, in principle, defined as traffic between 22.00h and 06.00h; holiday traffic is defined, in principle, as the average daily traffic (ADT) during the approximately two-month vacation period (in exceptional cases one month). Peak-hour traffic is, in principle, defined as the traffic at the fiftieth highest hour.

19. For the total E-Road network (and other roads if possible) in each country, vehicle-kilometres should be calculated for the year of the Census and for the different vehicle categories distinguished.

20. In view of the highly differentiated techniques used for road censuses in the various countries, there is no need for a uniform standard design for all counts. Nevertheless, certain principles are fundamental.

21. It is necessary that the E-Road network be divided into road sections. A section should be chosen in such a way that the volume of traffic is nearly the same over its entire length. Since traffic densities tend to increase rapidly in and around large built-up areas, it is necessary to choose counting posts on road sections in rural areas at sufficiently large distances from urban zones. The data for counting posts in urban zones may be added if the E-Road has at least four lanes.

22. For each section, the average annual daily traffic flow (AADT) for the year 2010 is to be provided. Three methods can be used for providing the AADT:

- (a) Continuous counting for the whole year;
- (b) Counting during short periods, ensuring their representation across the year; or
- (c) A combination of the foregoing types of counting. Sampling methods may be integrated into systems of permanent counts, using so-called "ratio estimates".

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<sup>3</sup> In calculating the values and in designing the counting procedures, results obtained should be representative for the average annual daily traffic flow (AADT).

23. In certain exceptional cases, AADT may be determined without counting, based on previous counts or on counts on adjoining sections of the same road.

24. Traffic data should be given for 2010. However, it is left to the countries concerned to decide whether to undertake counting at every post in that year or to spread it over a number of years and to adjust statistically the data obtained. If the counting is spread over a number of years, the influence of other changes in the network, such as the opening of new roads to traffic during those years, would have to be taken into account.

25. In order to arrive at the AADT for each E-Road as a whole, the sum of the vehicle-kilometres for all road sections on that E-Road should be divided by the length of the E-Road.

26. The design of the counts in respect of the classification of vehicle categories is to be arranged in such a way that:

- (a) For the whole network the complete classification can be given;
- (b) For each separate E-Road either a complete classification or a limited classification can be given;
- (c) For each road section, either a complete classification or a limited classification can be given.

27. The limited classification referred to above should at least distinguish between “light motor traffic” and “heavy motor traffic”.

## **VII. CHARACTERISTICS OF E-ROADS**

28. Information about the volume and distribution of traffic on these E-Roads will be of greater value if information about the characteristics of such roads can be obtained. Governments are therefore requested to submit information at the same time on infrastructure parameters of E-Roads (tables 7 and 8), in accordance with the European Agreement on Main International Traffic Arteries (AGR), as decided by the Working Party on Road Transport at its ninety-first session (15-17 October 1997) (TRANS/SC.1/361, paras. 15-18).

29. For the publication of results, roads should be classified as follows, according to the number and width of the carriageways and numbers of traffic lanes:

(a) Single carriageway<sup>4</sup> roads:

<u>width of carriageway</u>	<u>number of traffic lanes</u>
(i) < 6 m	(i) two lanes
(ii) 6 - 6.99 m	(ii) three lanes
(iii) 7 - 8.99 m	(iii) four lanes
(iv) 9 - 10.49 m	(iv) five or more lanes
(v) 10.50 - 11.99 m	
(vi) 12 - 13.99 m	
(vii) 14 m or wider	

(b) Roads with two carriageways separated by a central reserve:

<u>width of each carriageway</u>	<u>number of traffic lanes in each carriageway</u>
(i) < 7 m	(i) two lanes
(ii) 7 - 8.99 m	(ii) three lanes
(iii) 9 - 10.49 m	(iii) four lanes
(iv) 10.50 - 11.99 m	(iv) five or more lanes
(v) 12 - 13.99 m	
(vi) 14 m or wider	

30. Motorways<sup>5</sup> will usually constitute a subdivision of category (b) in paragraph 29, but could also, at special points or temporarily, have only one carriageway and would then constitute a subdivision of category (a).

31. Express roads are defined in the AGR Agreement as "... road(s) reserved for motor traffic accessible only from interchanges or controlled junctions and on which, in particular, stopping and parking are prohibited on the running carriageway(s)" (ECE/TRANS/16/Amend.2, annex II).

32. Roads with different numbers of lanes in each carriageway should be classified according to the smaller number of lanes. The length of these road sections should be indicated.

33. In accordance with paragraph 26 above, information should be provided on the following: (a) design speeds on E-Roads, (b) average width of traffic lanes, central reserves and emergency stopping strips; and (c) the application of E-Road signing.

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<sup>4</sup> Please refer to Definitions in document ECE/TRANS/WP.6/AC.2/2008/1/Add.2.

<sup>5</sup> Please refer to Definitions of Terms in document ECE/TRANS/WP.6/AC.2/2008/1/Add.2.

## VIII. COMPILATION AND PUBLICATION OF THE 2010 E-ROAD TRAFFIC CENSUS

34. It is recommended that Governments supply to the UNECE secretariat a report on the Census carried out in their country. Since the usefulness of the publication of the Census depends to a large extent on its timeliness, it is desirable that Governments try, to any extent possible, to furnish the data (including the map, if necessary), before 1 November 2011.<sup>6</sup> The report should include:

- (a) Particulars concerning the characteristics of the E-Roads, in conformity with tables nos. 1 and 2 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1.;
- (b) Particulars concerning the number and nature of the counting posts, in conformity with table no. 3 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1.;
- (c) Particulars specified in respect of all E-Roads taken together and in respect of each E-Road, in conformity with table no. 4 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1.;
- (d) Particulars specified in respect of each E-Road, in conformity with table 4 bis in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1.;
- (e) Particulars concerning the length and usage of roads in respect of all E-Roads, motorways, express roads, as well as all other roads, and the total of these taken together, in conformity with table no. 5 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1.;
- (f) A concise description of the design of the counts and the sampling methods used, including the method used for estimating vehicle-kilometres for the whole road network;
- (g) A map (or maps) showing data obtained from the 2010 Census. A sufficient number of selected counting posts should be shown on the map (or maps) in order to reveal important variations in the distribution of traffic among the various categories of traffic volume distinguished. It is of particular importance that the counting posts and their identification numbers in the maps are also reproduced in table 7 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1, although the table may contain more counting posts than are represented in the maps. Only if counting posts in the maps are identified in table 7 is the secretariat in a position to prepare consolidated maps on a pan-European basis.

35. In principle, the following details should be observed when preparing the maps:

- (a) Countries will show their results on maps drawn to the same scale as the maps of their country contained in the 2005 E-Road Census”, using only black (full and shaded) contours, in accordance with the scale shown in table no. 6 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1;
- (b) Average annual daily volumes of traffic, which determine the width of the lines, should be distinguished by a number of interval classes corresponding to the categories shown in table no. 6 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1;

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<sup>6</sup> The attention of Governments is particularly drawn to this point, in view of the considerable delay frequently observed in connection with previous censuses.

- (c) For the final preparation of the maps, the UNECE secretariat will use only one colour (red) to indicate volumes of traffic. The width of the lines, not exceeding 1.4 cm, will be roughly proportional to the average annual daily traffic flow; and shades of colour will be used to indicate broad levels of average traffic volumes, a darker shade indicating a higher volume of traffic than a lighter shade. The classification and width of lines are shown in table no. 6 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1;
- (d) Motorways and express roads will be indicated by a thin white line in the centre of the red strip (see table no. 6 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1);
- (e) The E-Road numbers (E1, E2, etc.) in a rectangle will be shown in black and repeated as often as necessary to mark the itinerary of each road clearly; when two or more roads follow the same route, the road number of each should be shown in the same rectangle: e.g. E4, E6;
- (f) The number of selected counting posts, as indicated in table no. 6, will also be shown in black;
- (g) Names of important towns and localities will be shown on the maps.

36. As the preparation of the maps by countries seems to cause difficulty and takes considerable time, it is possible in certain cases to omit requests to countries to supply such detailed maps as described in paragraph 34:

- (a) Where counting post numbers and location of posts are unchanged and no change in the type of E-Roads and its routing occurs, the UNECE secretariat will repeat the post data of the 2005 map on the 2010 map. The width of the lines representing average annual daily volume of traffic (see table no. 6 in the annex) will be adjusted by the UNECE secretariat in accordance with the data in the 2005 tables. In such a case, no separate map would need to be established by the country concerned, provided that all necessary data on counting posts are contained in table no. 7 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1;
- (b) Minor changes in post numbers and location of posts could be indicated by the country concerned on the relevant map published by the UNECE, thus avoiding the necessity for countries to print a new map. In the event of a change in the type of E-Roads, the opening of a new E-Road or a major change in the routing of an existing E-Road, countries should supply a map (an existing printed map would be sufficient) showing in detail the changes effected and marking on it precisely the counting post numbers and location of posts;
- (c) Where a country has not previously participated in the Census, a map showing the E-Road network with counting post numbers and location of posts as indicated in paragraph 34 must be provided. In general, however, there should be no need for participating countries to show traffic density by line width if the accompanying table no. 7 in document ECE/TRANS/WP.6/AC.2/2008/1/Add.1 has been properly completed.

37. To the extent possible, data (and maps) should be transmitted to the UNECE secretariat in an electronic format, in place of, or in addition to, the hard-copy reply.

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