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Group of Experts on cycling infrastructure module

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Item 3 of the provisional agenda
Cycling infrastructure definitions and standards

Cycle definitions and cycle highway definitions used in member States

Note by the secretariat

I. Introduction

1. The Group of Experts on cycling infrastructure module (GE.5) requested countries to share definitions they apply for cycle. Also the views of industry was requested on cycle definition.

2. GE.5 also requested countries to share their definition for cycle highway.

3. This document in section II contains cycle definitions received from countries. In section III the views of industry on cycle definitions are provided. Finally, in section IV, the definition of cycle highway received from countries is provided.

II. Cycle definitions from countries

4. The following definitions have been provided:

Austria [added on 22 March 2023]

"Cycle" (as per the Austrian road code):

- a vehicle equipped with a device for transmitting human power to the driving wheels,

- a two-wheeled vehicle propelled directly by human power (scooter), or

- cycles had to be equipped with (cycle regulation):

(a) with two independently acting braking devices, with which an average braking deceleration of 4 m/s2 at an initial speed of 20 km/h is achieved on a dry road surface,

(b) with a device for emitting acoustic warning signals,

(c) with white, forward-acting reflectors or retro-reflecting materials that comply with the provisions of ECE Regulation No. R 104, with a light entry area of at least 20 cm2; the reflectors may be connected to the headlight,

(d) with red, rear-acting reflex reflectors or reflex-reflecting materials that comply with the provisions of ECE Regulation No. R 104, with a light entry area of at least 20 cm2; the reflectors may be connected to the headlight,

(e) with yellow reflectors on the pedals; these can be replaced by equivalent devices,

(f) with tires whose sidewalls are ring-shaped, continuous, white or yellow reflective, or on each wheel with reflex reflectors acting on both sides or reflective materials that comply with the provisions of ECE Regulation No. R 104, with a light entry area of at least 20 cm2,

(g) if the cycle is intended for the transport of several people, each additional person must have their own seat, their own holding device and their own pedals or supporting devices.

(h) with a bright headlight firmly attached to the cycle, which illuminates the road ahead with white or light yellow, stationary light with a luminous intensity of at least 100 candela and a red rear light with a luminous intensity of at least 1 candela. In daylight and good visibility, this equipment can be omitted.

“Electric cycle” (as per the Austrian road code in combination with the motor vehicle law):

- a cycle, which is additionally equipped with an electric drive with a maximum top performance of 600 Watt and a maximum speed of 25 km/h (electric cycle),

- an electrically powered vehicle whose drive corresponds to that of an electric cycle

“Carrier cycle”: there is no legal definition for a “carrier cycle”. The maximum load weight for two-track cycle is 250 kg

“Other types of cycle: (street) racing cycle (cycle regulation)”:

1. Own weight of the ready-to-ride cycle no more than 12 kg

2. racing handlebars

3. outer rim diameter at least 630 mm and

4. outer rim width maximum 23 mm.

5. Racing cycles may be placed on the market and used by daylight and good visibility without bell and reflector equipment.

France:

“Cycle”: vehicle which has at least two wheels and is propelled solely by the muscular energy of the persons on that vehicle, in particular by means of pedals or handcranks.

“Pedal-assisted cycle”: cycle equipped with an electric auxiliary motor with a maximum continuous rated power of 0.25 kilowatts, the supply of which is gradually reduced and finally interrupted when the vehicle reaches a speed of 25 km/h or when the cyclist stops pedalling

There are no other official definitions in use.

Germany:

“Bicycle” (According to section 63a of the StVZO (Straßenverkehrs-Zulassungs-Ordnung)) is a vehicle with at least two wheels and propelled exclusively by the muscular strength of the persons on it with the aid of pedals or hand cranks.

This definition also applies if this vehicle (pedelec) is equipped with an auxiliary electric motor having a maximum continuous rated power of 0.250 kW whose assist function is reduced progressively as the vehicle speed increases and cut off altogether at a speed of 25 km/h or when the rider stops pedalling or arm-cranking.

These requirements are also considered to be met if the bicycle has an auxiliary drive as described above that enables the vehicle to accelerate to a speed of up to 6 km/h, even without simultaneous pedalling or cranking by the rider (start or push assist function).

Cargo bikes are subject to the same statutory provisions as bicycles and pedelecs. In this regard, reference is made in particular to sections 63 ff. to 67a of the StVZO.

If the vehicle exceeds the aforementioned maximum rated continuous rated power or maximum assistance speed or if it can also be moved without simultaneous pedalling or cranking above a speed of up to 6 km/h, it will be classified as a motor vehicle. Motorcycles (and mopeds) are subject to the binding scope of application of Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles and must meet the relevant technical requirements. These provisions are applicable law in all EU member states and mandatory.

Poland:

“Cycle”: a vehicle with a width not exceeding 0.9 m, propelled by the muscular energy of the person riding this vehicle; it may be equipped with an auxiliary electric drive activated by pressing the pedals, supplied with a voltage of not more than 48 V, with a continuous rated power of not more than 250 W, the supply of which is gradually reduced and finally interrupted when the speed of 25 km/h is exceeded.

“Cycle cart”: a vehicle with a width of more than 0.9 m intended for transporting people or goods, propelled by the muscular energy of the person riding this vehicle; it may be equipped with an auxiliary electric drive activated by pressing the pedals, supplied with a voltage of not more than 48 V, with a continuous rated power of not more than 250 W, the supply of which is gradually reduced and finally interrupted when the speed of 25 km/h is exceeded.

Slovenia:

“Bicycle" means a single or double-track vehicle exclusively propelled by a driver or a bicycle with an auxiliary power engine, being a single-track or a two-track vehicle equipped with foot pedals and an auxiliary electric engine having a maximum continuous rated power of 0.25 kW, the output of which is progressively reduced and finally cut off as the vehicle reaches a speed of 25 km/h, or sooner, if the cyclist stops pedalling;

Spain:

“Cycle”: vehicle which has at least two wheels, propelled by the muscular energy of the persons on that vehicle, in particular by means of pedals or hand-cranks.

“Bicycle”: cycle that has two wheels.

“Pedal-assisted bicycle”: bicycle equipped with an auxiliary electric motor, with a maximum continuous nominal power of no more than 250 W, which power progressively decreases and cuts off when speed reaches 25 km/h or the cyclist stops pedalling.

United Kingdom:

“Bicycle” means a two-wheeled vehicle that is propelled solely by the muscular energy of the person on that vehicle by means of pedals and has not been constructed or adapted for propulsion by mechanical power.

“Electrically assisted pedal cycles” vehicles which shall:

(a) have a kerbside weight not exceeding—

(i) in the case of a bicycle, other than a tandem bicycle, 40 kilograms; and

(ii) in the case of a tandem bicycle and a tricycle, 60 kilograms;

(b) be fitted with pedals by means of which it is capable of being propelled; and

(c) be fitted with no motor other than an electric motor which—

(i) has a continuous rated output which, when installed in the vehicle with the nominal voltage supplied, does not exceed—

(A) in the case of a bicycle, other than a tandem bicycle, 0.2 kilowatts;

(B) in the case of a tandem bicycle and a tricycle, 0.25 kilowatts; and

(ii) cannot propel the vehicle when it is travelling at more than 15 miles per hour.

III. Industry views on cycle definition

5. The industry provided the following views:

(a) Currently, both the 1968 Convention on Road Traffic and 1968 Convention on Road Signs and Signals define cycle as follows: “cycle means any vehicle which has at least two wheels and is propelled solely by the muscular energy of the persons on that vehicle, in particular by means of pedals or handcranks”. Taking then into account that nowadays more and more cycles are equipped with an auxiliary electric motor, it appears appropriate that the existing cycle definition is revised, on the one hand, to accommodate this development, and on the other hand, to distinguish between various types of cycles so that this can be used for setting up relevant conditions for a safe interaction between their users, as well as between them and other road users. In addition, it should be also noted the wider carrier cycles are a more and more common development across countries, which may imply that such cycles be defined.

(b) The proposed definition therefore introduces a new overarching category of a “Pedal-driven vehicle” that features three subcategories: Cycle, Speed Cycle and a Large Carrier Cycle.

(c) The definition for a “Cycle” is devised in a way to cover classical bicycles, slower e-bikes as well as lighter carrier cycles. This reflects the successful practice in many countries that do not distinguish between classical bicycles and e-bikes with the maximum cut-off speed set at no more than 25 km/h, a maximum continuous rated power of 250 W. The width parameter proposal is also based on the European Union rules - cycles designed to pedal of vehicle category L1e-B, also known as speed pedelecs, under type approval in the European Union can have maximum 1 meter width; however, the industry standard is 85 or even 75 centimetres. This allows for inclusion of popular light carrier cycles in the “Cycle” category.

(d) The definition of a “Speed Cycle” is based on the rules in the European Union countries. With the increasing popularity of the faster e-bikes, the introduction of the definition is important in order to allow the Contracting Parties to distinguish between various types of cycles and develop appropriate set of rules and conditions for their use in traffic. A maximum continuous rated power is up for discussion; at the moment the vehicles in L1e-B category in Europe that includes Speed- EPACs can have a maximum continuous rated power of 4 kW, in conjunction with other power limitations (in Europe, there is a link to a maximum power factor). However, 4 kW is a very high level for Speed Cycles and it may be beneficial to use a lower maximum continuous rated power of 1 kW.

(e) The proposal for a “Large Carrier Cycle” introduces a category for wider and larger cycles. It is important that a separate category is established, as “Large Carrier Cycles” might not fit in all types of cycling infrastructure. Similarly, due to large size and weight of such cycles, a higher continuous rated power shall be considered compared to other cycles. However, as the discussions within the industry and standardization bodies on the parameters distinguishing carrier cycles are still ongoing, the definition for “Large Carrier Cycles” shall be considered as a first proposal and a basis for further discussions.

(f) All the definitions exclude an option of an open throttle. However, Contracting Parties can refer to the definition of a “Moped” in the Vienna 1968 Convention on Road Traffic that allows them to consider mopeds as bicycles. Therefore, including throttle e-bikes in the definitions of pedal driven vehicles would be superfluous.

6. The definitions for consideration:

“Pedal-driven vehicle” means any vehicle which has at least two wheels and is propelled by the muscular energy of the persons on that vehicle, in particular by means of pedals or hand-cranks. A pedal-driven vehicle can be equipped with electrical assistance but cannot be propelled exclusively by means of this auxiliary electric motor, except in the start-up

assistance mode up to 6 km/h. Contracting Parties can limit the auxiliary propulsion power by requesting a maximum assistance factor.

“Cycle" is a pedal-driven vehicle; where it is equipped with electrical assistance, the maximum cut-off speed is set at no more than 25 km/h, a maximum continuous rated power of 250 W, and maximum width of 1 m. Contracting Parties can use a lower maximum width threshold, but not lower than 0.75 m.

“Speed Cycle” is a pedal-driven vehicle with electrical assistance which has a maximum cut-off speed exceeding the one set for Cycle but no more than 45 km/h, a maximum continuous rated power of [x] kW and maximum width of 1 m. Contracting Parties can use additional motor power limitations and a lower maximum width threshold, but not lower than 0.75 m.

“Large Carrier Cycle” is a pedal driven vehicle with more than two wheels that is wider than a cycle but not wider than 1.5 meter. The maximum cut-off speed is set at no more than 25 km/h with a continuous rated power of 1000 Watt.]

“Maximum assistance factor” is the ratio between the actual driver’s pedal power and the actual auxiliary propulsion power.

IV. Cycle highway definition

7. The following definitions/comments have been provided:

Austria [added on 22 March 2023]

There is no legal definition of a cycle highway in Austria

In the Austrian (non-mandatory) design guidelines since 2022 a cycle highway / rapid cycle connection is defined as:

Route intended for cycling, covering important source and source over longer distances, connects target areas and allows consistently safe and attractive driving at high cruising speeds.

They serve to connect important start and destination points of cycling traffic as directly as possible over greater distances and are primarily based on the separation principle (i.e. cycle path or cycle lane) or designed as a cycle lane. Rapid cycle connections represent high-quality and efficient connections for everyday cycling and are made with large curve radii and lane widths based on a high riding speed for cycling. Intersections with roads for motor vehicle traffic should be level-free if possible. In the case of a same level crossroads should be given preference to the rapid cycle connection, however the local circumstances must always be considered on a case-by-case basis. Rapid cycle connections should be linked preferably to each other or linked to main cycle routes.

During project planning, a riding speed of 30 km/h should be aimed for in the route area.

Quality features of rapid cycle connections:

- Good and safe navigability even at high speeds and in the wet
- Direct route, largely free of detours and inclines (as far as topographically possible).
- Level clearance for motor vehicle traffic or priority at level crossings
- Separation of pedestrian traffic (e.g. accompanying sidewalk)
- Sufficient width (see the following configuration features)
- High surface quality (asphalt or concrete)
- Good flatness in longitudinal and transverse direction
- Marking of edge lines
- Gradients = 6% (as far as topographically possible)
- Urban planning integration (e.g. center tour) and landscape integration

- With regard to winter service, the criteria of the national winter service guidelines must be observed, whereby for rapid cycle connection as cycling facilities of the highest order, preferably in the winter service category B is to be used
- lighting

Elements of a rapid cycle connection: With the exception of the cycle lane, high-speed cycle connections are separate from motor vehicle traffic and pedestrian traffic respectively. The following network elements can be used to design a rapid cycle connection:

- independent cycle paths
- roadside cycle paths
- cycle lanes
- cycle streets

Other network elements may only be used in sections in justified cases.

Design features of a rapid cycle connection are:

- Basic width for one-way cycle path = 2.6 m per direction of travel
- Basic width for a two-way cycle path = 4.0 m
- Basic width for cycle lanes = 2.0 m per direction of travel (execution only in special cases). parking lane are not permitted next to the cycle lane.
- Basic width for a cycle street = 4.0 m (plus safety strip to parked vehicles = 0.75 m; Pedestrian traffic is to be conducted on separate walking paths or sidewalks
- Additional protection width of 0.5-1.0 m depending on the speed limit of the carriageway
- For a driving speed of 30 km/h, curve radii of 22 m should be selected. In the crossing area tighter radii can be used.
- Tactile – ideally structural – separation from the footpath adjoining the cycle path

Belgium:

In Belgium, the five Flemish provinces took the initiative to build a strong collaboration around a national 'Cycle Highway-network' that is branded as a uniform mobility product. Recently the capital region of Brussels joined the coalition and in the future the French-speaking region will also join. This will result in a national network that is branded in a uniform way: https://fietssnelwegen.be/.

In the Flemish provinces of Belgium, 'cycle highways' are most of the times called 'Fietssnelweg'. In Brussels and the French speaking parts of Belgium, the official word is 'Cyclostrade'. On this website a longer description of this mobility product is provided in different languages. This description is in line with the definition according to the CHIPS EU-project (further information provide below) because it stresses the functional aspect of cycle highways: inter-city connections, backbone of the local cycle network, etc. Just like in the CHIPS EU-project definition, there is no reference to one specific infrastructural solution. The high quality of the cycling routes come in different guises.

"A cycle highway, bike freeway or fast cycling route are all words for the same kinds of routes. Cycle highways are often built along railways, waterways or highways. They are high-quality cycling routes, simple and straightforward, for inter-city cycling trips. A backbone to which other cycle connections connect. Together they form a network that covers the whole of Flanders and the Brussels region.

The trajectory of a cycle highway has been carefully thought out and the infrastructure is designed or adapted in such a way to enable fast and efficient cycling over longer distances:

- as few stops as possible
- at intersections: priority for cyclists where possible
- wide paths, to facilitate overtaking and sociable cycling

- comfortable, smoothly curved surface, and
- rectilinear design

A cycle highway comes in many different guises: cycle street, cycle path, towpath, separate cycle lane, car-free paths, residential areas. A great many different types of infrastructure that together form the cycle highway.

The cycle highway does not currently have its own legal status. The type of infrastructure over which a cycle highway runs determines the legal status and the traffic design. Via installed signage from the traffic code, a user will know what status a section of cycle highway has, and what he/she can (and cannot) do on that section of the route.

In the 'Cahier Cyclostrades' from Brussel the CHIPS EU-project definition is explicitly used. In the Flemish design manual for bicycle infrastructure, the following description is being used:

"Cycle highways are continuous bicycle routes between cities, towns and major attraction poles intended for long-distance bicycle traffic. They allow for fast and safe functional travel over longer distances but can also be used by recreational cyclists."

France:

High-service level cycle network is characterized by:

- Mode separation
- Geometry and management of intersections making the cycle routes efficient and pleasant
- High-quality and well-equipped route

Read more at Fiche vélo n°35 - Réseau cyclable à haut niveau de service - Objectifs et principes d'aménagement (au5v.fr)

Slovenia:

No official definition for cycle highway has been agreed. In informal discussion cycle highway is defined as a subtype of a cycle track (bidirectional cycle track away from the road).

Spain:

No official definition has been yet agreed.

United Kingdom:

Motor traffic free routes are referred to in the Cycle Infrastructure Design Guidance for England. These are routes dedicated to those who prefer to avoid motor traffic. They are suggested to be designed and maintained to a high level of quality, particularly in terms of surfacing, accessibility and lighting. They also need to be well maintained and kept free of leaf debris, ice and snow in winter. More information can be consulted in Chapter 8 of the guidance at Cycle Infrastructure Design (publishing.service.gov.uk)

Definition according to the CHIPS EU-project

In the CHIPS EU-project different partners and associated partners from Belgium, the Netherlands, Germany, Denmark, United Kingdom agreed around the following functional definition of the concept 'Cycle Highway':

"A cycle highway is a mobility product that provides a high-quality functional cycling connection. As backbone of a cycle network, it connects cities and or suburbs, residential areas and major (work) places and it satisfies its (potential) users."

The different aspects of this definition are explained here. Please note the deliberate choice of not to make specific statements around a specific type of infrastructure in this definition. It only states that the quality of the longer distance bicycle connection should meet the needs of its (future) users. Cycle highways should display an array of excellent technical solutions to fulfil the needs of all types of cyclists at all levels of experience and fitness. The definition tolerates that cycle highways can come in different guises. While the standard preferred

materialization is a wide segregated and care-free cycle track, a cycle highway can also contain a towpath, a cycle street, a cycle path next to a roadway, a transit through a presidential area.