
Economic Commission for Europe

Inland Transport Committee

Working Party on Transport Trends and Economics

Group of Experts on cycling infrastructure module

Second session

Geneva, 28 and 29 November 2022

Item 3 of the provisional agenda

Cycling infrastructure definitions and standards

Considerations and proposals concerning cycle definition and provisions for markings and for traffic light signals from the 1968 Convention on Road Signs and Signals and related instruments

Note by the European Cyclists' Federation, World Bicycle Industry Association and the secretariat

I. Introduction

1. The Group of Experts on cycling infrastructure module (GE.5) agreed at its first session that it should consider at future meetings: (i) the definition of cycle in view of new types of cycles including but not limited to: pedelec, speed pedelec or cargo cycle, and (ii) provisions for markings for cyclists, in particular markings for preselection of lanes and arrow markings as well as provisions for traffic light signals for cyclists as included in the 1968 Convention on Road Signs and Signal and related instruments with the view to understand if these provisions should be streamlined or updated.
2. GE.5 requested the secretariat and the European Cyclists' Federation and World Bicycle Industry Association to make specific proposals with regard to cycle definition and provisions for markings and traffic light signals for consideration at the next meeting.
3. This document discusses the definition for cycle and the provisions for markings and traffic light signals and makes recommendations for consideration by GE.5.

II. Cycle definition

4. 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*”.
5. 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 carrier/cargo cycles are a more and more common development across countries, which may imply that also carrier cycles be defined.

6. In view of the above the below cycle definitions are proposed for consideration by GE.5, on a basis of which GE.5 may wish to formulate its own proposal:

- *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 hand-crankes, and which can be equipped with an auxiliary electric motor but cannot be propelled exclusively by means of this auxiliary electric motor, except in the start-up assistance mode. The term "cycle" embraces only cycles: (i) equipped with an auxiliary electric motor which has a maximum cut-off speed of no more than 25 km/h, and (ii) of a maximum width of 1 m. Contracting Parties may apply a higher cut-off speed in their domestic legislation to a maximum of 32 km/h, and may lower the maximum width threshold to not less than 0.75 m.*

- *Speed cycle: means a cycle with an auxiliary electric motor which has a maximum cut-off speed exceeding the one set for a cycle but no more than 45 km/h, and a maximum width of 1 m.*

- *Carrier cycle: means a cycle specifically designed for transporting goods and/or passengers and whose maximum width exceeds 1 m or any lower width if such is set up in the national legislation.*

III. Traffic light signals for cyclists

7. The 1968 Convention on Road Signs and Signals in Article 23 describes the three-colour system of signals for vehicular traffic, consisting of three non-flashing lights (red, amber and green respectively). Paragraph 9 of the article describes signals restricted to a specific direction and, paragraph 13 describes signals dedicated for cyclists.

8. Paragraphs 9 and 13 which may be of relevance to the discussion of GE.5 read as follow:

Paragraph 9 of Article 23:

In a three-colour system, the red, amber and green lights may be replaced by arrows of the same colour on a black background. When lighted up, these arrows have the same significance as the lights, but the prohibition or authorization is restricted to the direction or directions indicated by the arrow or arrows. Arrows signifying that traffic may or may not proceed straight ahead shall point upwards. Black arrows on a red, amber or green background may be used. These arrows have the same significance as the above-mentioned arrows.

Paragraph 13 of Article 23:

In cases where traffic light signals apply to cyclists only, this restriction may be clarified, if to do so is necessary in order to avoid confusion, by including the silhouette of a cycle in the signal itself or by using a signal of small size supplemented by a rectangular plate showing a cycle."

9. For paragraph 13, ECE/TRANS/WP.1/2019/4/Rev.1 proposes a modification (modified wording highlighted in bold). This modification is considered along with other proposals for amendments to the 1968 Convention of Road Signs and Signals by the Global Forum for Road Traffic Safety (WP.1)

Paragraph 13 of Article 23 (modified):

*In cases where traffic light signals apply to cyclists only, this restriction may be clarified, if to do so is necessary in order to avoid confusion, by including the silhouette of a cycle in the traffic light signal itself or by using a traffic light signal of small size supplemented by **an***

additional panel showing a cycle. Such an additional panel used in conjunction with the traffic light can be placed below, above or beside it.

10. It is noted that both the current version and the proposed modification of the provision allow for two options of traffic light signals for cyclists:

Option 1: include the silhouette of a cycle in the traffic light signal itself, or

Option 2: supplement the signal by an additional panel showing a cycle.

11. At the same time, it is believed that these options have certain disadvantages.

12. With regard to the inclusion of the silhouette of a cycle in the signal itself, this term appears to be somewhat ambiguous and is often interpreted as obliging the Contracting Parties to have a cycle silhouette superimposed on red, amber and green backgrounds. If done so, signals are not easily legible (when the background is lit, the unlit silhouette is hardly legible) and therefore can be easily mistaken with general signals for motor-driven vehicles (see Figure 1).



Figure 1. The traffic light signal on the left side is meant only for cyclists, and in line with the current wording of the convention includes a silhouette of a cycle. But with the traffic light lit it is almost indistinguishable from the traffic light for cars (rightmost one). Source Aleksander Kopiński

13. With regard to a supplement of an additional panel showing a cycle, some countries add a light signal depicting the cycle over the red, amber and green traffic light signals (see Figure 2). It is unclear whether this solution can be considered as compliant with the proposal for the modified paragraph 13.



Figure 2. Traffic lights for cyclists (Denmark).
Source: Aleksander Buczyński

14. It is then noted that majority of countries with experience in managing cycle traffic use signals with symbols of cycle of red, amber and green colour on black background (see Figure 3). This appears as a most suitable and legible option for restricting the traffic light signals to cyclists only and, if agreed, such an option should be proposed for inclusion in the Convention, Article 23, paragraph 13, and possibly replace the option 1 referred above.



Figure 3. Traffic light signals with a red, amber and green symbol of cycle on black background are clear and exclude any possibility of being mistaken by drivers for light signals for other traffic. Examples from Germany (left) and Netherlands (right). Source respectively: Marcin Jackowski and Aleksander Buczyński

15. In such a case the modified paragraph 13 could read as follows (modification by strikethrough and bold as new addition using as a basis the modified text from ECE/TRANS/WP.1/2019/4/Rev.1):

*In cases where traffic light signals apply to cyclists only, this restriction may be clarified, if to do so is necessary in order to avoid confusion, by ~~including the silhouette of a cycle in the traffic light signal itself~~ **replacing the red, amber and green lights by lighting symbols of cycle of the same colour on a black background** or by using a traffic light signal of small size supplemented by an additional panel showing a cycle. Such an additional panel used in conjunction with the traffic light can be placed below, above or beside it.*

16. It is then noted that the current wording of article 23 does not explicitly cover directional lights for cyclists. Theoretically it is possible to combine provisions of paragraph 9 and 13 (add a panel with a cycle to traffic lights with arrows), but such a combination is rare in practice (Figure 4). The most common system involves combination of a symbol of cycle and arrow(s) on each traffic light (Figure 5). Alternatively, a panel with arrow(s) is added to traffic lights with symbols of cycle on black background (Figure 6).



Figure 4. Examples of directional traffic lights with a panel (?) indicating that the signals are dedicated for cyclists (Denmark).

Source: Aleksander Buczyński



Figure 5. Traffic light signals for cyclists turning left in Netherlands (left) and Germany (right).

Source: Aleksander Buczyński



Figure 6. Traffic lights for cyclists with panels indicating different directions.

Note: The panels used are in a form of D, 1 road signs defined as direction to follow in the 1968 Convention on Road Signs and Signals, rather than the typical panel form presented in the Convention.

Source: Aleksander Buczyński

17. It is therefore proposed to include a provision explicitly covering directional lights for cyclists, which could read as follows: **“13a. [new] The red, amber and green lighting symbols of cycle may be supplemented by lighting arrows of the same colour. In such case, the prohibition or authorization expressed by the signal is restricted to the direction or directions indicated by the arrow or arrows.”**

18. In several countries, an additional fourth signal light is used in traffic light signals for cyclists to indicate the detection of a cyclist. This is important for dynamic traffic light systems, where receiving a green traffic light is conditional on detection of the specific group of users. As the detection of cyclists has lower accuracy than for cars, it is important to provide them with a feedback information that they have been detected and will receive green light. Figure 7 provide examples of such lights.



Figure 7. Detection confirmation in Luxembourg (left); detection confirmation combined with an estimate of waiting time in the Netherlands (right).

Source: Aleksander Buczyński

19. It is therefore proposed to include a provision allowing for using the detection of cyclist light signal. It can read as follows: **13b. [new] Traffic light signals for cyclists might be supplemented by an additional light signal indicating the detection of cyclist.**

20. Finally, it is also noted that in places where a common cycle and pedestrian track is located, or where a cycle track is located next to the sidewalk, common traffic light signals for pedestrians and cyclists are often used (Figure 8). Such solution can drastically reduce the costs of implementing safe infrastructure and simplify the signalisation of an intersection.

21. In this context it is noted that the Article 24 of the Convention on signals for pedestrians only would need to be modified to allow for such a solution. Such modification would require changing the heading of Article 24 and adding the paragraph 6, as below:

“ARTICLE 24. Signals for pedestrians **only**

[...]

6. [new] Light signals for pedestrians may include a symbol of cycle to indicate that they apply both to pedestrians and cyclists.”



Figure 8. Common traffic light signals for pedestrians and cyclists. From left to right: Belgium, Hungary, Poland and Spain.
Source: Aleksander Buczyński

IV. Markings

22. Lane selection before an intersection might differ for different categories of users. The most typical example is cycles and/or busses being allowed to go straight across an intersection from a right-turn lane for general traffic, due to the fact that these categories of users have a dedicated lane starting after the intersection, or are allowed to enter an area prohibited for general traffic (see Figure 9 and Figure 10 for examples).



Figure 9. Example of different lane selection for different groups of users: busses are allowed to go straight from the right-turning lane, because of a bus-and-cycle lane starting after the intersection.
Source: Aleksander Buczyński



Figure 10. Example of a right-turn lane where cyclists are allowed to go straight because of a cycle lane starting after the intersection. Budapest, Hungary.
Source: Aleksander Buczyński

23. At the same time, it is recognized that the 1968 Convention does not currently include such a solution. It is therefore proposed to add a pre-selection sign as a variant of a E,4 sign depicting a possibility for a cycle to go straight from a lane indicating a right turn for general traffic.

24. This issue should be also addressed for road markings, covered in Annex 2, Chapter IV of the Convention. In this case, paragraph 39 under A. Arrow markings should read as follows:

*On roads having sufficient traffic lanes to separate vehicles approaching an intersection, the lanes to be used may be indicated by lane selection arrow markings on the surface of the carriageway (diagrams A-39 to A-41). Lane selection arrows may also be used on a one-way road to confirm the direction of traffic. The lane selection arrows should be not less than 2 m (6 ft. 7 in.) long. They may be supplemented by word markings on the carriageway. **The lane selection arrows supplemented by word markings or symbols of category of users may be used on the same lane as another lane selection arrow to indicate that the lane may be used by the category of users differently (diagram A-...)***

25. A possible diagram depicting such a solution is provided in Figure 11.

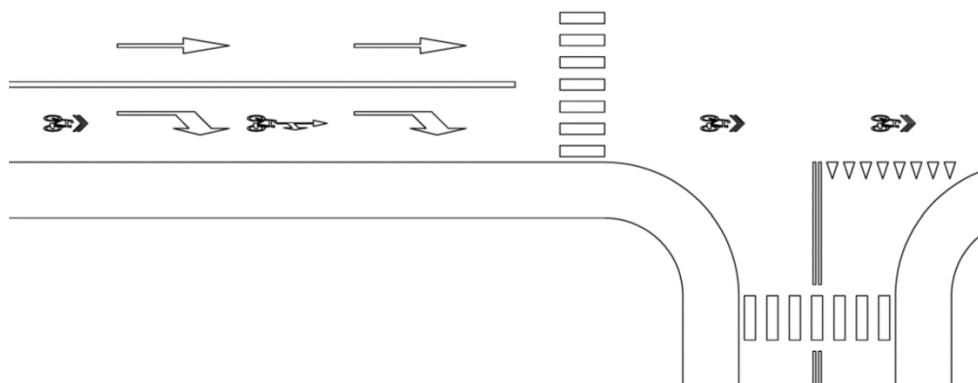


Figure 11. Another example with the arrows for cyclists indicating both straight and right.
Source: STANDARDY ROWEROWE DLA MIASTA POZNANIA, https://zdm.poznan.pl/upload/standardy_r.pdf

26. It is then noted that paragraph 39 refers to arrow markings which may be supplemented by word markings. In this case, it should be recognized that categories of users are often better (more readable, understandable for international road users) represented by symbols than word markings. For example, a symbol of a cycle used for arrows for cyclists, can be much more practical than word markings “DVIRATIS”, “FIETS” or “ROWER – see Figure 12. For this purpose, paragraph 13 could be further modified, as follows:

On roads having sufficient traffic lanes to separate vehicles approaching an intersection, the lanes to be used may be indicated by lane selection arrow markings on the surface of the carriageway (diagrams A-39 to A-41). Lane selection arrows may also be used on a one-way road to confirm the direction of traffic. The lane selection arrows should be not less than 2 m (6 ft. 7 in.) long. They may be supplemented by word markings or symbols of a category of users (for example, cycle) on the carriageway. The lane selection arrows supplemented by word markings or symbols of category of users may be used on the same lane as another lane selection arrow to indicate that the lane may be used by the category of users differently (diagram A-...)

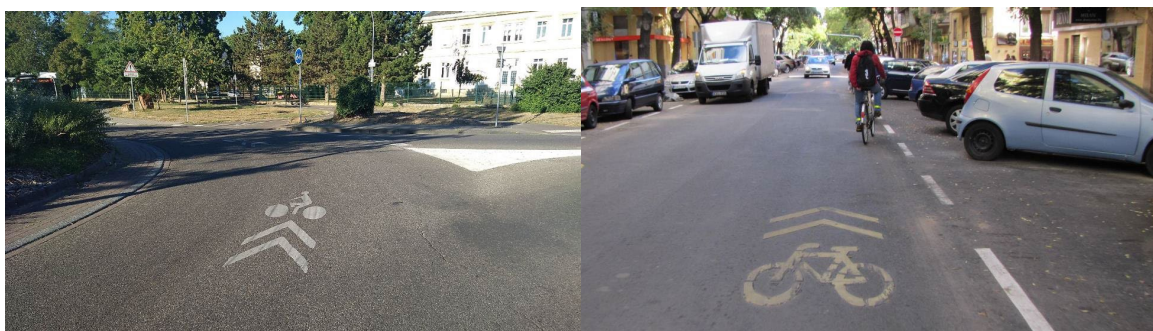
27. It is further noted that two approaches exist in practice for indicating the direction or directions assigned to cyclists as a specific user category. In the first approach only the additional direction to the direction indicated for general traffic is indicated, whereas in the second approach all directions are indicated to cyclists as a specific user category (see Figure 10 for approach one and Figure 11 for approach two) for comparison. GE.5 may wish to consider these two approaches and make recommendations as relevant.

28. It is then noted that in more and more countries markings is used to indicate a recommended position of a cyclist on a carriageway. This marking is referred to as sharrows. Informal document No.4 provides a proposal for a definition for sharrows,

29. In this regard a relevant paragraph to the Annex 2 could be added to introduce the sharrows markings. Such a para could possibly read:

“To indicate the recommended position of cyclists on the carriageway or improve the awareness of drivers of other vehicles about the possible presence of cyclists on the carriageway, a symbol of a cycle in combination with two chevrons above [or below] it may be used (diagram ...)”

30. Figures 13 and 14 depict a possible marking for sharrows.



Figures 12 and 14. Sharrows.
Source: Aleksander Buczyński

31. At the same time, GE.5 may wish to discuss whether to endorse chevrons located both below and above the symbol of a cycle, or to agree on one of them.

V. Other issues

32. GE.5 is reminded that further adjustments to the 1968 Convention on Signs and Signals and, if appropriate, also to the 1968 Convention on Road Traffic might be desirable pending its discussion on the types of cycling infrastructure. In particular additional provisions/signs/markings may be proposed for inclusion in the Convention with regards to the following types included in ECE/TRANS/WP.5/2021/6:

- Agricultural / forestry / industry / water management road,
 - Advanced stop line / bike box / bike lock,
 - Indirect / hook / two-stage turn provision,
 - Traffic-light exemption for cyclists, and
 - Cycle highway.
-