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**Sustainable urban mobility and public transport**

## **THE PEP European Cycling Master Plan – Infrastructure Module**

**Note prepared by United Nations Economic Commission for Europe  
Sustainable Transport Division, European Cyclists' Federation (ECF),  
Confederation of the European Bicycle Industry (CONEBI) and World  
Bicycle Industry Association (WBIA)**

**THE PEP**  
**EUROPEAN CYCLING MASTER PLAN –**  
**INFRASTRUCTURE MODULE**

Prepared in the framework of the Working Party on Transport Trends and  
Economics (WP.5)

## Introduction

At its Seventy-Seventh Session the United Nations Economic Commission for Europe (ECE) Inland Transport Committee (ITC) (Geneva, 24-26 February 2015) decided that the Working Party on Transport Trends and Economics (WP.5) should regularly review the developments in urban mobility and transport, and particularly, the interlinkages between urban, regional, national and international transport networks and services (ECE/TRANS/248, para. 18). WP.5 as follow-up to the mandate given by ITC, as of 2016 started cooperating with the Transport, Health and Environment Pan-European Programme (THE PEP) on the development of the pan-European master plan for cycling.

At the Fourth High-level Meeting on Transport, Health and Environment (Paris, April 2014) Governments adopted the Paris Declaration, including a clear call for member States to promote cycling and to develop a pan-European master plan for cycling within the framework of the THE PEP. It was also decided that the development of the pan-European master plan would be coordinated by the lead partners of THE PEP Partnership on Cycling: the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management and the French Ministry of Ecology, Sustainable Development and Energy, in close collaboration with the European Cyclists Federation and THE PEP secretariat. During the Team Leader Meeting of THE PEP Partnership on Cycling (Cologne, 2 June 2016), the experience of UNECE to develop infrastructure master plans such as TEM / TER and EATL was presented. The team leaders of the Partnership decided that the ECE Sustainable Transport Division should have a leading role on the development of the cycling master plan. Extrabudgetary resources such as consultant(s) needed for this undertaking would be secured through THE PEP Trust Fund. For that purpose, a draft methodology that should be followed for the development of this master plan based on the experience of ECE in developing plans was prepared (ECE/TRANS/WP.5/2016/4).

For the purpose of this endeavour, the ECE Sustainable Transport Division has joint forces with the Confederation of the European Bicycle Industry (CONEBI) and the European Cyclists' Federation (ECF). In May 2020, a joint letter has been sent to the network of National EuroVelo Coordination Centres and Coordinators inviting them to actively participate in this undertaking by sharing available data on their existing and planned national cycling tracks of international relevance.

The current report provides in chapter I a proposal for definitions of various infrastructure types of importance to cycling. It then refers to several good practices in chapter II on the organisation of cycling networks or routes. The report also discusses the EuroVelo network in chapter III. Further, in chapter IV, it presents the data on national cycling networks received and the initial analysis. Finally, chapter V offers conclusions and recommendations for consideration by WP.5.

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## Abbreviations:

EC	European Commission
ECF	European Cyclists' Federation
ECS	European Certification Standard
NECC/Cs	National EuroVelo Coordinators and Coordination Centres
TEN-T	Trans-European Transport Network

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## Chapter 1 – Definitions and types of cycling infrastructure

This chapter provides an overview of the different types of cycling infrastructure and the purpose they serve, including the economics of cycling infrastructure.

### Types of cycling infrastructure

Various types of cycling infrastructure have been identified and are used in the countries across the ECE region. For this report, the types of infrastructure listed below have been selected with the aim of proposing and adopting common definitions and their interpretation as far as possible:

- Cycle track
- Cycle lane
- Cycle street
- Street with contraflow cycling
- Bus-and-cycle lane
- Sidewalk with cycling allowed
- Agricultural / forestry / industry / water management road
- Cycle crossing
- Grade-separated cycle crossing
- Advanced stop line / bike box / bike lock
- Indirect / hook / two-stage turn provision
- Traffic-light exemption for cyclists
- Wayfinding
- Cycle highway

### Cycle track

A cycle track is an independent road or part of a road designated for cycles, signposted as such. A cycle track is separated from other roads or other parts of the same road by structural means.

The above definition is sourced from the United Nations 1968 Convention on Road Traffic and the 1968 Convention on Road Signs and Signals and is agreed upon by the Contracting Parties to both legal instruments.

A cycle track is thus seen as a physically segregated cycle path. The physical segregation is approached in different ways in various countries. For example, it can be achieved by separating the cycle track from roads by some structure but also by road safety equipment (so called “light separation”) or sufficient space, such as 75 cm of buffer space in Hungary (Buczyński 2020, page 160).

Cycle tracks are signposted with a mandatory sign referred to as “D, 4. Compulsory cycle track” in the Convention on Road Signs and Signals.



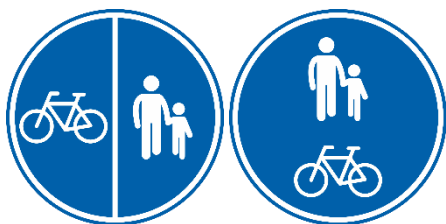
Cycle tracks with good surface can provide a very comfortable cycling experience, especially if they lead through natural/attractive landscapes away from noisy roads. They provide a high level of safety for cyclists between the crossings as they are segregated from the carriageway.

*Cycle track variants*

Sign D, 4. Compulsory cycle track

*Cycle and pedestrian track*

The Convention on Road Signs and Signals further refers to tracks or paths that can be used by two categories of road users, e.g. cyclists and pedestrians or horseback riders. In such a case, a shared track/path is signposted by the signs “D, 11 a Compulsory path or track for two categories of road users” or “D, 11 b Compulsory shared path or track for two categories of road users”.



Signs D, 11 a / D, 11 b for two categories of road users

*Non-compulsory cycle track*

A non-compulsory cycle track is an independent road or part of a road designated for cycles, but the cyclists are not obliged to use them.

The most common way of signing non-compulsory cycle tracks, adopted in Austria, Belgium, Denmark, France, and Luxembourg, for instance, is to put the bicycle symbol on a square rather than a round background. The sign is identical with the sign G, 18 “advised itinerary for cyclists” included in the “Proposal for Amendments to Annex 1 and 3”, submitted by the Group of Experts on Road Signs and Signals (UNECE 2019b). At the same time, the definitions for the non-compulsory cycle path in countries applying this sign are more specific as to the rights of cyclists and other road users than the definition proposed for the G, 18 sign.<sup>1</sup>



Road sign C113 in France

*Greenway*

<sup>1</sup> For example, the French sign C113 is described as: “Recommended track or cycle lane reserved for two or three-wheeled cycles. This sign indicates that access to a cycle path or lane is recommended and reserved for two- or three-wheeled cycles and indicates to pedestrians and drivers of other vehicles that they are not allowed to use or stop on the path or lane.” (Ministère Français de l'Intérieur 1967) Translation by ECF.



A greenway is a non-mandatory cycle track independent from the road network, which often follows a canal or a disused railroad. Its use is open to road users as signposted or defined in the national legislation.

Nowadays, the definition of greenways and the exact range of users included (pedestrians, skaters, cyclists, equestrians etc.) may vary from country to country. Dedicated signs for greenways also do not exist in all countries (ECF 2018, page 12). In many countries, greenways are simply signposted essentially with non-mandatory cycle-track signs.

As they usually lead through natural areas or along rivers and canals, greenways represent attractive infrastructure for cyclists. For instance, the European Greenways Association covers many disused railway corridors, canal tow paths and historic routes that were converted into traffic-free routes and encourage the use of non-motorised transport.

Examples of different signs denoting a greenway:



France



Belgium

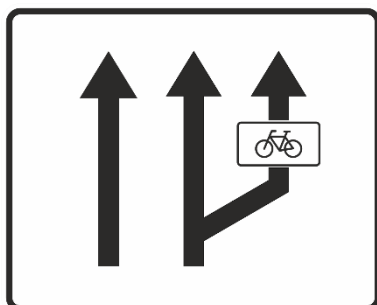
#### *Cycle track admitting other users*

National legislation may permit admit additional users to use cycle track or their access to the track can be permitted through adequate signage.

#### Cycle lane

A cycle lane is a part of a carriageway designated for cycles. A cycle lane is distinguished from the rest of the carriageway by longitudinal road markings (UNECE 1968b).

In contrast to a cycle track, a cycle lane is not separated from other parts of the road by physical segregation. Most European countries sign cycle lanes with signs by the side of the road, in addition to horizontal markings and in some cases such signage is not in conformity with the Convention on Road Signs and Signals. To achieve a better standardisation for cycle lane signage, the “Proposal for amendments to Annex 1 and 3” (UNECE 2019b) includes a new sign: E, 2 b “lane reserved for a specific type of road user”.



Sign E, 2b

In some cases, cycle lanes can provide cycling infrastructure at a relatively low cost and can improve the perceived safety, but with insufficient widths, high speeds, or high volumes of motorised traffic, the

protection they provide can be illusory (ECF 2018, page 12). The risk is even higher with so-called advisory cycle lanes, included in several national legislations, which are not reserved for cyclists.

The necessary degree of segregation between cyclists and cars in terms of safety depends mostly on vehicular traffic speed and volume. The guidelines and standards in different countries give different thresholds as to the speed and volume of traffic necessitating a separation of bicycle infrastructure. As a rule of thumb, streets with a 30 km/h speed limit can be considered safe for cyclists (CHIPS project 2020).

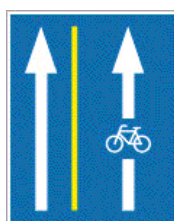
Examples of different roadside signs denoting a cycle lane:



Belgium, Luxembourg  
(compulsory cycle  
lanes only)



Poland, Spain



Hungary



UK



Cycle lane road markings in Belgium, ©ECF

### Cycle street

A cycle street is a specially designed section of road or an area where special traffic rules apply and it is signposted as such at its entries and exits.

Nowadays, the special rules vary somewhat between countries but generally aim to prioritise cyclists over motor vehicle traffic. Common elements are a speed limit of 30 km/h, a prohibition for motorised vehicles to overtake cyclists, and a permission for cyclists to ride side by side if it is not generally allowed on other roads (Buczyński 2020, page 163-165).

Cycle streets are based on the principle of dominant usage: The number of bicycles using the street should be higher than the number of motor vehicles on that street. Measures such as filtered permeability, e.g. closing a short section of a street for motor vehicles, are often introduced to eliminate the possibility of through-traffic and ensure the intended function (CHIPS project 2020).

Examples of different road signs is use for a cycle street:



Netherlands

Germany

Belgium

Luxembourg

Even if there are no specific legislative provisions for cycle streets, public roads can be used as segments of the cycling network if their design and role in the road network ensure low volumes and speed of motorised traffic. For example, 27% of the surveyed sections of the EuroVelo network comprise public roads with very low traffic, which are considered suitable for all users by the European Certification Standard, a set of criteria developed by the European Cyclists' Federation (ECF) to certify EuroVelo routes and evaluate their quality (ECF 2018). Another 18.4% include roads with low traffic, which are also suitable for most users.

### Street with contraflow cycling

A street with contraflow cycling is a road that is one-way for general traffic but may be used by cyclists in both directions.

While a one-way street might be too narrow for two cars to pass each other, it will often be wide enough for a car and a bicycle. Moreover, one-way streets often serve to reduce through-traffic in residential areas, but this is not necessary for cyclists as cycling does not generate noise, pollution, or substantial safety hazards for inhabitants. Panels with the exception for cyclists should be added under the no entry sign to allow the contraflow cycling and under the one way sign to inform other road users of it. In most European countries, the administrative regulations allow to add an exception for cyclists under one-way signs if the traffic speed is limited to 30 km/h (Buczyński 2020, page 165-169).

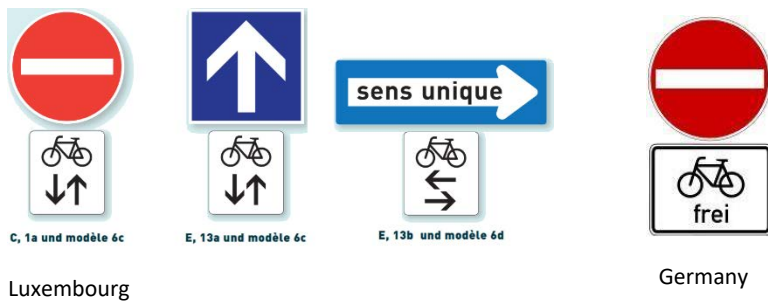
In many cities, contraflow cycling can provide an easy way to create a safer alternative route for cyclists: Instead of cycling with heavy traffic on the main road, cyclists can make use of the network of local streets.<sup>2</sup>

Streets with contraflow cycling can but do not have to be cycle streets. On cycle streets, it is recommended to avoid indicating dedicated space for contraflow cycling (marking contraflow cycle lanes), as it would conflict with the intended use (cycling side by side, using the entire width of the carriageway).

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<sup>2</sup> In a study in the Brussels Capital Region, an analysis of 992 accidents did not reveal an increased risk of accident on a contraflow street compared to another road of the same category. It even seemed that the number of accidents per kilometre of local access road was lower on contraflows than on the rest of the local network (Bruxelles Mobilité 2014).

Examples of different roadside signs denoting contraflow cycling:



### Bus-and-cycle lane

A bus-and-cycle lane is a lane reserved for (public transport) buses and cycles.

Bus-and-cycle lanes can for instance be signed by combining the bicycle symbol with the bus symbols or the “BUS” inscription, or by use of relevant additional panels in combination with other signs (Buczyński 2020, page 169).

Bus lanes provide more space for cyclists than a normal public road, but the cyclist still shares the bus lane with motorised traffic. While it is not the most attractive type of infrastructure for cyclists, it can be much safer than alternative road layouts.

Several national administrative regulations point out that streets with bus lanes with no cycling allowed and no separate cycling infrastructure create a critical cycling safety risk by obliging cyclists to ride between the buses and private cars.



Sign permitting cyclists to use the bus lane in Luxembourg

### Sidewalk with cycling allowed

A sidewalk with cycling allowed is a part of the road originally designed for pedestrians where cycling has been (conditionally) authorised, either by general rules or through a bicycle panel under the pedestrian track sign.

General rules usually include a permission or obligation for children under a certain age to cycle on the sidewalk (pavement). The legal age limit for cycling on the sidewalk varies depending on the country and can lie between 8 (Germany) and 13 (Luxembourg).

Austria, Germany, and Switzerland also provide an option to authorise cycling on the sidewalk by placing an exception for cyclists under the sign for a pedestrian track. In all of these cases, adult cyclists using the sidewalk need to give way to pedestrians.



Sign permitting cyclists to use the sidewalk in Germany

Cycling on the sidewalk can also be allowed in other situations, such as when supervising children allowed to cycle on the sidewalk (Germany, Poland) or if the carriageway is unfit for cycling traffic (Hungary) (Buczyński 2020, page 170).

Considering the many changes in the sidewalk's surface and the shared space with pedestrians, the cycling comfort and safety are limited.

#### Agricultural / forestry / industry / water management road

An agricultural, forestry, industry and/or water management road is a non-public road closed to general traffic. These roads typically carry very low motor vehicle traffic, and with proper signs, cycling can be exempted from the general prohibition.

Cyclists often share these roads with agricultural, maintenance or service vehicles. Special infrastructural solutions such as "tractor locks" exist to block the entry of non-authorized vehicles. These roads can be very attractive for cycling but may be damaged or dirtied more often because of use by heavy machines (ECF 2018, page 12).

Examples of signs denoting an agricultural, forestry, industry and/or water management road:



Belgium



Poland

Administrative barriers might obstruct utilising the full potential of such roads for cycling network development in some countries. Owners of the roads can also be reluctant to allow or encourage cycling traffic on them, as organising or promoting cycle traffic is not a part of their statutory goals. Overcoming these barriers is an important pre-requisite for an efficient network building programme.

#### Cycle crossing

A cycle crossing is the place where cyclists need to interact with motor vehicles on a crossing even if cycle tracks can provide physical separation in between the crossings. The crossing space should be denoted by horizontal markings and also by road signs for approaching motor vehicles.

Nowadays, the meaning of these markings and signs are not always the same. Clear regulations for right of way on cycle crossings are important for the development of dedicated cycling infrastructure. Especially if cyclists enjoy the right of way when cycling on the carriageway but lose it on a parallel cycle track when crossing a road, the usefulness of building dedicated cycling infrastructure is questionable.

In most frameworks and their practical applications, the right of way on cycle crossings follows the same logic as the right of way for motor vehicles: The cycle track along a primary road enjoys the right of way over entry arms of minor roads, and cyclists continuing straight have the right of way over motor vehicles

changing direction (e.g. turning left or right from a primary road onto a minor road). This principle stems from 1968 Convention on Road Traffic in article 16.2.<sup>3</sup>

### Grade-separated cycle crossing

A grade-separated cycle crossing is a cycle tunnel or bridge on a cycle track which offers cyclists a way of crossing a natural or artificial barrier, such as rivers, busy roads, and railway lines. It is often designed to cater for pedestrians as well (EC 2020).

Grade-separate cycle crossings are often the most expensive part of a cycle network, but correctly planned and designed, they can be very safe and efficient. For instance, the need to build kilometres of cycle tracks along main roads can be avoided by connecting two low-traffic local roads with a cycling-only bridge or tunnel.

### Advanced stop line, bike box, bike lock

An advanced stop line, bike box or bike lock is an area on an entry arm of a junction that reserves space for cyclists and either makes it easier for a cyclist to perform a turn manoeuvre or increase the cyclists' visibility for car drivers.

This can also make it easier for cyclists to wait in front of traffic lights without being affected so much by the motor vehicles' emissions. These solutions and their signage are not systematised across countries (Buczyński 2020, page 172).



Sign indicating an advanced stop line in Belgium

### Indirect / hook / two-stage turn provision

An indirect / hook / two-stage turn provision provides space on the carriageway and/or signing allowing cyclists wishing to turn left to cross the intersection in two separate stages.

Turning left in right-hand traffic (and vice versa for countries with left-side traffic) is a particularly challenging manoeuvre for cyclists on carriageways. They need to signal the turn by taking a hand off the handlebar, find their way into faster moving motorised traffic, watching out for cars coming from behind and also from the opposite direction, all at the same time while paying attention to the road surface. How cyclists are supposed to approach this manoeuvre depends on the country. For instance, Germany allows cyclists both to turn left directly from the carriageway and to cross the intersection in two separate stages: first by stopping at the right side of the carriageway after the crossing, reorienting themselves by 90 degrees, and then by turning left at the end of the phase or the next relevant green light (indirect/hook/two-stage turn). Cyclists are always obliged to turn left directly in Croatia, Slovenia, and Portugal, while they are always obliged to turn left in two stages in Denmark (Buczyński 2020, page 175).

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<sup>3</sup> Notable exceptions: There are some doubts about the right-of-way principles in Croatia and Slovenia, while in Belgium a double line of squares denotes cycle crossings with no priority for cyclists, in contrast to the meaning of similar signs in most other European states.





“Indirect turn for cyclists” sign in Hungary

### Traffic-light exemption for cyclists

A traffic-light exemption for cyclists allows cyclists to bypass a traffic light. A dedicated sign underneath the traffic light indicates in which directions cyclists might go without observing the traffic light. Cyclists crossing on a red light generally are obliged to yield to perpendicular traffic and pedestrians.

This type of infrastructure evolved in some countries as traffic lights are usually designed to regulate motor vehicle traffic, either to avoid conflicts between motor vehicles or between motor vehicles and pedestrians. Apart from a few advanced cycling countries in Europe, most traffic lights are not optimised for the flow and safety of cycle traffic, even if dedicated signals for cycle traffic are provided. This leads to safety risks, including accidents caused by large trucks turning right while the drivers do not see the cyclist in the dead angle (Ministère français de la Transition écologique et solidaire 2017). Several countries have therefore recognised that it can be beneficial to allow cyclists to bypass traffic lights.<sup>4</sup>

While in some cases the exceptions are added to prioritise cycling, in many they simply represent a compromise between having traffic lights not suited for cycling and an expensive junction reconstruction (Buczyński 2020, page 176-177).

Examples of different roadside signs denoting a traffic-light exemption for cyclists:



Belgium



Germany



Denmark



Luxembourg

### Wayfinding

Wayfinding covers all infrastructure allowing cyclists to orient themselves and navigate along cycle routes.

The most important wayfinding infrastructure in the cycling context are upright signs mounted on posts, street furniture, walls etc. providing or confirming the route direction and number (ECF 2012, page 11). Signs are required at major crossings or turning points, while regular confirmation signs reassure cyclists of being on the right route. The sign content can comprise confirmation of the direction, the next main town name, the distance, attractions, and village names (ECF 2018, page 31-34). In the case of cycle-node systems, the signing content also covers the number of the next node. In addition, information boards can help interpret the route and add interest to the trip.

<sup>4</sup> A study in Strasbourg covering 179 crossings equipped with new signs denoting a traffic-light exemption for cyclists concluded that there were no accidents directly linked to the new traffic-light exemption signing (Delattre 2018).

Wayfinding also comprises road markings, which play an important role as they help the cyclists follow the route, especially in poor visibility conditions, improve the recognisability of cycle infrastructure for other users, and can also warn against obstacles (Buczyński 2017).

Wayfinding infrastructure can increase the level of awareness for cycling and support a positive cycling culture. Cyclists can directly benefit of the relevant guidance in terms of trip length, duration, and comfort (EC 2020).

Many European countries have adopted national standards for wayfinding infrastructure. While the content proposed in these standards is often quite similar, the actual designs can vary considerably.

In order to provide consistent and clearly recognisable signing for the cycle routes that make up the EuroVelo network, the European Cyclists' Federation (ECF) collaborated with the ECE to prepare a signing recommendation. This recommendation is included in the Consolidated resolution on road signs and signals (R.E.2; UNECE 2010) and can be easily incorporated in the different national signage systems to ensure the safe conduct of international and national cyclists (see examples below). For more information, see the Chapter on the EuroVelo network.

Examples of national wayfinding infrastructure, incorporating EuroVelo route information panels:



Austria





Croatia



Czechia



France



Germany



### Cycle highway

A cycle highway is a mobility product that combines different types of infrastructure, such as cycle tracks or cycle streets, to provide a high-quality functional cycling connection. As the backbone of a cycle network, it connects cities and/or suburbs, residential areas and major (work) places (CHIPS project 2020). It stands for safe and fast cycling, reliability, and comfort. It carries a clear name, an own visual identity, a logo, an individual identification sign, and other elements which help promote it and communicate with the users. Variations and alternative names given to cycle highways include superhighways and bicycle roads (EC 2020).

Cycle highways have higher quality requirements for their components to fulfil the needs of all types of cyclists at all levels of experience and fitness. Mature cycle highways can satisfy users with different types of bicycles, such as cargo bikes, recumbent bikes and pedelecs, including speed pedelecs with a maximum speed of up to 45 km/h. They are primarily designed for commuters, while leisure and tourism use are secondary. Focus areas are a wide and smooth surface, few stops, very low or no traffic, and lighting during night-time. A cycle highway's benefits far outweigh its costs, according to a German study on the Ruhr cycle highway RS1 (see below), as it encourages commuters to cycle and reduces congestion in urban areas.

### Benefits from investing in adequate cycling infrastructure

Cycling infrastructure is very cost-effective compared to other modes of transport, according to the research available (Haubold 2018, page 1). A significant part of the cycling benefits that have been

quantified so far result from cycling infrastructure's positive effect on public health, notably through reduced mortality. There are few studies on the costs and benefits of specific types of cycling infrastructure, except for cycle highways. The calculations are mostly made at a global level for all types of infrastructure considered together.

A German study on the feasibility of the Ruhr cycle highway RS1 from 2016 calculated a cost-benefit ratio of 1:4.8 for an increase in cycling modal share of 10 percentage points. These annual benefits take maintenance already into account. The study also concluded that the "highly congested" qualified and local road network of the Ruhr metropolitan region "will be relieved by some 52,000 car trips" per day, leading to a reduction in carbon dioxide emissions by 16,600 tons annually. The construction costs for the about 100 km cycle highway were estimated to be €184 million, including all bridges and extra structures (Regionalverband Ruhr 2016, page 4).

A 2014 study on commuter cycling in Auckland, New Zealand, found that "transforming urban roads over the next 40 years, using best practice physical separation on main roads and bicycle-friendly speed reduction on local streets, would yield benefits 10-25 times greater than costs." (Macmillan 2014, page 1)

Another 2014 study by the Brussels Capital region's transport authority found that investments in cycling yielded returns that were five to nine times higher than the original investments already under current conditions. An ambitious cycling policy would lead to societal gains in Brussels of around €300 to 550 million, representing 8 to 19 times the original investment. Moreover, 500 additional jobs linked to cycling could be created by 2020 (Haubold 2018, page 2).

The average cost-benefit ratio for cycling projects in both urban and rural environments was £5.50 of social benefits for every £1 of public money spent, according to a 2014 study by the British Department for Transport (British Department for Transport 2014, page 11).

A 2009 paper by the League of American Bicyclists and the Alliance for Biking & Walking also concluded that a "modest mode shift from driving to riding has considerable impacts in savings on health, road construction, congestion, and environmental remediation." The paper cites the example of North Carolina's Outer Banks, which spent US\$ 6.7 million on bicycle infrastructure and have seen an annual nine to one return on that one-time investment (League of American Bicyclists 2009, pages 2 and 8).

## Chapter 2 – National Cycling Network Best Practices

This chapter presents cycling networks that can be found around the world and can be considered as a good practice in regard to the organization of the network, its signage, its maintenance, its promotion as well as additional services that are being offered.

### Austria – Wide variety of scenic routes

A wide variety of options exists for every type of cyclist on regional and thematic cycling routes. Detailed information on the routes for trip planning and preparation is made available on respective websites.

For example, in the region of [Oberösterreich](#) the overall network covers 5.000km and the length of the routes varies from 8km to almost 400km. Interested cyclists are able to see the length, the degree of difficulty, the time needed to complete the route and the difference in altitude. Moreover, advice is given on what types of bikes to use (e.g. mountain bikes, touring bikes, etc.) and in what season it would be best to make the trip.

Another example is the “[Dampfross & Drathesel](#)” cycling route that makes use of previous train tracks. For these type of scenic routes also additional services such as tourism agencies that can plan complete trips, suggestions for hotels and restaurants as well as bike rentals are offered.

Even though many great services, and sometimes even a full touristic package, are offered with the different routes, the experience of using the regional and thematic cycling routes could improve for cyclists, if these routes be connected in a national network, hence interconnections between the various routes would exist.

Belgium – Flanders – Cycle Highways



The Belgian region of Flanders has a wide network of [cycle highways](#) that has been developed over the past years and is being extended further. Five provinces cooperated to establish a coherent intercity functional network. The network is built with the aim to connect all Flemish cities to facilitate commuting as well as leisure cycling. When finished the total length will be 2.700km. The cycle highways are mostly part of existing cycling routes with common standards, branding and communications. Most of the cycle highways are located on separated cycle tracks or in low-traffic residential areas increasing the safety for the cyclists.

As such it is the first cycle highway network of this scale but there is still further space for improvement such as improved coordination with neighbouring initiatives in the Brussels Capital Region, Wallonia and the Netherlands.

The province of Limburg is already doing the first move towards coordinating cycle routes with neighbouring countries with its 1.166 km long-distance Meuse Cycle Route that crosses through Belgium, Germany and the Netherlands.

When developing a cycle network also maintenance is an important aspect to keep up the quality of the paths and make it user friendly for a long time. Concrete examples exist from the Province of Limburg and the Province of

Antwerp.

In Limburg a dedicated quality monitoring system exists for the cycle network. Thanks to this, Limburg is often praised for its high quality network that is characterized by the state of the surface of the paths, the appropriate width of the cycle paths, the absence of motorised traffic as well as safe crossing points leading to a general satisfaction rate of 98% primarily due to the quality of the road surface. This high level can be kept up thanks to quality charters in all the municipalities of Limburg as well as 3 full-time engineers employed by the department of mobility of Limburg working on the design & implementation of projects on the network.

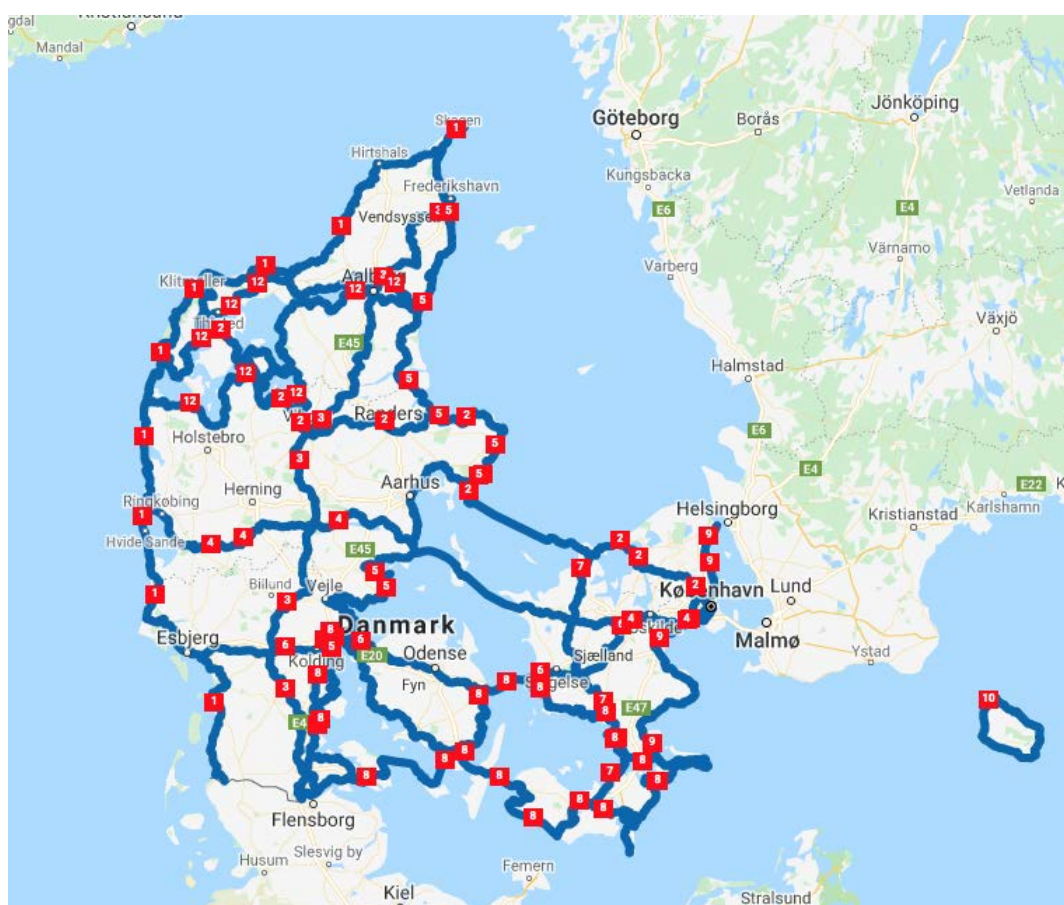
Nonetheless also such a well-managed network encounters some issues including damages or obstructions to signage, the conditions of the road, litter, peripheral infrastructure as well as vegetation. Problems in the network are detected mostly by cycling monitors (+50%), followed by tourists using the network (31%). In addition, maintenance workers and municipalities verify the quality of the network based on monthly checks.

The cycle network of the province of Antwerp is about 2.850km long with 720 cycle nodes. Also this network enjoys a high rate of satisfaction due to good signage, suitable restaurants and hotels along the way, the

possibility for tranquil bike rides as well as attractiveness of the landscapes. In addition, the province has worked on continuing the networks across the border to allow for seamless bike rides into other regions of Belgium as well as into the Netherlands. Users of the Antwerp network can consult an online map where it is possible to report problems with the route, such as bad conditions of the road (e.g. potholes, uneven ground, slippery), signage, incoherency of the cycle network, etc. Most of the reported problems come from volunteers (57%), followed by tourists (34%), interns and municipalities.

### Denmark – Fully integrated cycle network

Denmark has 12 national cycling routes that are managed by the Danish Road Directorate with a length of more than 4.200km. A national cycling route has the following characteristics (i) it extends north-south or east-west through several regions (ii) is over 200km long (iii) it is accessible in all types of weather and (iv) it should be coherent in regard to signage and road design. The routes are primarily intended for cycling tourists and go past cycling paths or low dense traffic areas.



Source: <https://www.turisme.nu/turister-risikerer-online-mareridt/>

The national Danish cycling routes' official map is made up of so-called route relations in OpenStreetMap, where they are maintained and continuously updated according to material provided by the Road Directorate, partly by employees of the Road Directorate and partly by experienced volunteer OpenStreetMap enthusiasts.

The Danish cycling network is fully integrated into the Danish road network putting cycling on the same level as other modes of transport.



## France – Coordination through itinerary committees

The French national cycling network ([Schéma national des véloroutes](#) – National Cycle Route Scheme) is co-developed by Vélo & Territoires (collective of regions and municipalities to promote cycling) counting 58 routes with a length of more than 25.400km. 69% of this was completed by the beginning of 2020. The aim of the National Cycle Route Scheme is to establish a network of major national cycle routes in order to develop and promote daily mobility and cycling tourism.

Vélo & Territoires is responsible for monitoring the progress of the National Cycle Route Scheme which has to be built according to [specifications](#) made by the relevant French ministries. These specifications explain what is considered as a cycle path including linearity from one city to another, continuity of the path without any interruptions, safety, common signage, regular maintenance and it has to be accessible to all types of cyclists. Moreover, the aim of the National Cycle Route Scheme is explained based on five principles (i) realizing a network of 7.000-9.000km, (ii) researching the possibility of transferring existing infrastructure for bicycles, (iii) connecting the main cities along the route, (iv) proposing at least one cycle route per region by taking into consideration notable tourist attractions and (v) assuring continuity with the existing networks in neighboring countries. Other specifications in the report refer to rules when crossing through cities, the admissible types of cycle routes, technical characteristics (min. width of 3-5m), signage, maintenance, additional services to offer along the route (bike repair services, bike rental, parking, etc.) as well as an environmental impact assessment that should be conducted regularly.

One interesting aspect about the French network are the itinerary committees that support the development for individual route projects such as the EuroVelo routes that cross through France. These committees are formed by project teams that are supported by public bodies including regional councils, county councils as well as inter-city cooperation bodies or tourism boards. Depending on the local situation European or state funding is used to support the committees. The committees are set up for a fixed time, between 2 and 5 years, with fixed goals, an action plan and a budget. They are supported by both France Vélo Tourisme (public-private association working on promoting Cycling Tourism in France) and Vélo & Territoires.

The different stakeholders that are planning the cycle route of the national cycle network then work together on common signage of the route, the development of qualified services along the route, the creation of communication tools, the organisation of events as well as the monitoring of the route. Currently there are about 30 committees of this kind in France with a different type of organization depending on the individual route.

## Germany – Integration of hospitality sector in bicycle tourism

The [Cycling Network Germany](#) comprises 12 national long distance routes of 11.700km connecting all regions of Germany. Routes 1 to 6 go from west to east and routes 7 to 12 are from north to south. All routes can already be accessed today as they go along existing long-distance routes. with developed service offers. The sign posting into the national network is in development.

The network is geared towards every day and tourist cyclists. The next step in promoting this national cycling network is the establishment of a coordinating agency as part of Germany's overall climate action plan.

The Cycling Network Germany was established on the basis of the "[National Cycling Plan 2002 to 2012](#)" by the German Federal Government. With this network, the federal and state governments are jointly

committed to overarching standards and a high level of quality in cycle tourism. The overarching standards include a high quality of the network and its infrastructure, with good promotion and common signage.

Route 3, that is also part of EuroVelo 1, was developed as a premium long distance path as part of a pilot project. The federal government as well as 5 German regions participated to make this a model route for the other routes of the German cycling network. The project lasted from 2008 to 2012 with a funding of 900.000€.

Besides the national cycling network many local initiatives exist at the 'Länder' level that are all combined in the [Bicycle Route Planner Germany](#) also facilitating planning a journey from one region of Germany to another. All in all, this planner includes more than 100.000 km of cycle routes, 568 thematic routes, more than 100.000 points of interest and more than 5.000 cyclist friendly accommodations.

Overall, the German cycling network consists of various national, regional and local cycling networks and the network is well known for its [Bett & Bike cycle-friendly accommodation](#) system. This system was co-developed by the Germany cycling association (ADFC) establishing quality criteria for bike-friendly hosts. If a host has this type of standard, bike tourists can rely on a bike-friendly service thereby facilitating the planning of bicycle trips. Different categories of accommodation such as hotels, hostels, holiday apartments, guesthouses and campsites, are offered for either bike tourists, mountain bikers or campers. Moreover, specific hosts for e-bike users exist also making it possible for cyclists to charge their e-bike while resting. In total, cyclists can choose from about 5,800 different types of hosts that offer a safe place to lock their bike.

To make the Bett & Bike offers as accessible as possible a separate mobile application is available that allows users to find their next destination while they are already on their way. As an alternative, also a website is available in both German and English, highlighting to cyclists some of the 'special hosts' such as a former jail, a historical sleeping car or a furnished construction trailer. To further improve its integration, the Bett & Bike accommodations are usually shown in the regional [Bicycle route planners](#).

### Luxembourg – Full integration into the tourism package

The [national cycle network of Luxembourg](#) consists out of 23 routes with a total length of 600 km as of the beginning of 2020. In the future, it is planned to extend the network to a total of 900 km. The routes are designed in such a way that they pass by various tourist attractions such as natural monuments, castles or rivers.

This network is promoted by the main tourism website of Luxembourg closely integrating bicycle tourism with other types of tourism. In addition to detailed descriptions of the available routes, (including GPS data, length of the route, difficulty level, hospitality services in the area, etc.) and the recommendation of specific routes, Visit Luxembourg also offers the purchase of overnight bicycle trips in Luxembourg. Therefore, this is a good example of how cycle tourism can be fully integrated with other kinds of tourism by clearly advertising for it at the main tourism website.

### Netherlands – Well connected network of long-distance, regional and local cycling routes

The Netherlands has an extensive network of [long distance cycling routes](#) spanning the full country. The main target group are cycle tourists that are planning a trip for a few days. All of these routes are completely signposted in both directions. A positive aspect of this network is its strong integration with local and city cycling networks that amount to 33.000km and are organized via more than 8.900 nodes leading a cyclist from one node to the other. These local networks are targeted towards daytrips.



Currently the cycling network is in a transition. The long distance routes are officially added to the country wide system of nodes and only the most iconic long-distance routes are kept and further promoted, whereas other long distance routes are incorporated into the regional networks.

The main iconic long-distance routes are currently the LF Maasroute from Maastricht to Rotterdam with 480km, the LF Zuiderzeeroute starting and ending in Amsterdam with 440km as well as the LF Kustroute from Cadzand Bad to Nieuwschans along the Dutch coast with 610km. For 2021 two further iconic long-distance routes are planned, the LF Hanzeroute and the LF Waterlinieroute.

To facilitate accessibility for users, they can check up to date route information [online](#) where information on construction sites are published and possible diversions are proposed. Moreover, users can report potential problems with the cycle route (e.g. blockage, illegible signage, incorrect route, etc.) [online](#) that further improves the quality of the network.

Source: Netherlands Cycling Platform

## Spain – Repurposing old train tracks for bicycles

[Vias Verdes](#) can be used by cyclists in Spain which travel across the country. These are 120 greenways on unused railway infrastructure spanning a total of 2,900km in peri-urban areas and dedicated to cycling but also walking. The program is coordinated by the Foundation of Spanish Railways (FFE) and exists since the 1990s with further plans for extension in the future.

In 1993 there were more than 7,600 km of railway tracks that were no longer used for train service or that had never been used because its construction was abandoned. With the greenways, the historical and cultural value is preserved from its disappearance because it offers enormous potential to develop initiatives for ecotourism and sustainable mobility according to new social demands.

The project has received support from the former Ministry of Public Works, Transport and the Environment as well as the Ministry of Agriculture, Fisheries and Food in the framework of the Natural Paths Program that executed more than 50% of the currently existing greenways. Other entities involved in the development of the greenways are Autonomous Communities, Provincial and City Councils, public entities, as well as cycling groups, ecologists and citizen groups that demand the preservation of these old rail infrastructure.

The design of the greenways largely makes use of the qualitative advantages of the previous railway routes which means that the paths have gentle slopes and wide curves making them very accessible also to people with limited mobility. Moreover, the greenways are separated from public roads adding to safety of their users. In case the greenways pass a public road, protected crossings are installed or foreseen.

Complementary services such as restaurants, hotels, bike rentals, museums and information offices have been installed along the greenways and where possible they were housed in former railway stations to further preserve the cultural heritage. At the beginning of 2020 more than 150 stations have been renovated to offer these complementary services.



The impact the greenways have is also economical and not just cultural. The Vía Verde de la Sierra (Cádiz-Sevilla) currently provides 25 direct jobs in the management and maintenance of the already renovated stations and they receive 300 000 visitors / year. Another success story is the Girona greenways network, whose annual impact is valued at around 3.5 million euros, with a creation of 62 direct jobs and nearly 300 000 visitors / year.

The greenways program, therefore, provides an excellent opportunity to find a new purpose for the very valuable Spanish railway heritage that is currently in disuse, and which is mostly publicly owned with direct economic benefits for the surrounding community.

### Switzerland – Excellent public transport connection

The Swiss National cycle route network is developed by [Veloland](#) Schweiz and consists of nine (Nr. 1-9) national routes, 53 (Nr. 21..99) regional routes and 59 local routes. All of the national and most of the regional routes are fully developed.

A map of the network provides information to cyclists also on the length, the surface of the cycle path, the altitude and the level of difficulty. Moreover, there are suggestions on how to reach the route, where to sleep, eat and what sights to visit on the way.

In addition, the Swiss network has a particularly good connection to the public transport system and train stations are clearly marked on the official maps. Also, the Swiss train service SBB itself has good conditions for cyclists in general. Bicycles can be transported on most Swiss trains and in case full capacity has been reached there is the option of bicycle shipping (shipping the bicycle as luggage on the train).

Overall, the Swiss cycle network is a very well developed and integrated network making it very accessible to all interested parties. Not only is the Swiss public network one of the greenest and environmentally friendliest in the world, but it is also very reliable, secure and effective.

### United States of America – Integration in overall transport system

The United States Bicycle Route System (abbreviated USBRS) is the national cycling route network of the United States. It consists of interstate long-distance cycling routes that use multiple types of bicycling infrastructure, including off-road paths, bicycle lanes, and low-traffic roads. There is no exclusive design standard associated with USBRS. But a [design guidance](#) released by the Federal Highway Administration provides context for infrastructure design choices for connected, safe, and comfortable bicycle networks that meet the needs of people of all ages and abilities. The bikeway selection guide is divided into five sections (i) an introduction (ii) describing ways that policy provides the framework for building cycle routes (iii) key aspects of the planning process that influence the selection of types of cycle routes (iv) identifying strategies for selection the preferable type of cycle route based on the design user and road context and (v) highlighting real world examples on a range of different road types.

Each segment of the collective routes is maintained by state and local governments. The USBRS is intended to eventually traverse the entire U.S. like the Dutch National Cycle Routes and the United Kingdom's National Cycle Network, yet at a scale similar to the EuroVelo network that spans Europe.

The USBRS was established in 1978 by the American Association of State Highway and Transportation Officials (AASHTO), the same body that coordinates the numbering of Interstate highways and the U.S.

Routes. Routes are nominated for official designation by state departments of transportation and approved by AASHTO. Designation of a U.S. Bicycle Route means that the state department of transportation and all jurisdictions along the route have given their support. Free technical assistance is provided by [Adventure Cycling](#) on behalf of AASHTO to any state interested in developing a U.S. Bicycle Route.

Thanks to [OpenStreetMap](#), all U.S. Bicycle Routes are shown in the open-source, wiki-based [OpenCycleMap](#) layer. The map displays all designated USBRS, as well as other established bicycle routes across the country. More than 14,000 miles are currently established in 27 states and Washington, D.C. The [total network](#) is designed to reach just over 50,000 miles when completed. Implementation is driven by state departments of transportation without direct federal funding.

Adventure cycling as well as state departments of transport individually provide information about their efforts in regard to the USBRS on their individual websites.

The special aspect about this network is its scale as well as its strong integration with the overall US transport system thanks to its integration with the state department of transportation.

## Chapter 3 – EuroVelo, the European cycle route network

This chapter provides an overview of EuroVelo, the European cycle route network, covering its history, current state of development and organisation, as well as the future ambitions.

### What is EuroVelo?

EuroVelo is the European network of long-distance cycle routes that cross and connect the whole continent. The development of EuroVelo will lead to safe, direct, coherent, and connected cycling infrastructure and cycle route networks that will benefit all categories of cyclists. The network is developed and coordinated by the European Cyclists' Federation (ECF) in cooperation with a network of National EuroVelo Coordination Centres and Coordinators.

All EuroVelo routes have a length of at least 1,000 km, connect at least two countries, and have an internationally recognisable identity/theme. Wherever possible, the routes should be based on existing or planned national or regional cycling routes.

There are currently 17 EuroVelo routes in the network:

- EuroVelo 1 – Atlantic Coast Route
- EuroVelo 2 – Capitals Route
- EuroVelo 3 – Pilgrims Route
- EuroVelo 4 – Central Europe Route
- EuroVelo 5 – Via Romea Francigena
- EuroVelo 6 – Atlantic-Black Sea
- EuroVelo 7 – Sun Route
- EuroVelo 8 – Mediterranean Route
- EuroVelo 9 – Baltic-Adriatic
- EuroVelo 10 – Baltic Sea Cycle Route
- EuroVelo 11 – East Europe Route
- EuroVelo 12 – North Sea Cycle Route
- EuroVelo 13 – Iron Curtain Trail
- EuroVelo 14 – Waters of Central Europe
- EuroVelo 15 – Rhine Cycle Route
- EuroVelo 17 – Rhone Cycle Route
- EuroVelo 19 – Meuse Cycle Route



Schematic EuroVelo Diagram

The routes are numbered based on whether they cross Europe on a North-South or West-East axis. Currently there are ten North-South routes (odd numbers 1-19) and seven West-East routes, including two circuits (even numbers 2-14). These 17 routes have a combined length of more than 90,000 km and cross 42 different countries (ECF 2019a).<sup>5</sup> All routes are presented on [www.eurovelo.com](http://www.eurovelo.com), with overview information for each country and stage. An extension of the network is possible. A formal process is established within ECF for this purpose (ECF 2016).

<sup>5</sup> A high-resolution EuroVelo overview map can be downloaded from: [https://pro.eurovelo.com/download/document/2020-EVmap-combined\\_watermark.pdf](https://pro.eurovelo.com/download/document/2020-EVmap-combined_watermark.pdf).

Official EuroVelo signage has been installed across the European cycle route network to make it easier for cycle tourists to follow the routes across borders. The distinctive EuroVelo route information panels can be incorporated into national signage systems in several different ways (ECF 2016).

The ECE Global Forum on Road Traffic Safety (WP.1) incorporated the signing of the EuroVelo routes into the Consolidated Resolution on Road Signs and Signals (R.E.2) in 2010 (UNECE 2010).

Examples of signing incorporating EuroVelo route information panels:<sup>6</sup>



Netherlands



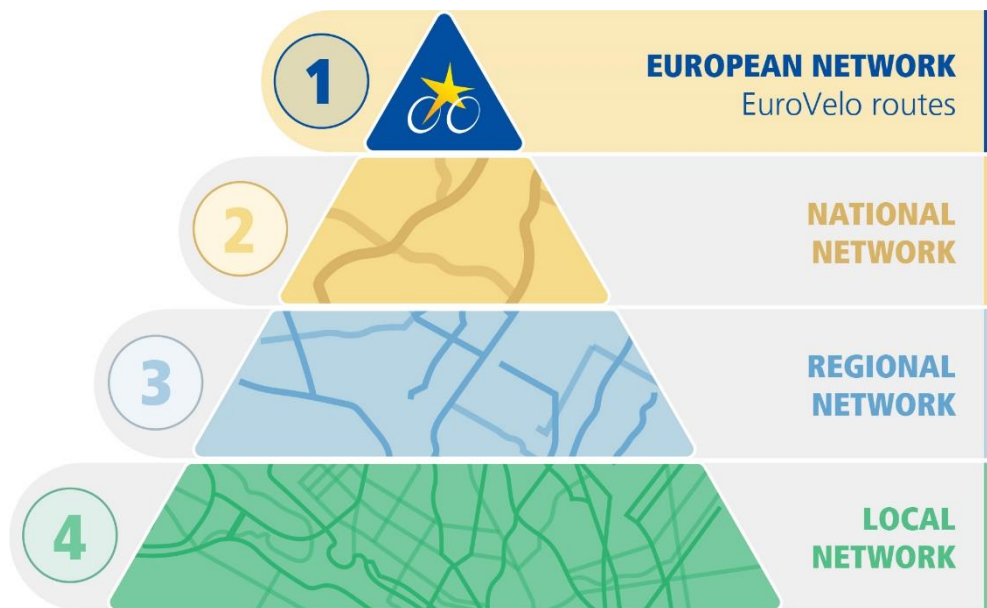
UK



Serbia

EuroVelo is a registered trademark of the ECF, and only routes approved by the ECF can be called EuroVelo. This is an important badge of quality for both the cyclist and the route promoter.

The EuroVelo network forms the backbone of many national, regional, and local networks across Europe.



<sup>6</sup> See chapter 1 on the definitions of cycling infrastructure for more examples.

## Objectives of EuroVelo

The objectives of the EuroVelo initiative are (ECF 2011 and ECF 2019a)<sup>7</sup>:

- To ensure the implementation of very high-quality cycle routes in all countries of Europe, carrying the best European practice across borders, harmonising standards, and exchanging experiences.
- To communicate the existence of these routes to decision makers and potential users, promote and market their use, and provide an important port of call for information about cycling in Europe.
- To encourage large numbers of European citizens to give cycling a try, and so to promote a shift to healthy and sustainable travel for daily trips and as cycling tourism, and to reduce the environmental impact of tourism and transport.
- To help create lasting economic growth with more and better jobs.
- To support regional and rural development by connecting both famous and less well-known tourism destinations and by improving the well-being of local communities through the provision of cycling facilities.
- To further European cohesion and mutual understanding by reminding citizens of the history, culture and nature of Europe through cycling, stimulating direct face-to-face interactions between people, encouraging more women and families to take up cycling, and providing opportunities for disabled people to use the routes.

It is also a long-held goal of the ECF to have EuroVelo integrated into the EU's Trans-European Transport Network (TEN-T network).<sup>8</sup> This would contribute to the objectives detailed above, including raising the profile of cycling and increasing the resources available for the development of the network (Buczyński 2020, Lancaster 2016).

## Short history of EuroVelo

The first discussions on the idea of establishing a European cycle route network started in 1994, when Jens Erik Larsen from Foreningen Frie Fugle, Denmark, began to work on a proposal. The previous year had seen the opening of the Danish national cycle route network, one of the inspirations for EuroVelo.

A working group within the ECF was established during the ECF's annual general meeting in Brussels in 1995 to look into creating a European cycle route network. Following this working group's first meeting in Cheb, Czechia, an initial map showing proposals for 12 European cycle routes was prepared.

An application was submitted to the European Commission (EC) for funding of the EuroVelo initiative in 1997. The application was successful and enabled a lot of work to be done on developing EuroVelo over the coming years. A second grant was received from the EC (DGVII Transport) in 1999 to continue developing the EuroVelo network. The EuroVelo initiative was officially launched in Logrono, Spain, in 1997.

After ECF, Sustrans and Foreningen Frie Fugle signed a contract for the management of the project in 1998, Sustrans and Foreningen Frie Fugle formally handed the project over to the ECF. The EuroVelo Council was established as an advisory group for the ECF Board on EuroVelo matters.

In December 2011, the European Parliament explicitly asked for EuroVelo to be included in the Trans-European Transport Network (TEN-T) in their response to the European Commission's White Paper on Transport. The motion states: "EuroVelo, the European long-distance cycle route network, should be included in the TEN-T network." References to EuroVelo and cycling generally were added to the TEN-T

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<sup>7</sup> The ECF is developing a new EuroVelo Strategy 2020-2030. This document is expected to be approved and finalised in 2020 and will be published on the EuroVelo website.

<sup>8</sup> Compare European Commission (2020): *Trans-European Transport Network (TEN-T)*, available at: [https://ec.europa.eu/transport/themes/infrastructure/ten-t\\_en](https://ec.europa.eu/transport/themes/infrastructure/ten-t_en).



Guidelines for the first time ever in 2014, following an extensive lobbying campaign by the ECF, its members and other supporters.

Various new routes have joined the network since its inception in 1995, with EuroVelo 19 – Meuse Cycle Route, and EuroVelo 14 – Waters of Central Europe being the latest additions. Several EU-funded projects have contributed to the development of individual routes and the overall network over the years.<sup>9</sup>

## Organisation

### *ECF*

The European Cyclists' Federation (ECF) is the umbrella organisation of more than 60 national and regional civil-society-based cycling organisations in Europe, representing more than 500,000 individual members. It is an advocacy organisation at the European level promoting cycling as a sustainable and healthy means of transportation and recreation. It is based in Brussels and works for better conditions for cyclists and for increased cycling (“more and better cycling for all in Europe”). As the world's largest cycling-advocacy organisation, it aims to raise political support for and investments in active mobility. A key goal is also a significant reduction in road danger.

The ECF also manages the EuroVelo network, ensuring its quality and coordinating its implementation and operation at the European level. The ECF provides advice and support to the National EuroVelo Coordination Centres and Coordinators (NECC/Cs) and manages the exchange of skills and experience between them.

The financing of this central coordination is provided through ECF membership, European Union institutions and agencies, NECC/Cs, project partners and the private sector. The day-to-day management of the EuroVelo network is ensured by the ECF EuroVelo Management Team, which is based in the ECF Office in Brussels (ECF 2019b).

The ECF EuroVelo Management Team is responsible for communicating EuroVelo throughout Europe and beyond. It provides overview information in electronic and printed form on the various EuroVelo routes and on services such as international cycle transport, guidebooks, and bookable offers. The Management Team informs its partners on the key requirements for the implementation of EuroVelo and transfers expertise and good practices between partners.

### *National EuroVelo Coordination Centres and Coordinators (NECC/Cs)*

The EuroVelo initiative is based on the subsidiarity principle. That means that while the network is managed at the European level by the ECF, decisions and activities at the national and regional level are managed by the network's national and regional partners. Vitally important to the success of EuroVelo is therefore the network of NECC/Cs that are found across the continent.

While insuring the implementation, operation and quality assurance of EuroVelo at the national level, they are also responsible for communicating EuroVelo nationally, providing accurate and up-to-date information on the sections of EuroVelo routes that pass through their area and ensure the integration of EuroVelo routes into new publications.

The different titles – Coordination Centre and Coordinator – refer to the maturity of the organisation. National EuroVelo Coordinators typically consist of one organisation, which is often (but not always) one of the national cycling federations. Over time, the Coordinator might incorporate representatives from public authorities, tourism boards, cycling organisations, public transport companies and other service providers

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<sup>9</sup> For an overview of past and ongoing projects, compare ECF (2019b): *EuroVelo Route Projects*, available online at: <https://pro.eurovelo.com/projects>.

in order to create a Coordination Centre. The exact composition of these NECCs will inevitably vary from country to country.

There are currently 23 National EuroVelo Coordination Centres and Coordinators, who between them cover more than 60,000 km of EuroVelo routes, i.e. 68% of the EuroVelo network.<sup>10</sup>

#### Categories of EuroVelo routes and state of the network

The EuroVelo network is more than 90,000 km long, with each of the 17 routes being at least 1,000 km in length and the longest being over 10,000 km. ECF is constantly working with its NECC/Cs on developing the network but there remain differences in the conditions of the routes (sometimes even between different sections on the same route). Whilst this is inevitable on a network of this size, it is important to communicate to potential users what they can expect if they cycle a particular section of a route. For this reason, the ECF has developed some common categories that are applicable for the entire network and are communicated on the European level (ECF 2019a).

#### *EuroVelo Routes*

The first 12 EuroVelo routes were designated back in 1995 when the network was more an aspiration than a reality. Consequently, each route only had to meet some very basic criteria (see table below). Most of these routes have seen substantial development in the meantime but there remain some sections at the planning stage or under development.

For routes at the planning stage, the route is not signed and there is no detailed information publicly available on the internet. The proposed itinerary communicated is a proposal for the best possible option currently available.

For routes under development but usable, it is possible to follow the route either by signing or detailed information publicly available on the internet on national or regional cycling / tourism portals (linked to "eurovelo.com"). The route may contain some sections that need further development (e.g. stretches on public roads with high levels of traffic).

In both cases, the ECF is working with national partners to encourage further development.

It is no longer possible for new routes or extensions to existing routes to join the network at this level of development, i.e. at the planning or development stage. They should be at least Developed EuroVelo Routes with EuroVelo signs at the time that they formally join the network (see below).

#### *Developed EuroVelo Routes*

A route or section can be called a Developed EuroVelo route if:

- it is signed in line with the national signing standards in the respective country and
- offers a website providing information to users.

A further distinction is made if the signing incorporates EuroVelo route information panels too.

About half of the network, i.e. about 45,000 km, is currently "developed".

Routes at the planning stage, routes under development but useable and developed routes can be all surveyed using the European Certification Standard methodology (see below for more information) to identify critical deficiencies and provide an impetus to make improvements in cooperation with the

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<sup>10</sup> For an overview map and contact details, compare ECF (2019b): *EuroVelo National Coordinators and Coordination Centres (NECC/Cs)*, available at: <https://pro.eurovelo.com/organisation/national-coordinators>. This website also provides more information on how to create an NECC/C.

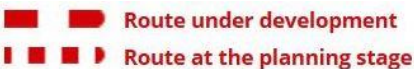




relevant authorities and partners. The aim is to raise the overall quality of the route to the point at which it can formally be certified. However, this process can take several years.

*Certified EuroVelo Routes*

A Certified EuroVelo route is one that has additionally successfully undergone the certification process in line with the ECF's European Certification Standard.

It is important to note that to join the EuroVelo network, a route does not necessarily have to be certified in accordance with the ECF's European Certification Standard. As a minimum, new routes, or major extensions to existing routes, should meet the criteria for Developed EuroVelo Routes with EuroVelo signs.

Status, categories communicated and colors on the EuroVelo maps	Minimum criteria and share in the network (N.B. in order to reach a certain category, the route should also comply with the criteria under the preceding categories)
<p><b>EuroVelo route</b></p> 	<ul style="list-style-type: none"> <li>• At least 1,000 km.</li> <li>• At least 2 countries</li> <li>• For routes under development, there should either be signing in line with national standards <u>or</u> detailed information publicly available on the internet on national or regional cycling / tourism portals (linked to EuroVelo.com).</li> <li>• Almost half of the network, i.e. about 44,000 km, is currently at the development or planning stage.</li> </ul>
<p><b>Developed EuroVelo route</b></p> 	<ul style="list-style-type: none"> <li>• Signing in line with national standards (a distinction is made if they incorporate EuroVelo signs).</li> <li>• Detailed information publicly available on the internet on national or regional cycling / tourism portals (linked to EuroVelo.com).</li> <li>• About half of the network, i.e. about 45,000 km, is currently “developed”.</li> </ul>
<p><b>Certified EuroVelo route</b></p> 	<ul style="list-style-type: none"> <li>• Certification according to ECF's <a href="#">European Certification Standard</a>. Can either be a full route or a continuous section of at least 300 km.</li> <li>• There are different levels of certification reflecting the potential target groups (regular cycle tourists; occasional cycle tourists; and inexperienced cycle tourists and cyclists with special bikes).</li> <li>• EuroVelo 15 - Rhine Cycle Route has been the only certified EuroVelo route so far.</li> </ul>

European Certification Standard

The European Certification Standard (ECS) is a set of rules developed by the ECF to certify EuroVelo routes and evaluate their quality (ECF 2018). It can also be used to assess the quality of national or regional routes. It can help set up national standards where they do not exist and harmonise the different regulations in the European states (ECF 2019b).

The elements included in the evaluation of cycle routes following the ECS methodology are:

- Route infrastructure (continuity, route components, traffic, surface and width, gradients)
- Attractiveness, information and EuroVelo identity signing, public transport

- Services (accommodation, food and drink, bike repair, bookable offers)
- Marketing (web promotion, print promotion, information along the route)

Only official EuroVelo Route Inspectors who have participated in the mandatory ECS training provided by the ECF are authorised to survey a route according to the ECS methodology.

EuroVelo 15 – Rhine Cycle Route is currently the only EuroVelo route that has been certified according to the ECS methodology (ECF 2020c).



“Certified EuroVelo Route” logo based on the European Certification Standard

### Achievements

The main website “eurovelo.com” has become one of the most important cycle-tourism portals in Europe. It recorded 1.87 million web sessions in 2019, up 6.8% compared to the previous year (ECF 2020b).

EuroVelo provides a contact point for interaction and engagement with users and cycle tourists across the continent and beyond. The EuroVelo Management Team regularly communicates with users through social-media channels and emails, providing advice, sharing stories etc. The initiative thereby successfully promotes the European idea of cohesion and mutual understanding and provides inspiration to cycle tourists aiming to cycle outside their home country.

EuroVelo has developed signing guidelines and route information panels that are applied and used on many EuroVelo routes already, making it easier for cyclists to follow the route (see below). Other tools for users include the EuroVelo app, which provides information on the route and includes an interactive reward system (ECF 2019c).

The EuroVelo routes themselves are regularly among the most successful and popular routes in Europe (ECF 2020a). The ECF has worked with its partners to survey these routes based on its own methodology and developed a database with data on the routes’ quality. This serves as a basis for action plans, i.e. prioritised improvements. The methodology is based on the European Certification Standard (ECS), a set of rules developed by the ECF and EuroVelo to evaluate the quality of long-distance cycle routes (ECF 2018). Detailed data is already available for more than 20,000 kilometres of EuroVelo routes following this methodology, and this data is used for route improvements through action plans.

The EuroVelo network is not just a network of EuroVelo routes used by cycle tourists and local people. It is also a network of many partners across Europe working together and exchanging information and experiences on a regular basis. With its EuroVelo newsletter, website and good-practices database, the EuroVelo Management Team provides various channels of communication for this exchange. In addition, EuroVelo regularly interacts both with professionals and users at the ITB Berlin, the world’s leading travel trade show, where it has hosted the Cycle Tourism Day twice so far. EuroVelo also hosted the biannual

EuroVelo and Cycling Tourism Conference four times so far to share knowledge, highlight good practices and encourage further development of the EuroVelo network and cycle tourism generally across Europe (ECF 2019b).<sup>11</sup>

A 2012 study by the European Parliament has generated a model to assess the economic impact of EuroVelo if developed as a European transport and tourism network. It is estimated that 60 million trips will generate a total of €7 billion of direct revenue that can be attributed to EuroVelo as a cycle tourism product (European Parliament 2012, page 3).

Through regulation (EU) No 1315/2013, a direct reference to EuroVelo was included in the TEN-T Guidelines for the first time. The wording is as follows (Recital 9): “When implementing projects of common interest on the TEN-T, due consideration should be given to the particular circumstances of the individual project. Where possible, synergies with other policies should be exploited, for instance with tourism aspects by including on civil engineering structures such as bridges or tunnels bicycle infrastructure for long-distance cycling paths like the EuroVelo routes.” (European Parliament / European Council 2013)

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<sup>11</sup> The last conference took place in Limburg, Belgium, in 2018, and brought together about 150 cycling professionals. The conference website is available at: <https://www.euroveloconference2018.com> (Accessed: 30 July 2020). The previous EuroVelo Conferences took place in Nantes, France (2012), Basel, Switzerland (2014), and Vienna, Austria (2016).

## Chapter 4 – National networks, towards the pan-European infrastructure module for cycling

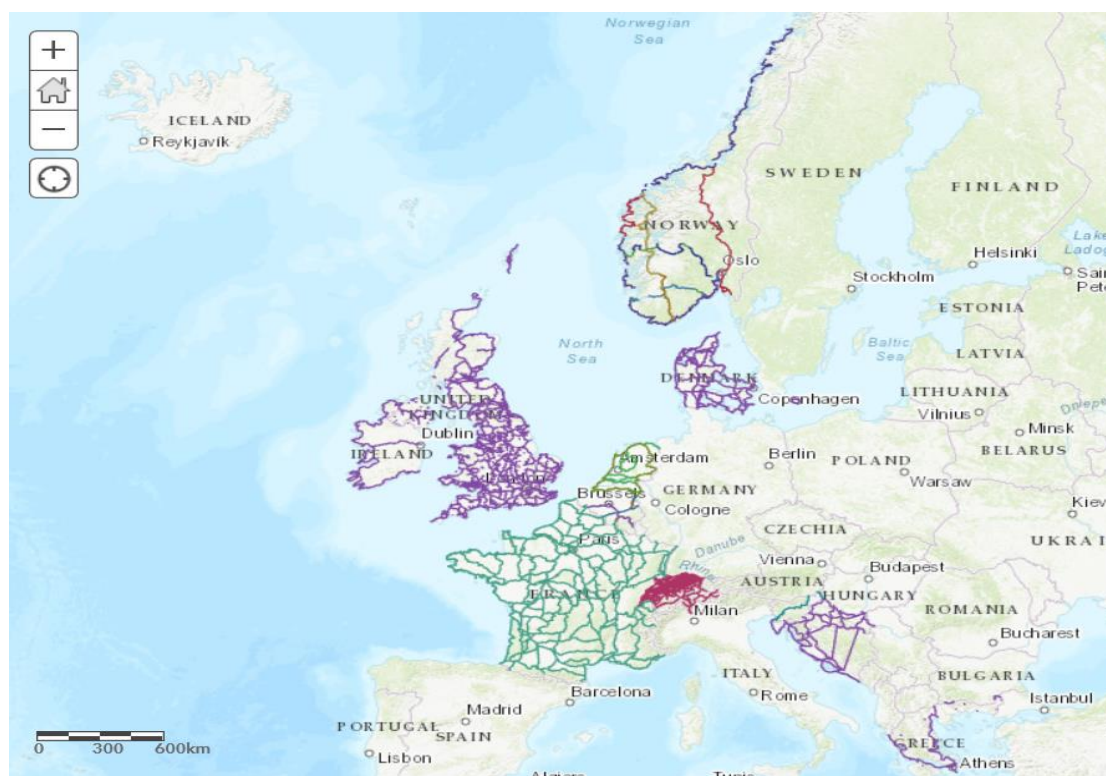
This chapter presents the information on the national cycling networks collected by August 2020 in the process aimed at the development of the pan-European infrastructure module for cycling. It discusses the next steps towards the development of a complete module.

Belgium, Croatia, Denmark, France, Greece, Ireland, the Netherlands, Norway, Slovenia, Switzerland, and the United Kingdom were able to provide data on their national cycling networks. The national data incorporates the relevant EuroVelo data for those countries.

Various additional National EuroVelo Coordination Centres and Coordinators indicated their readiness to provide data at a later stage in accordance with the necessary technical requirements, as follows:

- Shapefile format (file extension .SHP) or ESRI ArcMap format (geodatabase).
- Shapefiles should include information on the Projected Coordinate System used.
- Each feature, e.g. existing or planned route should also have a unique identifier. Any other field providing additional information can also be provided if possible.

All the gathered data has been made available on the ECE Geographic Information System (GIS) platform. Map 1 presents the data on the national cycling networks.

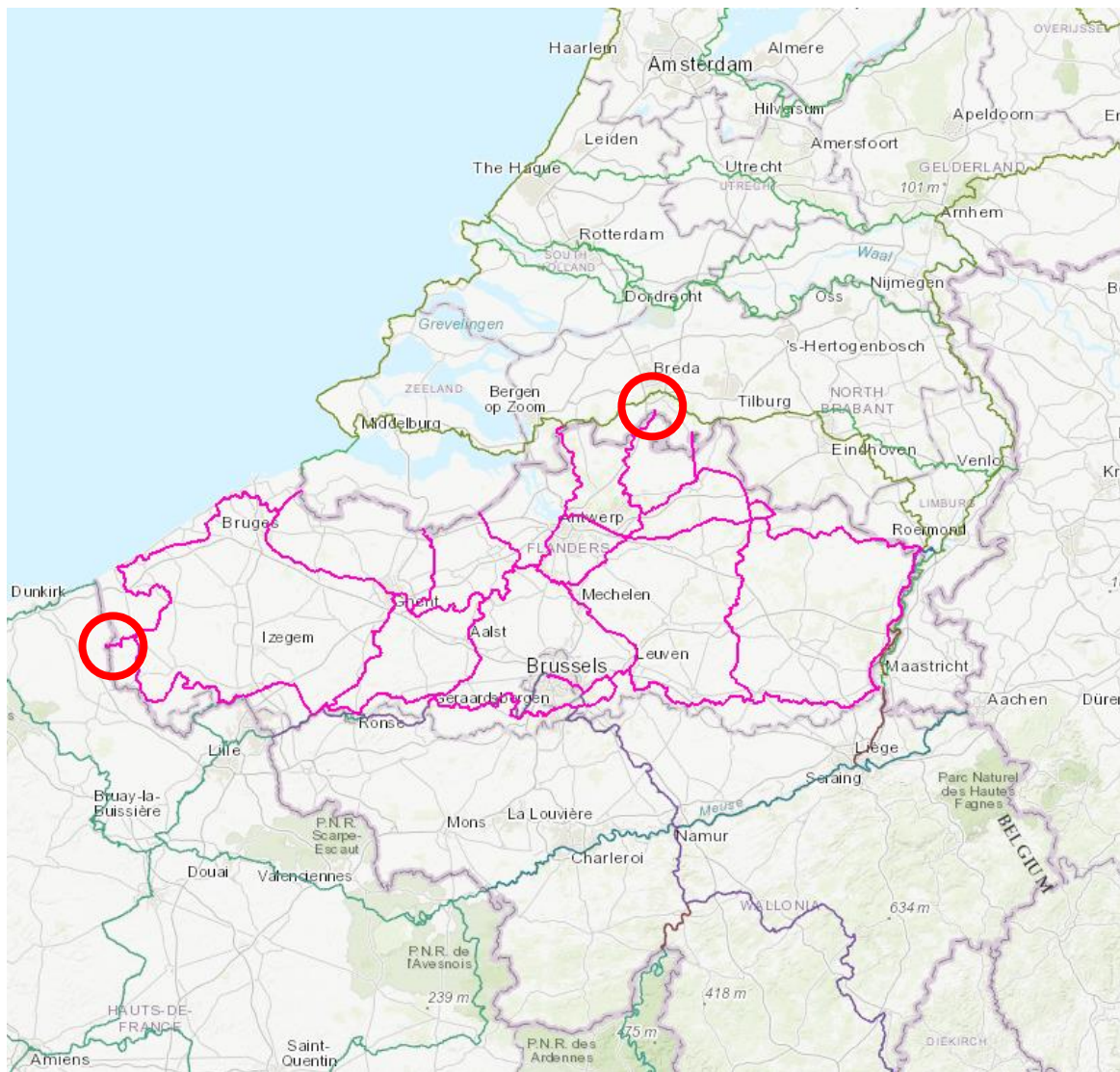


**Map 1:** All data received so far

When zooming in on border regions, such as between Belgium and the Netherlands and Belgium and France for instance, it becomes apparent that in some cases national cycling networks connect through the borders while



in other cases international links do not exist. One of the many advantages of making this data of national cycling networks available in a GIS environment is that it shows missing links between the national cycling networks for which connecting routes could be proposed. The availability of a planned international network should also support fundraising efforts by national, regional and local governments.



**Map 2:** Identification of missing international links

This data collection effort is hopefully going to produce in the next iteration of this report a full set of national cycling networks for the majority, if not all countries, of the ECE region. The connections between the national networks will be assessed to identify missing links and suggest connecting routes. The data is to be collected on the geographical location of the routes, as well as on the type of its infrastructure. The latter is to be classified as per the types proposed in this report. Authorities in charge of the cycling networks are requested to support this endeavour and to provide the relevant data to the secretariat.

## Chapter 5 – Conclusions and recommendations

Cycling infrastructure has undergone a major development to serve the increasing numbers of cyclists for the purposes of everyday commuting as well as tourism. This report shows that while definitions for certain types of infrastructure have been agreed at the international level and are stipulated in the international agreements, others have not been. At the same time, it is believed that the availability of commonly agreed definitions for the various types of cycling infrastructure, as presented in this report – chapter 1 – and their universal application will be of great benefit in helping cycling to develop further and in a safe way, as standardisation of cycling infrastructure will be achieved.

Moreover, this report further shows that for some types of infrastructure the future standardisation requires the development of new road signs that at the moment are not included in the 1968 Convention on Road Signs and Signals. These could be developed for example for the ‘cycle street’ and ‘non-mandatory cycle track/advised itinerary’. In the latter case, the review of the proposed definition for the advised itinerary in the “Proposal for Amendments to Annex 1 and 3”, submitted by the Group of Experts on Road Signs and Signals (UNECE 2019b) could be enough.

The report also provides evidence that the development of cycling infrastructure is very cost effective compared to other modes of transport and that it provides benefits that far outweigh the costs.

This report further presents – in chapter 2 – the best practices in organising cycle networks and/or specific routes. The key characteristics of a good network/route are:

- Coherence of the network by connecting cities and towns in a region with well-developed and continuous cycle routes and with connections to other modes of transport;
- Good road and wayfinding signage;
- Regular maintenance; and
- Relevant offer of additional services – accommodation providers, restaurants, bike rentals and repairs etc.
- The coordination and development of the network can be undertaken in various ways. For example, the establishment of dedicated regional committees in charge of regional networks and their coherence and interconnections with neighbouring networks is considered good practice.
- Promotion of the cycle network is important for mobility, recreation and tourism purposes. For example, it can help citizens discover high quality tourism opportunities with low environmental impact on their doorsteps.

The report also informs that the EuroVelo network has been very successful in establishing a backbone for many national, regional, and local networks across Europe. EuroVelo enjoys high popularity among cyclists and cycle tourists and connects the European nations and regions, including remote areas. It is a growing and very active network of cycle routes, users and professionals that creates jobs and economic growth. As almost half of the network is still at the planning and development stage, further investment is needed to tap the high potential for cycling outside of the most developed and popular destinations.

The EuroVelo network may serve as a backbone for the establishment of the key pan-European cycle routes and network as part of the pan-European infrastructure module for cycling.

The development of the infrastructure module requires further data collection effort as explained in chapter 4 of the report. It also requires that the definitions for types of cycling infrastructure as provided in chapter 1 are considered and eventually agreed upon to serve as the establishment of new international standards.

In this context, WP.5 is invited to consider this report and its conclusions.

WP.5 may wish to:

- Adjust and agree on the definitions for types of cycling infrastructure;
- Call for universal application of the definitions;
- Consider opportunities for engaging all pan-European countries in developing the pan-European infrastructure module for cycling;
- Encourage all the countries to submit data on the national networks and types of infrastructure of the networks;
- Request its secretariat together with the European Cyclists' Federation and the Confederation of the European Bicycle Industry to prepare the next iteration of the module;
- Encourage establishment of a funding project for the development of the next iteration of the module and in supporting the data collection effort from countries.

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