



# Integrating EuroVelo, the European cycle route network, and cycling into the TEN-T

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# Summary

The ECF welcomes the opportunity to contribute to the current review of the Trans-European Transport Network (TEN-T) guidelines.<sup>1</sup>

A significant increase in the number of trips made by bike is crucial for achieving the goals and targets of the European Commission. It will be needed to help meet the objectives of the European Green Deal and contribute to reducing the transport sector's greenhouse gas emissions by 90% by 2050. Cycling must therefore play a central role in Europe's transportation network and, by extension, the Trans-European Transport Network (TEN-T) – the EU's flagship transport policy.

The ECF proposes two measures to ensure cycling is better integrated into the TEN-T:

1. **Integrate EuroVelo, the European cycle route network, into the TEN-T.** EuroVelo should be included as a fully-fledged TEN-T network alongside the networks for other modes. As the European cycle route network is already well-established, its integration into TEN-T would be easy to achieve and entail tremendous benefits for the whole policy.
2. **Integrate cycling infrastructure into all TEN-T infrastructure projects.** The potential for cycling traffic in the area covered by the respective projects should be evaluated and necessary elements of cycling infrastructure should be integrated into project planning, design, and construction. This should include the following measures:
  - a. cycle routes **along** TEN-T corridors;
  - b. safe and comfortable cycle crossings **across** TEN-T corridors;
  - c. **upgrading** other roads affected by TEN-T projects to safe cycling standards;
  - d. cycling **connections** in TEN-T urban nodes.

The review of the TEN-T guidelines represents an opportunity to level the playing field for transport modes. The update can correct the limitations of the current approach and foster an unprecedented growth in cycling infrastructure across the EU.

# Introduction: Importance of cycling

Cycling is an important and growing segment of European mobility. European citizens demand high levels of mobility and road safety. They want to travel unimpededly, using seamless transportation networks. The European treaties guarantee this free movement of people across the continent. The EuroVelo routes and cycle highways provide key links between and within urban areas and are vital transport links in rural areas. The benefits of cycling appear not only in isolated fields like transport or environmental policy but in many other areas such as industrial policy, employment, health, and social policy.<sup>2</sup>

In its European Green Deal, the EU seeks a 90% reduction in greenhouse gas emissions by 2050. This will be impossible to achieve without cycling, which is the most efficient environmentally friendly transport technology.



6,000 cyclists per day use “Snelbinder”, a 2-km long cycling bridge attached to the railroad bridge over the Waal river in Nijmegen. The railroad line is a part of the TEN-T comprehensive network and the Waal waterway is a part of two TEN-T core corridors. Photo credit: ECF.



EuroVelo Schematic Diagram (2020)



# 1. Integrate EuroVelo, the European cycle route network, into the TEN-T

## 1.1 What is EuroVelo?

EuroVelo is the European network of long-distance cycle routes that cross and connect the entire continent. The development of EuroVelo will lead to safe, direct, coherent, and connected infrastructure that will benefit all categories of cyclists.

All EuroVelo routes have a length of at least 1,000 km and connect at least two countries. Wherever possible, the routes are based on existing or planned national or regional cycling routes. There are currently 17 EuroVelo routes in the network, with details available on [www.eurovelo.com](http://www.eurovelo.com) and a combined length of more than 90,000 km.

The EuroVelo network is currently developed and coordinated on the European level by the European Cyclists' Federation (ECF) in cooperation with a network of national partners. The National EuroVelo Coordination Centres and Coordinators can comprise national cycling federations, ministries and other public authorities, tourism boards, public transport companies and other service providers. The ECF has long campaigned for the European Commission to take a role in the development of the European cycle route network.

## 1.2 Member States call for a European cycle route network

Several recent high-level European initiatives and policies have encouraged the development of a European cycle route network:

In the **Graz Declaration**, signed on 30 October 2018, the EU's Environment and Transport Ministers called on the Commission, Member States, public authorities and other stakeholders to integrate "active mobility in the current and future European funding and financing schemes to enable the extension and improvement of infrastructure for active mobility, including the development of a Trans-European Cycling Network."<sup>3</sup>

The Graz Declaration echoes earlier calls by the EU Transport Ministers for the EU to support a continental cycling network. This demand was also in the **Declaration of Luxembourg** in 2015, which highlighted that Member States can increase the share of cycling by "ensuring that national transport infrastructure projects consider and aim to strengthen international, national, regional and local cycling networks."<sup>4</sup>

In summer 2020, Belgium, Luxembourg, and the Netherlands, in their joint **Benelux Bike Declaration**, called on the European Commission to promote the EuroVelo network and "use the ongoing revision of the TEN-T regulation to optimise co-funding possibilities for the construction or improvement of bicycle infrastructure, as well as broaden eligibility of bicycle projects in the definition of urban nodes."<sup>5</sup>

### 1.3 Benefits of including EuroVelo and cycling in the TEN-T

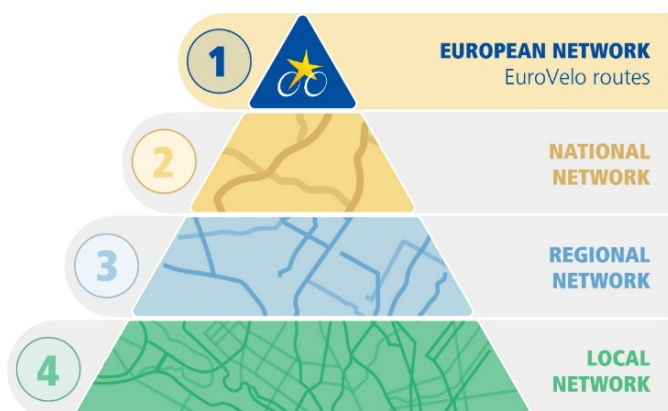
The integration of EuroVelo, the European cycle route network, into TEN-T would release European financial resources for implementing the missing sections of the EuroVelo network and directly contribute to meeting the TEN-T objectives, listed in Article 4 of the current regulation.

EuroVelo stimulates the development of national, regional, and local cycle networks, serving as a backbone for such networks and providing a quality benchmark. Electric-power-assisted bicycles and the development of cycle highways will contribute to cross-linking TEN-T infrastructure and urban/local cycling networks.<sup>6</sup> The growing range of everyday cycling will make the continuation of urban routes into the suburbs more and more important.<sup>7</sup> Integrating EuroVelo and cycling into the TEN-T would therefore improve connections between transport modes, close gaps, remove bottlenecks and contribute to the EU's environmental targets.<sup>8</sup> It is an opportunity for promoting trans-border cycling infrastructure networks, and it plays an important role in intermodal cross-border travel, for instance through widening the catchment area of rail travel.



Signing example: Common section of EuroVelo 6 (bottom), EuroVelo 15 and national cycling route 2 (in the middle) and a regional cross-border route (top).

Cycling is traditionally perceived as a local issue. Most cycle trips are indeed relatively short.<sup>9</sup> However, European directives and regulations can significantly affect how easy or difficult it is for local authorities to provide coherent, safe, direct, comfortable, and attractive cycling infrastructure. Without the integration of EuroVelo and cycling, TEN-T can negatively impact these developments. Integrating cycling into TEN-T networks will help use existing infrastructure more efficiently.<sup>10</sup> It will provide higher quality and more functionality for a lower price and make better use of public funding.<sup>11</sup>



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

The cycling and cycle-tourism industries and their customers rely heavily on functioning cycle-route networks providing efficient and reliable mobility to citizens. The integration of EuroVelo into TEN-T would boost economic growth and job creation, especially in remote areas.<sup>12</sup>

This integration would raise the network's popularity even further and allow the EU to be closer to citizens. The European Commission could participate in the coordination of EuroVelo and provide financial and technical assistance for the coordination, know-how transfer and communication on the European level. The integration would make cycling infrastructure safer and convince more citizens to switch to the bike.



At the same time, the cost of integrating EuroVelo and cycling into TEN-T would be relatively low in comparison with other TEN-T networks: EuroVelo is an oven-ready cycle-route network with a functioning management, and cycling infrastructure is very cost-effective compared to other modes of transport.<sup>13</sup>

## 1.4 Current situation

A direct reference to cycling and EuroVelo was included in the TEN-T Guidelines for the first time through regulation (EU) No 1315/2013. 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.**”

While the wording represented a step in the right direction, it stopped short of the approach already recommended by the ECF in the previous review procedure to formally recognise the entire EuroVelo network as one of the TEN-T networks.

References to cycling and EuroVelo have also featured in the Connecting Europe Facility (CEF) calls that have been published during the current financial period (2014-2020). For example:

*“Where applicable as part of a broader project of common interest, actions may include activities for the adaptation of TEN-T infrastructure to ensure the continuity of bicycle infrastructure for long-distance cycling paths such as the EuroVelo routes. These activities may include relevant adaptation of traffic signalling systems or the addition of infrastructure dedicated to cyclists and pedestrians, such as tunnels, bypasses, bridges, aerial cycling and walkways and protected cycling paths. They may cover activities extending along TEN-T routes or at crossings between TEN-T routes and long-distance cycling paths.”<sup>14</sup>*

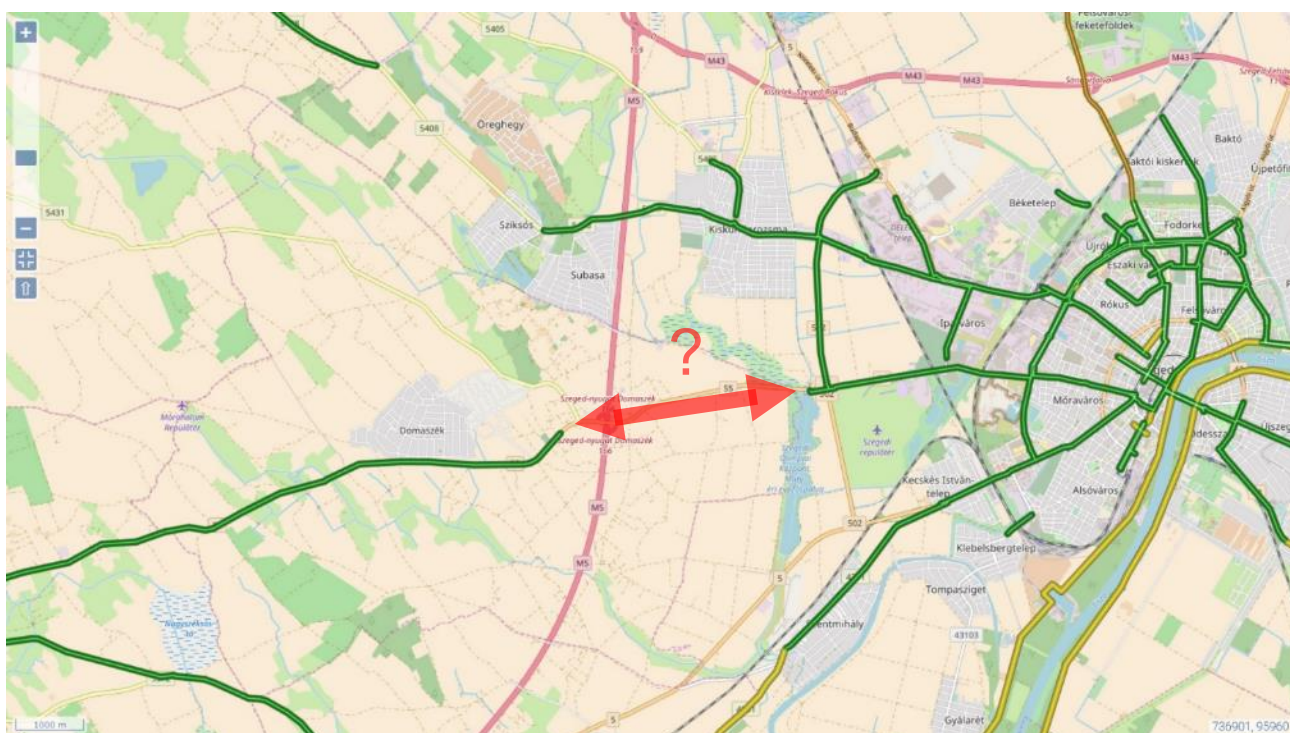
Several projects have taken advantage of this opportunity. However, this represents less than 1% of the interactions between EuroVelo routes and the TEN-T networks (see section 2.5). Based on the ECF's experience and observations, the legal basis and the CEF Calls that were published based on it were not encouraging enough for applicants.

Fully including EuroVelo, the European cycle route network, within the TEN-T would make investing in major cycling infrastructure projects much more feasible.

## 2. Integrate cycling infrastructure into all TEN-T infrastructure projects

### 2.1 Introduction

Elements of the TEN-T network are often considered to be a barrier and obstacle to development of active mobility in cities and regions that are investing in cycling. Sections of cycle routes following or crossing the TEN-T corridors are the most expensive and difficult to construct.<sup>15</sup> Motorways and ring roads cut off suburbs from core urban areas. In extreme cases, TEN-T (re)construction projects have uprooted<sup>16</sup> or divided<sup>17</sup> existing cycle paths or routes.



Construction of the M5 motorway in Hungary, which is part of the TEN-T core network, has interrupted a popular existing cycle path connecting the towns of Mórahalom and Domaszék with the city of Szeged. The cycle path was used both for commuting and as a part of EuroVelo 13, but the interchange of the M5 and national road 55 does not include any provisions for cyclists.

ECF recommends **evaluating the potential for cycling traffic in all TEN-T projects and integrating necessary elements of cycling infrastructure into project planning, design, and construction.** Depending on the network and type of project, this should include one or more of the measures listed in the table below. Wherever such measures are missing on an already completed section of TEN-T corridors, they should be eligible for EU funding as independent projects.

The following table shows which TEN-T networks should integrate which measures:

Measure	Railways	Roads	Inland waterways	Maritime (ports)	Air (airports)
Cycle routes along TEN-T corridors	+	+	+		
Safe and comfortable cycle crossings across TEN-T corridors	+	+	+		
Upgrade of other roads affected by TEN-T projects to safe-cycling standard		+		+/-	+/-
Cycling connections in TEN-T urban nodes		+/-		+	+

A similar approach has already been integrated into the recent revision of the Directive 2008/96/EC on road infrastructure safety management<sup>18</sup>, which obliged Member States to take into account the needs of vulnerable road users, such as pedestrians and cyclists, in the implementation of directive procedures.<sup>19</sup> This principle should also be reflected in the TEN-T guidelines and be extended from just roads to all the TEN-T networks.

## 2.2 Cycle routes along TEN-T corridors

Many TEN-T corridors provide an excellent opportunity for developing high-quality routes for active mobility. In particular, cycle highways along the TEN-T railroad lines, including sections of high-speed lines, have already proven to be successful projects in several Member States.<sup>20</sup> Cycle routes along inland waterways can serve both everyday commuting<sup>21</sup> and long-distance cycle tourism.<sup>22</sup> The key success factors include low gradients and limited amounts of crossings with the road network, as well as the easiness of integrating grade-separated crossings for cyclists at locations where roads cross a TEN-T railroad or waterway.



The F1 cycle highway in Belgium between Mechelen and Antwerp follows a high-speed TEN-T railroad line. The benefits of the investment exceed the costs by a factor of 14.<sup>23</sup> Photo credit: ECF.



There is also significant existing or potential cycle traffic along the TEN-T road corridors. Typical contexts where this is currently the case include:

- roads that connect suburban areas or satellite towns with the main city of an agglomeration.
- legacy roads with housing and workplaces developed along them, upgraded to expressway or motorway status.
- ring roads with workplaces (shopping malls, outlets, warehouses, business parks etc.) developing along them.<sup>24</sup>
- a single connection across a barrier where cyclists have no choice but to use it, such as a bridge across a major river or road leading to a border crossing, coastal road, mountain pass, etc.
- alternative routes that also carry heavy traffic and provide even worse conditions for cycling (narrow carriageway with no hard shoulders, poor surface quality, etc.).

The road administrations responsible for the TEN-T network have focused mostly on car traffic up until recently, but there is a growing recognition that more focus will need to be put on taking the needs of cyclists and pedestrians into account in the future.<sup>25</sup> Providing safe and attractive conditions for active mobility can release capacity for transnational traffic on many sections of TEN-T roads that are currently used by regional or local car traffic as well.<sup>26</sup>



TEN-T roads often do not provide sufficient pedestrian and cycling infrastructure. Triq l-Imġarr, Għajnsielem, Malta. Photo credit: ECF.

Many TEN-T corridors (road, railroad, inland waterways) are accompanied by so-called **service roads** – either to provide access to housing, agricultural and forestry areas along the corridor or for maintenance or emergency purposes. These service roads typically carry very low volumes of motorised traffic and can be safely shared by pedestrians and cyclists. For a relatively small cost they can be connected through short sections of cycling infrastructure to form a continuous link for active mobility.<sup>27</sup> This extra step improves the efficiency of investments and serves to make better use of existing infrastructure.



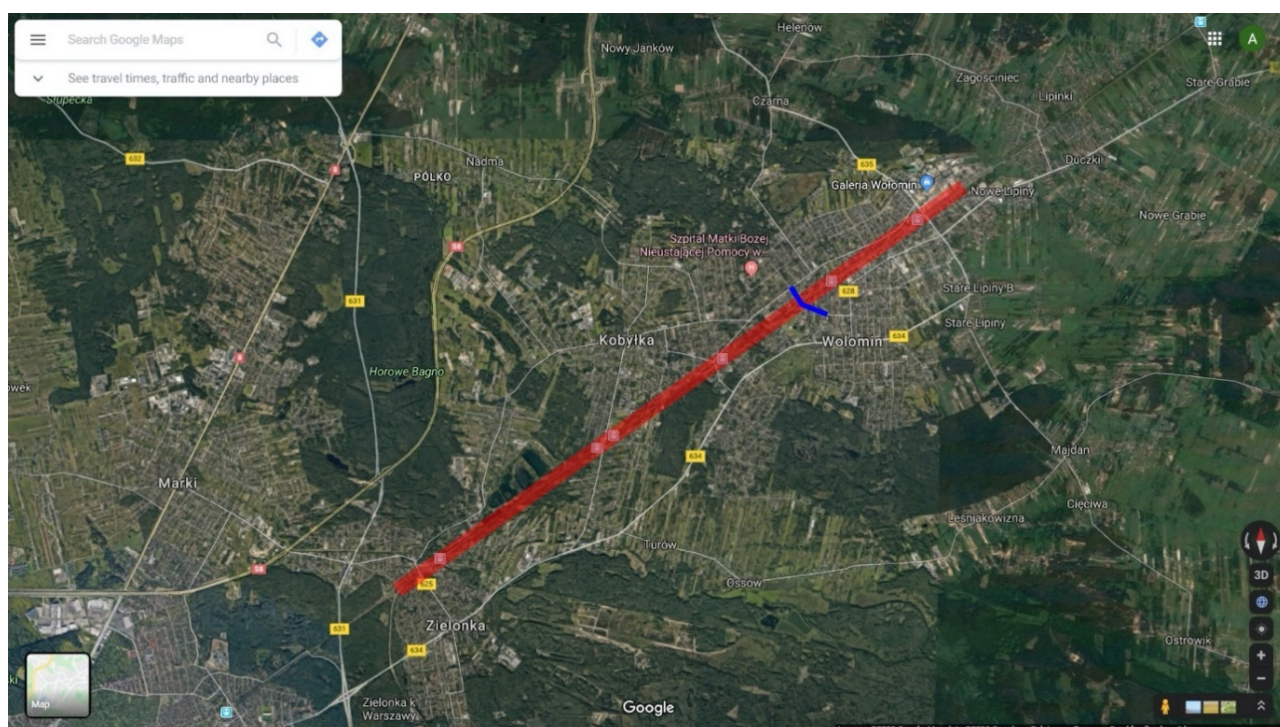
The F3 cycle highway connecting Brussels and Leuven in Belgium reuses, to a large degree, service roads built as part of an upgrade of a TEN-T railroad corridor to high-speed standard. However, several critical bridges and tunnels were not included in the upgrade project and had to be constructed separately, at higher cost and with disruptions for users.<sup>28</sup> Photo credit: ECF.

## 2.3 Cycle crossings across TEN-T corridors

Insufficient density of crossings over/under a motorway or a railroad line creates a barrier for active mobility. While a detour of a few kilometres can be acceptable for car traffic, it usually makes the distance prohibitive for daily walking or cycling trips, contributing to a shift to unsustainable transport modes.

Additionally, if a TEN-T corridor is only crossable by main roads, this concentrates the pedestrian and cycling traffic on the main roads. Even if a main road is redesigned and equipped with segregated pedestrian and cycling infrastructure in the crossing area, there might be a lack of this infrastructure further on. Insufficient density of crossings might therefore negatively impact road safety and mobility even a few kilometres away from the TEN-T corridor, which may not be reflected in a simple analysis of the corridor itself.





As a part of the Rail Baltica corridor, a 10-km section of the rail line between Zielonka and Wołomin in Poland (red line) was upgraded to a quadruple track with co-financing from the EU's Cohesion Fund (Operational Programme "Infrastructure & Environment", priority axis "Environment-friendly transport"). The section cuts in half three towns with a total of 90,000 inhabitants, but only one cycle crossing (in blue) was provided in the project, in comparison to five crossings for cars. Background map data © Google.

## 2.4 Impact of TEN-T projects on wider area

TEN-T projects often affect the surrounding road network in the area, even a few kilometres away from the (re)constructed infrastructure. For example, a regional road with previously low traffic where cyclists had been able to safely cycle on the carriageway can become an important link to a newly constructed motorway. The resulting increase in traffic might make it necessary to segregate pedestrian and cycling traffic.

Similarly, the construction or extension of an airport or seaport can increase the traffic on the roads providing access to it. TEN-T airports and seaports are also important centres of commercial activity, often offering a concentration of workplaces.<sup>29</sup> To ensure good accessibility in busy urban nodes, an option to reach these areas by bicycle both for commuters and tourists should also be available. Pilot projects to ensure cycle highway access to major airports are already underway.<sup>30</sup>

On the other hand, if a TEN-T road (re)construction project provides a new route for long-distance traffic to bypass settlements, for instance, the old route needs to be adapted to the new role. This can be done by introducing traffic calming measures, cycle lanes etc. This has usually not been part of TEN-T project planning so far. The intended effects such as improving safety and quality of life by removing the long-distance traffic from the sensitive area therefore often depended on further actions of local municipalities.



## 2.5 Importance of the issue

To gain an understanding of how much potential there is to integrate cycling infrastructure into all TEN-T infrastructure projects, ECF overlayed the EuroVelo network with the current TEN-T networks<sup>31</sup>. This highlighted that there are 7,861 locations in the EU+UK where the EuroVelo routes run along or across TEN-T roads, railways, or inland waterways. The total length of sections where a EuroVelo route overlaps with existing TEN-T networks adds up to nearly 10,000 km.

If the EuroVelo network is included in the TEN-T, as per our first request, then such overlaps should be automatically picked up and acted upon. However, the EuroVelo routes only represent part of the picture. They form the backbone of much larger national, regional, and local cycle route networks. The opportunities (and need) to incorporate cycling infrastructure in TEN-T projects is therefore far greater than the numbers referred to in the paragraph above. This should be taken into account in the current TEN-T revision to foster a truly connected and sustainable European transport system.

# References

<sup>1</sup> European Parliament / Council of the European Union (2013): REGULATION (EU) No 1315/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU, available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1315>. European Commission (2019): Public Consultation on the TEN-T guidelines, available at: [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-4706847/public-consultation\\_en](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-4706847/public-consultation_en).

<sup>2</sup> Cycling reduces CO<sub>2</sub> emissions, air and noise pollution, soil and water pollution, resource consumption, road maintenance costs, congestion, mortality and morbidity, the risk for various physical and mental diseases, and absenteeism at work. It creates jobs, including in remote areas, boosts technology and innovation, frees urban space and improves the quality of life, connectivity, and gender equality. Compare ECF (2018): The benefits of cycling, available at: <https://ecf.com/sites/ecf.com/files/TheBenefitsOfCycling2018.pdf>.

<sup>3</sup> Council of the European Union (2018): Graz Declaration, available at: <https://www.eu2018.at/latest-news/news/10-30-Graz-Declaration.html>.

<sup>4</sup> Government of Luxembourg (2015): Informal meeting of EU ministers for Transport, Luxembourg - Declaration on Cycling as a climate friendly Transport Mode, available at: <https://ecf.com/files/wp-content/uploads/Declaration-of-Luxembourg-on-Cycling-as-a-climate-friendly-Transport-Mode.pdf>.

<sup>5</sup> Political declaration of the Benelux countries beyond COVID-19; the urgent need for stimulating bicycle use as a necessary, safe and healthy alternative in (urban) mobility, available at: [https://www.benelux.int/files/4415/9471/6873/FINAL\\_layout\\_Political\\_Declaration\\_of\\_the\\_Benelux\\_countries\\_bike\\_stimulation.pdf](https://www.benelux.int/files/4415/9471/6873/FINAL_layout_Political_Declaration_of_the_Benelux_countries_bike_stimulation.pdf).

<sup>6</sup> In the Netherlands, the numbering of fast cycling routes (snelfietsroutes) already mirrors the numbering of motorways. The cycle highway does not necessarily stay just next to the motorway. It might lead along local roads 500 m away but connects the places along the motorway and is part of an integrated mobility solution such as Park & Bike facilities.

<sup>7</sup> For example, providing sufficient density of crossings for pedestrians and cyclists on a TEN-T network ring road can enable alternative corridors for active mobility, connecting suburbs with the city centre, instead of channelling all types of traffic into the same urban feeder road. Likewise, if a city provides space for cycling in the urban feeder route, taking the needs of cyclists in the TEN-T interchange area and further on into account is necessary for optimal use of the developed infrastructure.

<sup>8</sup> High quality cycling infrastructure can relieve congested sections of long-distance routes from short-distance traffic. Providing a cycle highway is usually cheaper than adding motorway lanes for short-distance commuters. A study undertaken by Dutch consultancy Goudappel Coffeng concluded that building 675 km of cycle highways would reduce the time spent in congestion in the Netherlands by 3.8 million hours per year. A further 9.4 million hours of car travel time could be saved each year if the use of electric bicycles increased. Similarly, a traffic demand study in Germany's densely populated Ruhr area estimates that the 100-km cycle highway RS1 can remove some 52,000 motorised vehicle journeys per day. The total cost of RS1 is put at €180 million (€1.8 million/km), which is significantly more cost-efficient than motor vehicle road projects.

<sup>9</sup> Opponents of the idea to integrate cycling into TEN-T claim that TEN-T networks serve long-distance traffic and cycling is only for short distances. However, this argument is flawed. Compare Aleksander Buczyński: "Traffic on TEN-T and EuroVelo: international or local?", available at: [https://pro.eurovelo.com/news/2020-10-08\\_traffic-on-ten-t-and-eurovelo-international-or-local-](https://pro.eurovelo.com/news/2020-10-08_traffic-on-ten-t-and-eurovelo-international-or-local-).

<sup>10</sup> For instance, a section the F3 cycle highway between Zaventem and Herent in Belgium makes use of service roads built as part of a TEN-T railroad corridor upgrade.

<sup>11</sup> In the Dutch province of Gelderland, the cycle highway F15 was integrated into the design extension of the A15 motorway (part of the TEN-T comprehensive network). The costs are estimated to be three times lower than those of cycle highway F325, which was built as an independent project along the A325 motorway.

<sup>12</sup> According to a study commissioned by the European Parliament, the total estimated economic impact of the EuroVelo Network when complete is 60 million trips per year generating €7.6 billion of direct revenue annually. See European Parliament (2012): The

European Cycle Route Network EuroVelo - Challenges and Opportunities for Sustainable Tourism, available at: [https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL-TRAN\\_ET\(2012\)474569](https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL-TRAN_ET(2012)474569).

<sup>13</sup> Compare Haubold, Holger (2018): Cost-benefit analysis for cycling, ECF paper, available at: [https://pro.eurovelo.com/download/document/Haubold\\_Cost-benefit%20analysis%20for%20cycling.pdf](https://pro.eurovelo.com/download/document/Haubold_Cost-benefit%20analysis%20for%20cycling.pdf).

<sup>14</sup> European Commission (2014): Call For Proposals Concerning Projects Of Common Interest Under The Connecting Europe Facility In The Field of Trans-European Transport Network, available at: [https://ec.europa.eu/inea/sites/inea/files/download/calls2014/cef\\_transport/calltexts/\\_140910\\_cef\\_transport\\_annual\\_call\\_final.pdf](https://ec.europa.eu/inea/sites/inea/files/download/calls2014/cef_transport/calltexts/_140910_cef_transport_annual_call_final.pdf).

<sup>15</sup> For example, on the F3 cycle highway in Belgium, the cost of the cycling bridge across the Brussels ring road, which is part of three TEN-T core road corridors, is estimated to be €24 million – more than all the other necessary investments between Brussels and Leuven combined.

<sup>16</sup> For example, the construction of the M5 motorway in Hungary, part of the Budapest-Belgrade connection, cut a popular existing cycle path connecting the towns of Mórahalom and Domaszék with the city of Szeged in two. The cycle path was used both for commuting and as a part of EuroVelo 13 – Iron Curtain Trail. Following the motorway construction, the cycling connection is interrupted, as the junction of the M5 motorway and national road 55 does not include any cycling facilities in the complicated interchange. The construction of a separate cycle bridge and additional cycling infrastructure will be necessary.

<sup>17</sup> For example, the construction of the Marynarska interchange in Warsaw, Poland, funded by the EU's Cohesion Fund under the "TEN-T road and air transport network" priority, had a negative impact on the cohesion of the city cycling network. A business district with 100,000 workers was effectively cut off from southwestern Warsaw. It also made it more difficult to access a TEN-T airport and a popular station on a TEN-T railroad line. See: <https://ecf.com/news-and-events/news/will-eu-continue-spend-billions-projects-make-it-unsafe-and-difficult-cycle>.

<sup>18</sup> Directive (EU) 2019/1936 of the European Parliament and of the Council of 23 October 2019 amending Directive 2008/96/EC on road infrastructure safety management: <https://eur-lex.europa.eu/eli/dir/2019/1936/oj>.

<sup>19</sup> Key changes in the directive on Road Infrastructure Safety Management: [https://ecf.com/sites/ecf.com/files/key\\_changes\\_in\\_the\\_rism\\_directive\\_20191206.pdf](https://ecf.com/sites/ecf.com/files/key_changes_in_the_rism_directive_20191206.pdf).

<sup>20</sup> For example, the cycle highways F1 Mechelen-Antwerp and F3 Brussels-Leuven in Belgium; RS1 near Mülheim in Germany; or de Liemers (Arnhem-Zevenaar) in the Netherlands.

<sup>21</sup> These include, for instance, the cycle highways F5, F13, F17, F20, F23 or F78 in Belgium.

<sup>22</sup> Examples include EuroVelo 6 – Atlantic-Black Sea along the Danube, EuroVelo 8 – Mediterranean Route along the Po river, EuroVelo 15 – Rhine Cycle Route, EuroVelo 17 – Rhone Cycle Route, or EuroVelo 19 – Meuse Cycle Route. Cycle routes along rivers are regularly among the most popular routes.

<sup>23</sup> Compare Buekers, Jurgen et al. (2015): Health impact model for modal shift from car use to cycling or walking in Flanders: application to two bicycle highways, Journal of Transport and Health, available at: <https://doi.org/10.1016/j.jth.2015.08.003>.

<sup>24</sup> For instance, on a section of the S8 expressway in Warsaw that was equipped with cycling paths, 200-400 bicycles were counted during peak hours between May and June 2017: <http://rowery.um.warszawa.pl/sites/rowery.um.warszawa.pl/files/Warszawski%20Pomiar%20Ruchu%20Rowerowego%202017%20-%20cz%20C4%99%C5%9B%C4%87%20opisowa.pdf>.

<sup>25</sup> Compare CEDR Position Paper 2016: Main Road Safety Challenges for European Road Directors in the Next 5-10 Years – Towards the Vision Zero, available at: [http://www.cedr.eu/download/Publications/2016/Main\\_Road\\_Safety\\_Challenges\\_for\\_European\\_Road\\_Directors\\_Oct2016.pdf](http://www.cedr.eu/download/Publications/2016/Main_Road_Safety_Challenges_for_European_Road_Directors_Oct2016.pdf). An example of a new approach is the Highways England Interim Advice Note 195/16: Cycle Traffic and the Strategic Road Network, available at: <http://www.standardsforhighways.co.uk/ha/standards/ians/pdfs/ian195.pdf>.

<sup>26</sup> Regional or local car traffic is often the primary source of traffic on these roads. The annual average daily traffic on the S8 expressway in the Mazovian voivodship in Poland varied between 14,000 vehicles/day at the border with the Podlaskie voivodship (95 km from Warsaw) and 30,000 vehicles/day at the bypass of Radzymin (15 km from Warsaw) and 142,000 vehicles/day in Warsaw in 2015. The huge increase in traffic on the last 15 km implies that most of it is generated by commuting on shorter stretches that can also be served by (electrically assisted) bicycles.

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<sup>27</sup> Compare “Rowerowa S5”, an initiative by local municipalities to connect service roads along the S5 expressway in Poland into a continuous and safe cycle highway: <http://www.portalsamorzadowy.pl/inwestycje/burmistrz-rawicza-proponuje-rowerowa-trase-z-wroclawia-do-poznania-wzdłuż-s5,76477.html>.

<sup>28</sup> Presentation of the F3 cycle highway from the Cycle Highway Academy in Leuven, October 2018: <http://www.nweurope.eu/media/4636/20181010-cha5-3b-introduction-to-f3-deel-cha.pdf>.

<sup>29</sup> For instance, approximately 81,000 people work in 450 companies and organisations concentrated in Frankfurt Airport City.

<sup>30</sup> Examples: cycle highway connecting Frankfurt Airport with the city centre or integrating access to business districts around Brussels Airport into development plans of the F3 cycle highway Brussels-Leuven.

<sup>31</sup> The analysis does not include the most recent addition to the European cycle route network, EuroVelo 14. See <https://pro.eurovelo.com/news> for a detailed breakdown of interactions between networks and methodology.



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