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# Draft of 22 February 2021

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**Preparatory meeting to the Fifth High-level Meeting on Transport, Health and Environment**  
2 March 2021

## **Draft pan-European master plan for cycling promotion**

**Submitted by Austria and France, leaders of Partnership on cycling promotion**

### *Summary*

At the Fourth High-level Meeting on Transport, Health and Environment (Paris, 14–16 April 2014), member States decided “to initiate the development of a pan-European Master Plan for Cycling Promotion, supported by guidelines and tools to assist in the development of cycling promotion policies at the national level. This new initiative will be undertaken within the framework of [the Transport, Health and Environment Pan-European Programme (THE PEP)] partnerships” (ECE/AC.21/2014/2–EUDCE1408105/1.6/4HLM/2, annex, para. 10). The Transport, Health and Environment Pan-European Programme (THE PEP) Partnership on cycling promotion, led by Austria and France, undertook the drafting of a master plan. The Steering Committee commented on the first draft of the master plan at its sixteenth meeting (Geneva, 12–14 December 2018) and, at its seventeenth meeting (Geneva, 21–23 October 2019).

An extraordinary meeting of THE PEP – (Geneva (online), 22 April 2020) – agreed that a topic directly addressing the impact of the coronavirus disease (COVID-19) pandemic and cycling’s potential role in making transport systems more resilient should be added to the draft Master Plan, a new draft of which would be presented during the eighteenth session of the Steering Committee<sup>a</sup>. The toolbox, to be annexed to the Master Plan, could also include good practice examples of countries’ approach to dealing with the current crisis and strengthening and improving conditions for cycling.

The Steering Committee, at its eighteenth session, (online, 25-27 November 2020) welcomed the changes to the draft, including the new topic “Promoting cycling for a more resilient transport system”, which was developed in the context of the pandemic, and the three new related recommendations. It also welcomed the work undertaken to develop an infrastructure module, under the auspices of the ECE Working Party on Transport Trends and Economics, and requested to include the way forward for the implementation of the infrastructure module in chapter 5.

The present document was further discussed and modified at meetings of the Partnership on cycling (online, 12 January 2021; and 15 February 2021); and at Preparatory meetings to the Fifth High-level Meeting (online, 25 January and 2 March 2021).

The current version was received by the secretariat from the leaders of the Partnership. The current draft shows in track changes the new text introduced after the eighteenth session of the Steering Committee.

The Master Plan also exists in a longer and more technical version, which the High-level Meeting may wish to publish.

<sup>a</sup> See Report of the extraordinary meeting available at  
<https://thepep.unece.org/sites/default/files/2020-06/Report%20special%20THE%20PEP%20meeting%20clean%20for%20web.pdf>

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We, the Ministers of Transport, Health and Environment of the States in the pan-European region, gathered in Vienna on the occasion of the fifth High-level Meeting on Transport, Health and Environment, have [adopted] this pan-European Master Plan for Cycling Promotion.

## I. Vision and objectives

1. Our vision is to promote cycling, which will contribute to sustainable livelihoods, a better environment, improved health and safety, greater social inclusion and economic prosperity, and overall improvement in the quality of life of our citizens. To that end, we acknowledge cycling as an equal mode of transport and have developed this pan-European Master Plan for Cycling Promotion.

2. By promoting cycling, the Master Plan will contribute to the goals identified under the Transport, Health and Environment Pan-European Programme (THE PEP) by:

- Contributing to sustainable economic development and stimulating job creation. The cycling industry and cycling tourism have high economic potential. In the pan-European region, an estimated 750,000 jobs are connected to cycling;<sup>1</sup>
- Promoting a more efficient transport system. Some 131 billion passenger-kilometres, replacing 42 billion passenger-car-kilometres, are cycled annually in the region (Box 3);
- Reducing emissions of transport-related greenhouse gases. Doubling the current level of cycling would reduce greenhouse gas (GHG) emissions by 8 million tons of carbon dioxide equivalent (CO<sub>2</sub>e) with indirect economic benefits of €1.1 billion per year in the region (Box 4);
- Promoting policies conducive to healthy and safe modes of transport. Doubling the current level of cycling would prevent 30,000 premature deaths with indirect economic benefits amounting to €78 billion per year (Box 5);
- Integrating transport, urban and spatial planning policies. Cyclists' needs can be met by providing seamless infrastructure and enabling connectivity, accessibility and multimodality when integrating transport, health and environmental objectives into urban and spatial planning policies.

3. To achieve our vision, we have established the following objectives to be implemented by 2030 in the pan-European region:

- (a) To significantly increase cycling in every country to contribute to the overall target of doubling cycling in the region as a whole;
- (b) To increase the overall transport system's resilience by providing appropriate space in favour of cycling and walking;
- (c) To extend and improve the infrastructure for cycling and walking in every country in the region;
- (d) To develop and implement national cycling policies, supported by national cycling plans, strategies and programmes including the setting of national targets in every country in the region;
- (e) To significantly increase cyclists' safety in every country in the region and to significantly reduce the number of fatalities and serious injuries in the region as a whole;
- (f) To integrate cycling into health policies, including those tackling non-communicable diseases and obesity;
- (g) To integrate cycling, including cycling infrastructure, into land use, urban, regional and transport infrastructure planning.

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<sup>1</sup> <https://thepep.unece.org/node/86>.

4. In order to monitor progress towards these objectives, we will develop, improve and follow indicators such as the modal share of cycling, number of national cycling plans and number of fatalities and serious injuries of cyclists per kilometre cycled annually, using 2020 as the baseline year (see recommendation 8.1).

### **A. Political mandate**

5. Our vision is based on the decision, adopted at the Fourth High-level Meeting on Transport, Health and Environment (Paris, 14–16 April 2014), “to initiate the development of a pan-European Master Plan for Cycling Promotion, supported by guidelines and tools to assist in the development of cycling promotion policies at the national level. This new initiative will be undertaken within the framework of THE PEP partnerships” (ECE/AC.21/2014/2–EUDCE1408105/1.6/4HLM/2, annex, para. 10).

6. We acknowledge the work carried out under THE PEP Partnership on cycling promotion, jointly coordinated by the Federal Ministry of Sustainability and Tourism of Austria and the Ministry for an Ecological Transition of France with the involvement of 25 countries, the European Cyclists’ Federation (ECF) and the secretariats of the ECE Sustainable Transport and Environment Divisions and World Health Organization Regional Office for Europe (WHO/Europe).

### **B. Recommendations for action**

7. The Plan includes recommendations (section IV) based on evidence and good practice from the region, collected in an annex presenting a toolbox of actions for cycling promotion (annexes are not included in this shortened version of the Master Plan). Member States can select those recommendations most applicable to their needs and requirements based on their administrative system, geographical conditions (including climate) and objectives with respect to cycling.

### **C. Cycling promotion requires the cooperation of all stakeholders**

8. In many countries, responsibility for cycling has been devolved to the subnational level. Regional and local authorities can be highly effective as catalysts and engines of cycling promotion in the pan-European region and should receive as much financial, legislative and political support as possible from the national level. Therefore, despite the wide range of competences across the region, national authorities are the Plan’s main target group. Cycling promotion requires cooperation (or inter-agency agreements) between the responsible and affected ministries (health, environment, transport and, in some cases, infrastructure, education, tourism, the interior and finance). The Plan addresses national authorities in their role as coordinators with other relevant authorities and stakeholders involved where appropriate.

9. Cycling fits perfectly within the scope of THE PEP as a unique policy platform that encourages transport policymakers and urban planners to consider the health and environmental impacts of transport and to address them through integrated policy approaches at the national level.

10. Some of the recommendations call on international, regional and supranational organizations, such as ECE, the European Union, WHO/Europe and the international financial institutions, to support national authorities by advocating for change. As members of these organizations and institutions, member States have a powerful voice in their decision-making and can also advocate for cycling at the international level.

11. The aforementioned authorities, institutions and organizations are both target groups and direct beneficiaries of activities under the Plan; however, civil society (including the private sector, and particularly the bicycle economy) is the ultimate beneficiary.

## II. Cycling in the pan-European region

12. New bicycles sold in Europe outnumber new passenger car registrations.<sup>2</sup> As at the end of 2017, public bicycle-sharing systems have been implemented in more than 1,250 cities worldwide, operating more than 10 million shared bicycles and sustainably meeting the need for transport and access to services, jobs, education, amenities and leisure for an increasing number of citizens<sup>3</sup> (see Box 1 below).

13. Some countries in the region have a long cycling tradition, with a large proportion of their population cycling, whereas the importance of cycling for transport, health, environment and the economy is barely recognized in other countries.

14. The Netherlands is leading the ranking in the pan-European region with more than one quarter (27%<sup>4</sup>) of trips done by bicycle. Countries like Denmark (15%<sup>5</sup>), Belgium (12%<sup>6</sup>) and Germany (11%<sup>7</sup>) are already beyond the 10% threshold. Slovak Republic<sup>8</sup>, Switzerland<sup>9</sup> and Austria<sup>10</sup> could be called climbing cycling nations with 7% of trips travelled by bicycle. Below 5% we find countries like Norway (4,3%<sup>11</sup>), Italy (3,3%<sup>12</sup>), France (2,7%<sup>13</sup>) and Luxembourg (2%<sup>14</sup>). Some of them report tremendous increases of bicycle usage due to Corona crises in 2020. As the methodologies applied to survey these figures as well as the year of surveying differ widely it is not possible to directly compare these figures nor to give a complete picture of bicycle usage in the countries of the pan-European region. 15. Exemplary approaches in cycling-oriented countries show that cyclists' needs should be promoted as an equal component of an integrated transport and mobility policy. This requires powerful political support at all levels in order to develop a national cycling culture. According to recent ECF research on national cycling policies and plans and on the ongoing updating of this information by actively involved members of THE PEP Partnership, 16 countries currently have national cycling plans or similar policy documents in place: Austria, Belgium (with Flanders, Wallonia and the Brussels-Capital Region each having their own plan), Czechia, Denmark, Finland, France, Germany, Hungary, Ireland, Luxembourg, Netherlands, Norway, Slovakia, Sweden, Switzerland and the United Kingdom of Great Britain and Northern Ireland (with England, Northern Ireland, Scotland and Wales each having their own plan). Italy, Malta, the Russian Federation, Slovenia and Spain are currently developing such plans.

16. European Commission statistics show that in countries that have a national cycling plan in place, a higher percentage of people use the bicycle as their preferred transport mode.<sup>15</sup>

### Box 1

#### Status of cycling

Cycling tourism has great promise, especially for peripheral regions, offering significant development potential for new touristic regions. In the European Union, tourists make

<sup>2</sup> [https://issuu.com/conebi/docs/european\\_bicycle\\_industry\\_\\_market\\_\\_8e7511a5a2e3fe](https://issuu.com/conebi/docs/european_bicycle_industry__market__8e7511a5a2e3fe).

<sup>3</sup> [www.rolandberger.com/en/Publications/Bike-Sharing-Cornerstone-in-future-urban-mobility.html](http://www.rolandberger.com/en/Publications/Bike-Sharing-Cornerstone-in-future-urban-mobility.html).

<sup>4</sup> Statistics Netherlands (CBS) (Netherlands Travel Survey (OVIN) 2016

<sup>5</sup> Transportvaneundersøgelsen 2019-2019" from DTU, Center for Transport Analytics

<sup>6</sup> Enquête Monitor sur la mobilité des Belges- FPS Mobility and Transport- Legal depot : D/2019/13.831/10; published Décembre 2019 » (data 2017)

<sup>7</sup> infas, DLR, IVT: Mobilität in Deutschland 2017, im Auftrag des BMVI

<sup>8</sup> national mobility survey 2015

<sup>9</sup> Mikrozensus Mobilität und Verkehr 2015

<sup>10</sup> National Travel Survey "Österreich Unterwegs" 2013/2014

<sup>11</sup> Norwegian National Travel survey 2019

<sup>12</sup> Isfort, 17° Rapporto sulla mobilità degli Italiani, 2020

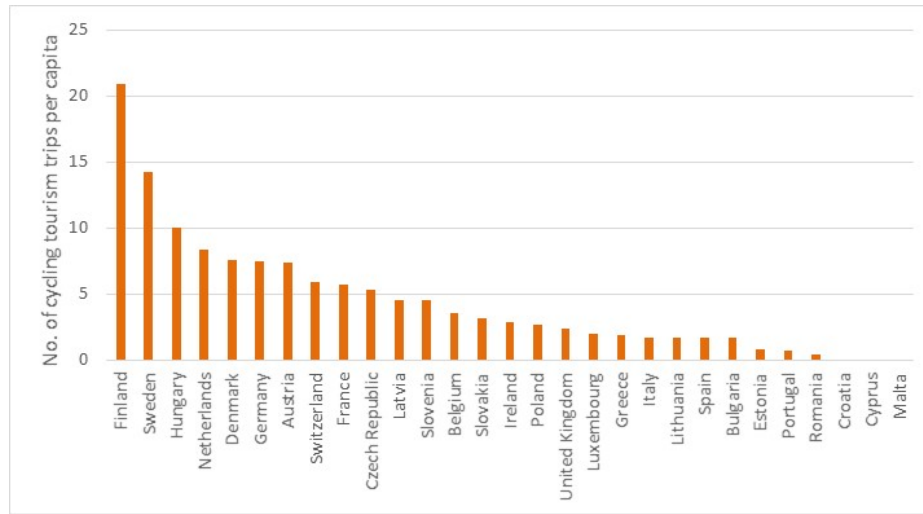
<sup>13</sup> Ministère de la transition écologique, Enquête de mobilité des personnes 2019

<sup>14</sup> Nationale Mobilitätsstrategie MoDu 2.0

<sup>15</sup> [https://data.europa.eu/euodp/data/dataset/S2017\\_82\\_2\\_422A\\_422B](https://data.europa.eu/euodp/data/dataset/S2017_82_2_422A_422B).

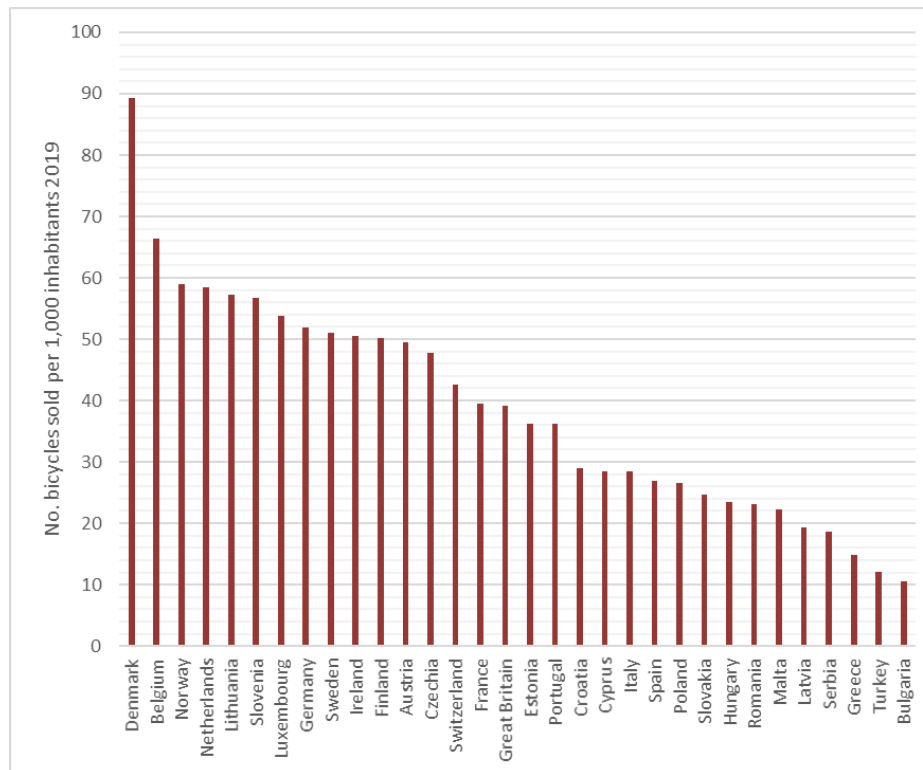
over 2.2 billion cycle trips and 20 million overnight cycle trips each year, making such tourism an important factor in regional economic development.

Figure II  
**Cycling tourism – Number of trips per capita**



Source: European Cyclists’ Federation, *Cycling Barometer 2013*; and Swiss Federal Roads Office, “Velofahren in der Schweiz 2014”, in *Materialien Langsamverkehr*, vol. 132 (2015).

Figure III  
**Bicycle sales 2019**



Source: For the European Union, Confederation of the European Bicycle Industry (CONEBI), *2020 European bicycle industry and market profile*, 2020 edition incl. Turkey; for Serbia Cycling Association of Serbia; for Switzerland Vélosuisse (Swiss Association of Bicycle Suppliers), for Norway Bicycle retailer’s organization; population figures for EU 28 incl. Switzerland, Serbia, Norway, Turkey from EUSTAT;

### III. Benefits of cycling

17. This chapter focuses on the benefits of regular cycling related to transport, the environment and health, the economy and the job market. Benefits are calculated by applying state-of-the-art instruments (e.g. the WHO/Europe Health Economic Assessment Tool (HEAT) for walking and cycling<sup>16</sup>) derived from studies based on the assumption that the objective of doubling cycling across the region will be achieved. References to THE PEP goals are provided.

18. Cycling contributes to implementation of the 2030 Agenda for Sustainable Development and pursuit of the Sustainable Development Goals.<sup>17</sup> Of particular relevance are Goals 1 (End poverty in all its forms everywhere), 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), 3 (Ensure healthy lives and promote well-being for all at all ages), 5 (Achieve gender equality and empower all women and girls), 7 (Ensure access to affordable, reliable, sustainable and modern energy for all), 8 (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all), 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation), 11 (Make cities and human settlements inclusive, safe, resilient and sustainable), 12 (Ensure sustainable consumption and production patterns), 13 (Take urgent action to combat climate change and its impacts) and 17 (Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development).<sup>18</sup> Walking and cycling are viable mobility options for essential trips – especially short- and medium-distance trips – even during transport system-disrupting events such as pandemics.

19. While many pan-European region countries keep statistics on the number of kilometres cycled,<sup>19</sup> in those countries where no such statistics are kept, members of the Partnership worked with experts to calculate the benefits of cycling.<sup>20</sup>

#### A. Contribution to sustainable economic development and job creation

20. Doubling cycling in the region would create additional jobs and increase the turnover in retail bicycle sales. Cyclists also support rural and local economies (Box 2).

##### Box 2

##### **Cycling contributes to sustainable economic development and job creation**

Cycling creates jobs! Approximately 750,000 jobs are linked to cycling in the pan-European region and that number has been increasing in recent years.<sup>21</sup> Relevant economic sectors include: the construction/maintenance of cycling infrastructure, the bicycle-racing industry; cycling-related research; bicycle repair; bicycle hire schemes; and bicycle courier services. Calculations based on the report, *Cycling Works: Jobs and Job-Creation in the Cycling Economy*<sup>22</sup> indicate that doubling the modal share of cycling in the European Union (8 per cent as at 2014) would create an additional 400,000 jobs and an additional €3.5 billion turnover in retail bicycle sales.

Cycling supports the rural and local economy. According to one study, cyclists spend, on average, three to four times as much money in each place visited as car-borne visitors<sup>23</sup> while daily cyclists ride shorter distances than they would drive by car and hence prefer

<sup>16</sup> [www.heatwalkingcycling.org/#homepage](http://www.heatwalkingcycling.org/#homepage).

<sup>17</sup> <https://sustainabledevelopment.un.org/?menu=1300>.

<sup>18</sup> <https://ecf.com/groups/cycling-delivers-global-goals>.

<sup>19</sup> Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Slovakia, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland.

<sup>20</sup> Excluding Canada and the United States of America.

<sup>21</sup> <https://thepep.unece.org/node/86>.

<sup>22</sup> <https://ecf.com/groups/cycling-works-jobs-and-job-creation-cycling-economy>.

<sup>23</sup> [https://www.cyclinguk.org/sites/default/files/document/migrated/campaign/0902\\_ctc\\_newvision\\_final-low-res.pdf](https://www.cyclinguk.org/sites/default/files/document/migrated/campaign/0902_ctc_newvision_final-low-res.pdf).



local shops over shopping malls outside a town or city. Thus, cycling promotes local supply and a carefully devised mixture of residential areas and accompanying infrastructure as the basis for a sustainable form of living.

## B. Support for sustainable mobility

21. Cycling is one of the most space-efficient modes of transport and the fastest and most efficient mode of travel for distances of up to five kilometres. Doubling cycling in the region would increase the share of public space available to people by reducing congestion, with indirect economic benefits of €4.9 billion (Box 3).

### Box 3

#### Cycling supports sustainable mobility

European cities are challenged by increasing urbanization and population growth and public space is limited. City structures rarely allow for construction of additional areas for motorized traffic and current infrastructure is stretched to the limit.

In October 2018, an Informal Meeting of European Union Environment and Transport Ministers endorsed the Graz Declaration<sup>24</sup> inviting the European Commission to develop and deliver the comprehensive strategy for, and a pathway towards, sustainable, clean, safe, affordable and inclusive mobility in Europe, with appropriate packages by 2021. The Graz Declaration took stock of the Declaration on Cycling as a Climate-friendly Transport Mode adopted in October 2015.<sup>25</sup> Cycling is one of the most space efficient modes of transport. A parked car needs more than eight times, and a moving car 28 times, the space required by a moving bicycle.<sup>26</sup> After decades of car-oriented planning in cities such as Berlin, the traffic area reserved for cars is 19 times greater than that reserved for cyclists.<sup>27</sup> Doubling cycling will make an increasing share of public space available to people.

A substantial percentage of daily car trips might be replaced by cycling, as over 50 per cent of all trips are shorter than five kilometres.<sup>28</sup> With proper infrastructure, cycling is the fastest and most efficient way to travel short distances, as cyclists can usually follow the most direct route at a higher average speed. Some 131 billion passenger-kilometres are cycled annually in the pan-European region, replacing approximately 42 billion passenger-car-kilometres per year, and doubling cycling would double the number of kilometres shifted. This assumption is based on current data: the average for the analysed portions of the pan-European region is 144 kilometres per year. However, it should be noted that cycling replaces not only car trips (32 per cent), but also public transport trips (42 per cent) and 26 per cent of walking trips. Electric bicycles compete favourably with cars for trips of up to 10 kilometres<sup>29</sup> and electric cargo bicycles are efficient where car traffic is limited or banned. Compared to walking, cycling extends catchment areas for routes to and from stations from two to six kilometres with the same energy input.<sup>30</sup>

<sup>24</sup> [www.eu2018.at/latest-news/news/10-30-Graz-Declaration.html](http://www.eu2018.at/latest-news/news/10-30-Graz-Declaration.html).

<sup>25</sup> [www.eu2015lu.eu/en/actualites/communiqués/2015/10/07-info-transports-declaration-velo/07-Info-Transport-Declaration-of-Luxembourg-on-Cycling-as-a-climate-friendly-Transport-Mode---2015-10-06.pdf](http://www.eu2015lu.eu/en/actualites/communiqués/2015/10/07-info-transports-declaration-velo/07-Info-Transport-Declaration-of-Luxembourg-on-Cycling-as-a-climate-friendly-Transport-Mode---2015-10-06.pdf)

<sup>26</sup> <https://english.kimnet.nl/publications/publications/2018/04/06/cycling-facts>.

<sup>27</sup> [www.clevere-staedte.de/files/tao/img/blog-news/dokumente/2014-08-05\\_Flaechen-Gerechtigkeits-Report.pdf](http://www.clevere-staedte.de/files/tao/img/blog-news/dokumente/2014-08-05_Flaechen-Gerechtigkeits-Report.pdf).

<sup>28</sup> [www.statistiques.developpement-durable.gouv.fr/sources-methodes/enquete-nomenclature/1543/139/enquete-nationale-transports-deplacements-entd-2008.html](http://www.statistiques.developpement-durable.gouv.fr/sources-methodes/enquete-nomenclature/1543/139/enquete-nationale-transports-deplacements-entd-2008.html); and information received from the German Federal Ministry of Transport, Building and Urban Development (2016).

<sup>29</sup> [www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/hgp\\_electric\\_bikes\\_get\\_things\\_rolling.pdf](http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/hgp_electric_bikes_get_things_rolling.pdf).

<sup>30</sup> Hermann Knoflacher, *Grundlagen der Verkehrs- und Siedlungsplanung: Verkehrsplanung* (Vienna, Böhlau Verlag, 2017).

The space efficiency of cycling helps to prevent congestion, making it possible to convert areas formerly dominated by motorized traffic into leisure areas providing a high-quality living environment. Cycling is independent of timetables and external energy. Reducing congestion by doubling cycling will yield indirect economic benefits of €4.9 billion.<sup>31</sup>

Replacing car trips with cycling trips reduces road construction and maintenance costs for municipalities. Based on findings of the Organization for Economic Co-operation and Development (OECD) data on infrastructure investment<sup>32</sup> and infrastructure maintenance,<sup>33</sup> expert calculations show that doubling the current level of cycling in the countries included in the estimates would save €0.7 billion in road infrastructure investment and €0.4 billion in road maintenance.

After walking, cycling is the cheapest mode of transport. Because bicycles are more affordable and more democratic than cars, more people can afford them. Thus, cycling has direct social benefits, democratizing mobility, increasing autonomy and contributing to the achievement of Sustainable Development Goal 10 (To reduce inequality within and among countries).

### C. Reduced emissions and energy savings

22. The transport sector is one of the main GHG emitters and the only sector in which emissions have increased since 1990. By replacing passenger-car-kilometres, cycling directly reduces fuel consumption, GHG emissions, air pollutants and noise. Doubling cycling in the region will have the following indirect economic benefits:

- (a) Reduce GHG emissions by 8 million tons of CO<sub>2</sub> with a savings of €1.1 billion per year;
- (b) Reduce air and noise pollution with a savings of up to €0.8 billion per year;
- (c) Save up to €2.6 billion per year in fuel costs (Box 4).

#### Box 4

##### **Cycling reduces emissions and generates energy savings**

The Paris Agreement under the United Nations Framework Convention on Climate Change offers a way forward in limiting temperature rise to well below 2° C (or even 1.5° as an ambitious goal). The former objective will require reducing GHG emissions by 80 to 95 per cent by 2050.<sup>34</sup> EU is even going a step ahead by committing to climate-neutrality by 2050<sup>35</sup>. Replacing passenger-car-kilometres also reduces fuel consumption, GHG and air pollutant emissions and noise. According to ECF, passenger cars emit about 271 grams of CO<sub>2</sub>e per km.<sup>36</sup> Doubling the current rate of cycling will reduce GHG emissions by 8 million tons of CO<sub>2</sub>, yielding €1.1 billion in indirect economic benefits per year.<sup>37</sup>

<sup>31</sup> Based on a United Kingdom of Great Britain and Northern Ireland WebTAG price for congestion ([www.gov.uk/guidance/transport-analysis-guidance-webtag](http://www.gov.uk/guidance/transport-analysis-guidance-webtag)). See also European Climate Foundation, Annual Report 2016: Embracing Tipping Points (2016).

<sup>32</sup> <https://data.oecd.org/transport/infrastructure-investment.htm>.

<sup>33</sup> <https://data.oecd.org/transport/infrastructure-maintenance.htm>.

<sup>34</sup> [www.roadmap2050.eu/attachments/files/Volume1\\_fullreport\\_PressPack.pdf](http://www.roadmap2050.eu/attachments/files/Volume1_fullreport_PressPack.pdf). See also United Nations Framework Convention on Climate Change, *National greenhouse gas inventory data for the period 1990–2013* (FCCC/SBI/2015/21).

<sup>35</sup> [https://ec.europa.eu/clima/policies/strategies/2050\\_en](https://ec.europa.eu/clima/policies/strategies/2050_en)

<sup>36</sup> <https://ecf.com/groups/cycle-more-often-2-cool-down-planet-quantifying-co2-savings-cycling>.

<sup>37</sup> Economic Commission for Europe, ForFITS Model: Assessing Future CO<sub>2</sub> Emissions (n.d.), available at [www.unece.org/trans/theme\\_forfits.html](http://www.unece.org/trans/theme_forfits.html); Ibid., Development and implementation of a monitoring and assessment tool for CO<sub>2</sub> emissions in inland transport to facilitate climate change mitigation, informal document No. 2, seventy-third session of the Inland Transport Committee

Air pollutants such as nitrogen oxides (NOx) and particulate matter (PM) are caused to a great extent by motorized traffic. NOx is mainly emitted by diesel vehicles and exceeds the health-compatible limits in several cities. Consequently, the number of low-emission zones is increasing. Furthermore, WHO estimates that almost 83 per cent of the population of the cities for which PM data exist are exposed to concentrations of particles with a diameter of less than 10 µm (PM10) exceeding the WHO air quality guidelines.<sup>38</sup> Cycling, which emits neither NOx nor PM, significantly improves air quality, especially where it is most needed: in cities.

The indirect economic benefits of reducing air pollution by doubling the current rate of cycling will amount to €0.4 billion per year. Assuming that the fleet comprises 41 per cent diesel cars and 54 per cent petrol cars<sup>39</sup> and that the share of the fleet that meets emission standards<sup>40</sup> is known, the costs of air pollution can be estimated using the *Handbook on External Costs of Transport*.<sup>41</sup>

The indirect economic benefits of reduced noise pollution from doubling the current level of cycling will amount to €0.4 billion per year. The European Environment Agency states that “road traffic is the most dominant source of environmental noise with an estimated 125 million people in the European Union affected by noise levels greater than 55 decibels (dB) Lden (day-evening-night level)”.<sup>42</sup> As cycling is noiseless, a higher modal share – especially in cities, where population density is high, distances between home and transport routes are low – will reduce noise pollution and increase quality of life.

Except where electric bicycles are recharged using fossil-fuel-generated electricity, riding a bicycle uses no fossil fuel. The indirect economic benefits of the fuel saved by doubling the current level of cycling amount to €2.6 billion per year. Replacing passenger-car-kilometres reduces fuel consumption. In calculating these benefits, a fuel price of €0.08 per kilometre and €1.32 per litre (average of diesel and petrol, Eurostat, 2014) and an average consumption of 6.1 litres per 100 kilometres (ECE) has been used. Cycling thus contributes to the decarbonization of the economy.

## D. A healthier and safer society

23. Cycling reduces physical inactivity and sedentary lifestyles, the health impact of which have an estimated cost of \$54 billion in direct health care and an additional \$14 billion in lost productivity. Doubling the current level of cycling will reduce absenteeism at work, resulting in up to €7 billion in indirect economic benefits per year. It will also prevent 30,000 deaths and provide €78 billion in indirect economic benefits (Box 5). During the pandemic, cycling emerged as both an effective way to support physical distancing and meet the minimum requirement for daily physical activity, and an effective mode of transport for essential trips. In a situation where people seek to minimize travel distances, walking and cycling have proved to be more suitable means of transport.

(Geneva, 10–13 October 2017); and Michael Replogle and Lew Fulton, “A Global High Shift Scenario: Impacts and Potential for More Public Transport, Walking, and Cycling with Lower Car Use”, in *International Journal of Sustainable Transportation*, vol. 8 (2014). An updated study by the Institute for Transportation and Development Policy and the University of California–Davis is available at [www.itdp.org/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario\\_Nov-2015.pdf](http://www.itdp.org/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf).

<sup>38</sup> [www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2013/health-effects-of-particulate-matter.-policy-implications-for-countries-in-eastern-europe,-caucasus-and-central-asia-2013](http://www.euro.who.int/en/health-topics/environment-and-health/air-quality/publications/2013/health-effects-of-particulate-matter.-policy-implications-for-countries-in-eastern-europe,-caucasus-and-central-asia-2013).

<sup>39</sup> [www.acea.be/statistics/article/vehicles-in-use-europe-2017](http://www.acea.be/statistics/article/vehicles-in-use-europe-2017).

<sup>40</sup> [www.eea.europa.eu/data-and-maps/indicators/proportion-of-vehicle-fleet-meeting/proportion-of-vehicle-fleet-meeting-1](http://www.eea.europa.eu/data-and-maps/indicators/proportion-of-vehicle-fleet-meeting/proportion-of-vehicle-fleet-meeting-1).

<sup>41</sup> [https://ec.europa.eu/transport/sites/transport/files/handbook\\_on\\_external\\_costs\\_of\\_transport\\_2014\\_0.pdf](https://ec.europa.eu/transport/sites/transport/files/handbook_on_external_costs_of_transport_2014_0.pdf).

<sup>42</sup> [www.eea.europa.eu/publications/noise-in-europe-2014](http://www.eea.europa.eu/publications/noise-in-europe-2014).

## Box 5

**Cycling contributes to a healthier and safer society**

Physical activity has multiple health, social, environmental, cultural and economic benefits for individuals, communities and nations. Regular activity is a well-established factor in preventing the leading noncommunicable diseases, including heart disease, stroke, type 2 diabetes and breast and colon cancer. It also helps to prevent other important noncommunicable disease risk factors such as hypertension and obesity and is associated with improved mental health, delayed onset of dementia and improved quality of life and well-being.

According to WHO, levels of insufficient physical activity are high worldwide: 27.5 per cent of adults and 81 per cent of adolescents do not meet the global minimum recommendations for physical activity (150 – 300 minutes of moderate-intensity aerobic physical activity or at least 75 to 150 minutes of vigorous-intensity aerobic physical activity per week for adults and at least 60 minutes of moderate-to-vigorous-intensity physical activity daily for children and young people aged 5 to 17)<sup>43</sup>. The global cost of physical inactivity is estimated to be \$54 billion per year in direct health care, in 2013, with an additional \$14 billion attributable to lost productivity.<sup>44</sup>

Cycling significantly reduces physical inactivity. Regular cycling to work has been found to reduce the total risk of mortality by about 10 per cent.<sup>45</sup> While active travellers should consider health risks such as the increased risk of road traffic injuries and rate of air pollution inhalation, the health benefits of physical activity outweigh the associated risks or costs with a median rate of 9 to 1.<sup>46</sup>

Reduced absenteeism at work resulting from the doubling of the current level of cycling will amount to €7 billion in indirect economic benefits per year.<sup>47</sup> A high percentage of cycling among daily trips has a significant impact on cyclists' mental and physical health, reducing the number of sick days taken, healthcare costs for public and private health insurance and loss of workforce.

Doubling the current level of cycling would prevent 30,000 deaths (primarily from increased physical activity) and provide an indirect annual benefit of €78 billion.<sup>48</sup>

However, to ensure that cycling delivers its full health benefit, it is imperative to address safety issues. A dedicated cycling infrastructure and road design aiming at reducing the average driving speed will encourage cycling and reduce the number and severity of collisions involving cars, cyclists and pedestrians.

Using OECD data on car crash fatalities,<sup>49</sup> European Union injury estimates<sup>50</sup> and casualty-related costs from HEAT, the indirect economic benefit of avoiding car accidents (reduced fatalities and serious or slight injuries) by doubling the current level of cycling is estimated at €3.0 billion per year. Based on a German cost-benefit study,<sup>51</sup> the indirect economic benefit of avoiding material damage from car accidents after doubling the current level of cycling in the region will amount to €4.9 billion per year.

<sup>43</sup> <https://www.who.int/publications/i/item/9789240015128>

<sup>44</sup> <http://apps.who.int/iris/bitstream/handle/10665/272722/9789241514187-eng.pdf>.

<sup>45</sup> <https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-014-0132-x>.

<sup>46</sup> Natalie Mueller and others, "Health impact assessment of active transportation: A systematic review", in *Preventive Medicine*, vol. 76 (2015), pp. 103–114.

<sup>47</sup> Calculation based on HEAT for the countries included in the estimates.

<sup>48</sup> Calculation based on HEAT.

<sup>49</sup> <https://data.oecd.org/transport/road-accidents.htm>.

<sup>50</sup> [http://ec.europa.eu/transport/road\\_safety/specialist/statistics/map-viewer/](http://ec.europa.eu/transport/road_safety/specialist/statistics/map-viewer/).

<sup>51</sup> Wolfgang Röhling and Tanja Schäfer, *Kosten-Nutzen-Analyse: Bewertung der Effizienz von Radverkehrsmaßnahmen – Schlussbericht* (Denzingen, Germany, Transport Consulting International, 2008).

## E. Inclusive, safe, liveable and resilient spaces

24. Cycling can transport as many people as private cars using far less space (Box 6). Investment in cycling infrastructure minimizes soil sealing (covering the ground with an impermeable material) and has cost advantages. Cycling-friendly redesign of traffic areas creates valuable public space, improving all inhabitants' quality of life. Cycling-friendly street design and shared spaces can be more easily adapted to changing conditions (as seen during the pandemic).

Box 6

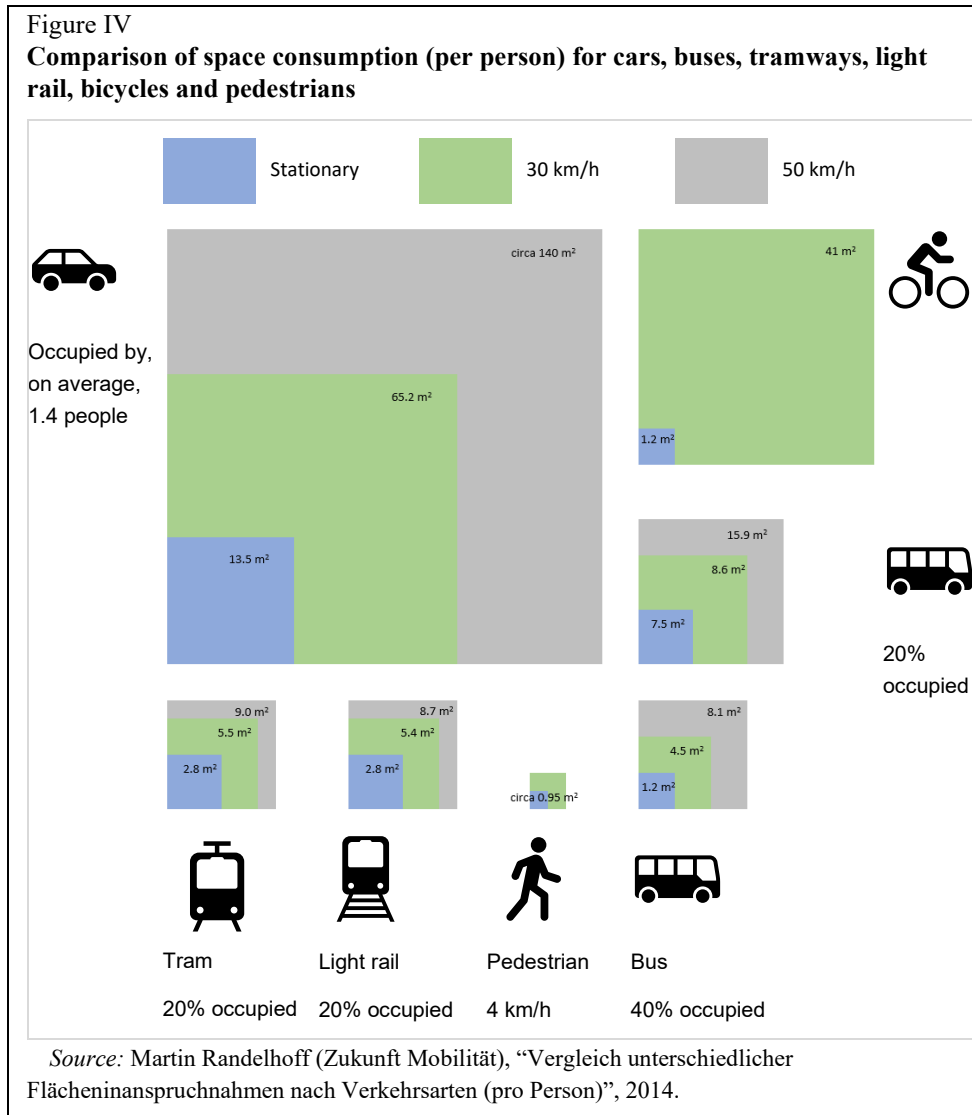
### **Cycling contributes to the creation of inclusive, safe, liveable and resilient space**

Space and soil are scarce resources. Therefore, the minimization of soil sealing (covering) and land use for transport infrastructure is an economic and ecological necessity. Large parts of Europe are highly fragmented because of transport infrastructure and urban sprawl. Particularly in urban areas, soil is being sealed by increasing housing and infrastructure construction. The advantages of cycling infrastructure over car infrastructure include reduced levels of soil sealing and fragmentation, as well as lower cost. The cycling-friendly redesign of traffic areas, including green spaces and public gardens, creates valuable public space, liveable areas and therefore improved quality of life for all.

As seen from figure IV, the same number of people can be transported by bicycle as by private car using far less space, especially in cities. In many downtown areas, parked cars take up valuable public space that could be eliminated by doubling the cycling rate. Cycling is of benefit to an integrated transport and urban planning approach, which should take into account the environmental and social quality of an area as perceived by residents, employees, customers and visitors.

The quality of an area is largely affected by conditions in public areas where people naturally interact with each other and their community, including streets and parks, and therefore by public policy and spatial planning decisions.

An integrated transport and urban planning approach will focus on mixed-use development that shortens travel distances and promotes walking and cycling. A good combination of density and mixed land usage can significantly increase cycling activities.



## F. Total benefits

25. The current benefits total over €130 billion per year and would rise to over €260 billion if the level of cycling were doubled in the region. The total benefit would be even higher, as some important benefits, such as aesthetics, fairness and equality, cannot be quantified monetarily.

## IV. Recommendations

26. The following recommendations offer possible actions for cycling promotion. Each country can choose those most applicable to its needs based on its administrative system (responsibility for cycling, if any, may be divided between various government sectors and administrative bodies at the national, regional and local levels), geographical conditions (including climate) and other country-specific factors. Special attention should be paid to the recommendations included under topic 11 providing guidance for appropriate actions to increase the resilience of the transport system during pandemics and other situations of crisis.

27. For a more detailed description of the recommendations, including a list of good practices, see the toolbox of actions for cycling promotion, based on the best available experience of countries in the pan-European region, which will be annexed to the Plan.

## 1. Develop and implement a national cycling policy, supported by a national cycling plan

28. In some countries in the pan-European region, cycling is not viewed as an equal mode of transport and is not fully incorporated into national policies on transport, health and environment, nor, in many cases, is it included in curriculums for future town planners.

29. A systematic plan, adopted internationally, will help national and local stakeholders streamline their efforts to promote cycling in order to address the aforementioned issues. National cycling plans are strategically important policy documents, providing a framework for expanding cycling at various policy levels and supporting regional and local authorities' efforts.

30. The following additional measures have proved effective in implementing national cycling plans: training (capacity-building) for the main stakeholders; establishment of a network of stakeholders; and appointment of a national cycling officer to steer the cycling promotion process.

### **Recommendation 1.1: Develop (and/or update) and implement a national cycling plan**

31. A national cycling plan provides a framework for the promotion of cycling at the national level. The plan and its objectives and recommendations should reflect the country's characteristics and include cycling policies and strategies. National authorities should coordinate, monitor and update implementation of the plan and ensure the involvement of all relevant stakeholders at the regional and local levels.

### **Recommendation 1.2: Create strong cycling working groups and appoint a national cycling officer**

32. Contacts and regular exchange of ideas between stakeholders at the local, regional and national levels and between the transport, health, environment and economic sectors should be ensured in order to improve understanding of cycling needs and requirements.

33. Countries should establish a national cycling officer (for countries that are just beginning to promote cycling) or a national cycling competence centre (for countries with longer experience). The officer/competence centre should ideally be supported by all relevant ministries and should have a specific mandate and a clear profile or description. The officer or the director of the competence centre should spend 100 per cent of his or her working time on cycling issues, have a strong technical competence, be empowered to reach out to a variety of stakeholders, play a coordinating and enabling role, be committed to and enthusiastic about cycling and cycle on a regular basis.

### **Recommendation 1.3: Establish a national knowledge centre or "bicycle academy" for the training of professionals and enhancement of skills**

34. Education, training and awareness-raising are the most efficient methods of transferring knowledge and disseminating cycling-friendly solutions. "Bicycle academies" – platforms for the exchange of know-how – can provide the necessary professional training and skill enhancement. They can be linked to existing research, academic and information institutions (of relevance to cycling), advocacy groups, non-governmental organizations, cycling embassies and international and local expert groups. To facilitate the exchange of know-how and cooperation among Member states a pan-European cooperation among the relevant institutions of the members states should be strengthened e.g. by developing centre of competence at the pan-European level.

## 2. Improve the regulatory framework for cycling promotion

35. Several countries have adopted standards and regulations adapted to the needs of cyclists and other countries might benefit from their experience.

36. Despite differences in regulatory frameworks, national authorities might adopt the good practices of other countries: steps taken in order to ensure the safety of cyclists and

pedestrians (e.g. traffic regulations, directional signage and traffic lights) should be compiled on a systematic basis and evaluated for use in other countries. Setting common standards for heavy goods vehicles (HGVs) can reduce or even eliminate blind spots and improve pedestrian and cyclist safety.

37. Improving regulatory frameworks can facilitate the smooth coexistence of all modes of transport. It improves safety, provides clear guidance for all concerned and acknowledges cycling as an attractive mode of transport.

38. Other types of vehicles such as cargo bicycles, delivery tricycles, handcycles and electrically assisted cycles offer a wide range of possibilities for new groups of users, compete for the existing infrastructure and are often not subject to regulation or standardization. They should be used as effectively as possible in order to tap their potential and increase the share of cycling, walking and public transport while taking care not to compromise the safety or convenience of other vulnerable users.

**Recommendation 2.1: Consider incorporating cycle-friendly regulations into traffic laws and guidance documents**

39. Many traffic laws and guidance documents still lack regulations designed to promote cycling and increase the safety of cyclists. Rules and principles that have proved effective should be considered for adoption by ECE and WHO member States. New rules that are consistent with national priorities and circumstances should be tested and evaluated from the point of view of their impact on safety, traffic and comfort.

**Recommendation 2.2: Create cycle-friendly traffic conditions**

40. On high-speed or high-density roads, a divided infrastructure increases cyclists' perception of safety and may attract more people to cycling. Where appropriate, traffic speeds should be limited to 30km/h or less where bicycles and motorized traffic mix but care should be taken so that speed control devices do not create hazards for cyclists. Where speeds cannot be lowered, or where justified by traffic densities, authorities should seek to separate bicycle and motor traffic whenever feasibly.<sup>52</sup>

**Recommendation 2.3: Improve and harmonize vehicle (equipment) specifications**

41. For other vehicles such as cargo bicycles and delivery tricycles, regulations should harmonize authorization and classification procedures in order to establish safety and behaviour rules and set up transnational standardization with a view to the development of a new ECE–WHO/Europe norm. To reduce the number of injuries and deaths from collisions with cyclists, local, national and international specifications for HGV design should address the blind spot problem and guidelines on HGV or lorry access restrictions and public procurement of HGVs in urban areas should be developed. The European Union initial qualification of professional drivers now includes references to cycling and urban driving.<sup>53</sup>

### 3. Create a user-friendly cycling infrastructure

42. Cycling infrastructure is constructed, managed, promoted and maintained at various administrative levels. Strategic planning is needed in order to connect these levels (e.g. flagship cross-border infrastructure, such as EuroVelo, and denser national networks). In many countries, existing design standards do not reflect cyclists' needs or ensure a coherent, attractive cycling network; a trans-European cycling network with a consistent interlinked structure should be created. European cycling routes should be planned with national routes as the backbone of the network, regional and local routes linking communities and some sections serving multiple needs. The development of a common methodology and framework, as initiated in the ECE Working Party on Transport Trends and Economics in the Infrastructure Module for the pan-European Master Plan for Cycling Promotion<sup>54</sup>, can serve

<sup>52</sup> Organisation for Economic Co-operation and Development, *Cycling, Health and Safety* (Paris, 2013).

<sup>53</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018L0645>.

<sup>54</sup> [http://www.unece.org/fileadmin/DAM/trans/doc/2020/wp5/WP5\\_id\\_2020\\_06e.pdf](http://www.unece.org/fileadmin/DAM/trans/doc/2020/wp5/WP5_id_2020_06e.pdf)



as a guideline for national, regional and local authorities. Each level of cycling infrastructure needs to be further managed, promoted, monitored and maintained. The outcome of this approach will provide greater safety, convenience and satisfaction for current cyclists and encouragement for potential ones.

**Recommendation 3.1: Develop or expand a methodology for and monitor implementation of a trans-European cycling network**

43. Through a coordinated approach involving ECE and WHO/Europe member States, ECE should support the development of a trans-European cycling network based on official national cycle routes and EuroVelo networks and incorporating urban networks and regional cycle routes.<sup>55</sup> The establishment of such a network will help national and regional governments to identify, design and prioritize backbone cycling corridors (see recommendation 3.2). National, regional and local governments might approach international financial institutions and other international donors with more structured and ready-to-be-financed project proposals (see recommendation 5.2).

**Recommendation 3.2: Coordinate the establishment and maintenance of trans-European, national, regional and local cycling networks including parking facilities**

44. The development of national cycle route networks should be coordinated at the national level while regional and local cycle networks should be coordinated by the relevant bodies. These may include trans-European routes (see recommendation 3.1) and/or connect with those of neighbouring countries. Such networks should be created in partnership with the relevant national, regional and local authorities and stakeholders, in light of their respective competencies, in order to ensure that the appropriate infrastructure for various purposes including bicycle parking facilities is in place.

**Recommendation 3.3: Standardize cycling infrastructure**

45. Minimum infrastructure quality standards that ensure the coherence, directness, safety, comfort and attractiveness of cycling networks should be adopted at the highest possible level and, at a minimum, as a condition for all projects financed by states, the European Union or international financial institutions (see recommendation 3.1). In order to increase its acceptance, the standardization process should be accompanied by promotion and training activities. Other infrastructure standards, such as those for bridge or tunnel design, should take these minimum quality standards into account.

#### **4. Provide sustainable investment and efficient funding mechanisms**

46. In order to achieve modal shift towards cycling, investment in infrastructure and promotion is needed (see recommendation 5.6). However, cycling is rarely valued as an equal mode of transport or included in national investment plans. Ensuring the allocation of sufficient budgetary resources should be an integral part of the development of national cycling plans. Experience shows that a sustained minimum level of investment is a prerequisite for significant improvement in cycling conditions. Financing should be provided at all administrative levels in order to foster the implementation of cycling measures and guarantee the maintenance of infrastructure. Since competencies in areas related to cycling vary from country to country, a set share of the national transport budget should be allocated to cycling over all levels of governance. In order to justify the allocated budget, new indicators that take the benefits of cycling into account should be used in cost-benefit analyses. This will raise the awareness of those benefits and change the perceptions of public authorities and sources of funding. International funding schemes might provide front-end financing but are seldom used to their full potential.

<sup>55</sup> Information on cycling infrastructure in the ECE area can be found in a study under preparation and that will be made available at the Fifth High-level Meeting.

**Recommendation 4.1: Set up sustainable national funding schemes to promote cycling**

47. One option for national authorities is to set up funding schemes to support local or regional authorities in their efforts to promote cycling. Cycling should be treated equally with other modes of transport when identifying and accessing financing measures including for infrastructure (examples are included in annex II of the Plan). It is crucial to sustain adequate investment levels over the long term in order to achieve a perennial modal shift. In addition to the financial engagement of the public sector, possibilities for private sector financing (e.g. for public bicycle-sharing systems) and other financial transport regulators (e.g. congestion charges, parking fees and a gasoline tax) should be explored. In the light of the substantial health benefits of cycling, financing from the prevention funds of health insurance providers may be an option, especially for promotional measures (see recommendation 6.1).

**Recommendation 4.2: Establish close cooperation with international financial institutions in order to ensure funding for cycling infrastructure**

48. Cycling infrastructure projects have a very high rate of return on investment, of up to 17 times (see annex II of Plan). Therefore, investments in cycling should be attractive for international financial institutions and other donors. Involving financial institutions could be the basis for additional funding opportunities. Often, donors have special conditions and rules for the financing of infrastructure projects, which require standardized key performance indicators and other relevant data (see recommendation 8.1). International funding workshops should support applicants in providing the necessary information and raise financial institutions' awareness of the benefits of investing in cycling projects.

**Recommendation 4.3: Consider the impact of cycling during investment decisions**

49. Considering the impact of and on cycling should be standard procedure in cost-benefit analyses of transport projects and should include transport, environment and health impacts. The issue should be addressed at the transnational level by developing an internationally agreed methodology for transport or urban development in cooperation with the international financial institutions, the international development agencies, ECE and WHO. This process should include a review of existing cost-benefit analyses in ECE and WHO/Europe member States and identification of the benefits and costs used. Guidance for assessing the health impact of transport or urban initiatives (e.g. using HEAT) that include their impact on cycling should be developed (see recommendation 8.3). Environmental impact assessment or, if appropriate, strategic environmental assessment should be standard procedure for transport projects, plans, programmes and policies.

**5. Include cycling in the planning processes and facilitate multimodality**

50. Cycling is often insufficiently integrated into the transport system, limiting the potential for everyday cycling over short distances. Cycling infrastructure is not considered until a very late stage of development projects, when all other infrastructure and facilities are already in place, raising the cost of subsequent adaptation.

51. Cycling should be included in the drafting of regulations on infrastructure planning. Cycling-friendly planning principles should be applied consistently during the planning process unless they are proved irrelevant. Cycling for everyday trips is most common over short distances and might be expanded by integrating it into the transport system as a whole. Close cooperation with all relevant stakeholders will help to operate the transport chain more efficiently.

52. Cycling-friendly spatial and land-use planning will make the most fundamental change visible: it will reduce transport needs, provide space for non-motorized traffic and result in more liveable and attractive cities and settlements.

**Recommendation 5.1: Incorporate cycling into all infrastructure planning**

53. Regulations at all administrative levels should establish basic principles for cyclist-friendly infrastructure planning. All relevant technical details should be provided in cycling planning guidelines, manuals and design standards, while ensuring flexibility in order to take local, regional and national circumstances into account. Guidelines, manuals and standards should be promoted and regularly updated. Close cooperation and harmonization with relevant institutions, agencies and affected stakeholders in adapting existing regulations is also necessary. The process should culminate in regulations and plans, followed by monitoring of their implementation.

**Recommendation 5.2: Consider cycling during spatial planning and incorporate it into building regulations**

54. Spatial planning should facilitate short trips suitable for cycling by ensuring an adequate land-use mix and considering the needs of cyclists and non-motorized traffic in general. Where all basic public services are provided at the local level, car trips can be replaced by cycling and walking.

55. Cycling-friendly building regulations should set detailed requirements (including secure bicycle parking, chargers, positioning of entrances, wide doors, oversized elevators, changing rooms, lockers and repair stands). ~~and those undergoing major renovations.~~

**Recommendation 5.3: Facilitate multimodality (cycling, public transport and walking)**

56. In order to facilitate bicycle transport, public transport vehicles should be able to carry bicycles comfortably and affordably. A smooth transfer between the bicycle network and the platform should be ensured by ramps, special staircases or elevators. The responsible institutions should include the necessary vehicle or service specifications in the tender documentation for public procurement and introduce attractive tariff systems.

Multimodality should be facilitated by providing secure and convenient bicycle parking at public transport stations as well as services such as public bicycle sharing schemes. While extending the catchment area of the stations, such facilities would enable attractive multimodal alternatives to car use for a large share of commuters.<sup>57</sup> Multimodal route planners and applications and traffic information systems should include cycling networks and bicycle-sharing schemes. The introduction of innovative e-ticket systems and mobility cards should cover all sustainable transport modes, including public transport, car-sharing, bicycle-sharing and secure bicycle parking.

58. In order to support multimodality and the integration of cycling into the infrastructure network, multimodal transportation agencies should be established. To that end, the relevant agencies must be identified and an agreement on basic cooperation principles reached.

**6. Promote cycling through incentives and mobility management**

59. Many countries offer tax benefits to people who use their cars or public transport for their daily commute; only a few countries do the same for cycling. Monetary incentives are a powerful tool that can change behaviour and enhance cycling's status. The recent introduction of electric bicycles expands the scope of bicycle use far beyond that of conventional bicycles in terms of distance and convenience. However, this potential is not being fully tapped owing to considerably higher purchase cost. The aim is to have cycling acknowledged and promoted as an equal mode of transport in the fiscal system, while improving public awareness and appreciation of it.

60. Monetary incentives might include, tax benefits, the installation of cycling infrastructure by companies and subsidies for commuting by bicycle. Electric mobility funding schemes should promote both electric cars and electric bicycles. Promotional campaigns should raise awareness of cycling and its benefits with a view to behaviour change and endeavour to attract groups that have not previously cycled.

**Recommendation 6.1: Introduce fiscal incentives for cycling**

61. Depending on the national fiscal system, the aim of a level playing field for commuting can be achieved in various ways. Examples of fiscal incentives include the introduction of a tax-free mobility budget, tax-free kilometric reimbursement for cycling to work, tax incentives for bicycles, cycling infrastructure for employees and facilitation of bicycle usage for business trips. Where there is no political majority for the introduction of a specific tax benefit for cycling, the elimination of subsidies for commuting by car can level the fiscal playing field for all modes of transport. Once fiscal incentives have been introduced, it is crucial to promote them in order to raise awareness among employers and other potential beneficiaries.

**Recommendation 6.2: Provide communities, companies and consumers with financial support for the purchase of bicycles (e.g. electric or cargo)**

62. Wider diffusion of high-quality conventional bicycles and innovative bicycles such as pedal electric bicycles (pedelecs), folding bicycles and cargo bicycles can steer behaviour away from car or van trips. Therefore, all electric-mobility strategies and funding schemes should include electric bicycles. In markets with low sales figures, a general subsidy of €500 for electric bicycles and €1,000 for electric cargo bicycles might help to bridge the price gap with conventional bicycles and facilitate market uptake. In countries where electric bicycles already have a large market share, fiscal incentives should focus on cycle use although financial support schemes (particularly for pedelecs and electric cargo bicycles, owing to their higher price, and for small businesses) may still be an option

**Recommendation 6.3: Promote the use of cycling through mobility management**

63. Campaigns to promote cycling, for both daily and touristic purposes are a necessary part of efforts to create a cycling culture. Mobility management offers a wide range of instruments designed to promote cycling and other sustainable modes of transport by including demand management for car use and changing travellers' attitudes and behaviour. At the core of mobility management are "soft" measures, such as information, promotion, organization, coordination, education and training, location and support, that enhance the effectiveness of "hard" measures (e.g. new bicycle lanes). In many cases, responsibility for these measures lies at the local and/or regional level. National authorities should have a clear understanding of their roles and responsibilities and provide a suitable framework to support local and regional efforts.

**7. Improve health and safety**

64. Each year, about 1 million deaths in the WHO/Europe region are attributed to insufficient physical activity.<sup>56</sup> Active mobility in the form of cycling as a means of transportation is a highly promising approach to the integration of physical activity into daily life. Measures designed to increase cyclists' safety should be incorporated into national and international road safety policies.

**Recommendation 7.1. Strengthen awareness among health professionals and build their capacity to advocate cycling as a tool for promoting physical activity and improving public health**

65. Regular cycling has significant health benefits. Public health professionals can be a strong voice in advocating for the inclusion of cycling in health policies and interventions. This requires developing well-structured, user-friendly guidelines for physicians and public health professionals, raising awareness of the links between active mobility and health and addressing issues related to specific health conditions. The guidelines, underpinned by strong scientific evidence, should include cycling as a preventive or rehabilitative treatment for some health conditions and in order to prevent various non-communicable diseases. They should also provide clear information on the recommended speed and duration of cycling for

<sup>56</sup> <http://www.who.int/nmh/publications/ncd-status-report-2014/en/>.

specific diseases in light of factors such as age and weight. Advocacy for and promotion of cycling should extend beyond the health sector to address the educational, occupational and recreational settings in which people live and work. In view of the reduced risk of non-communicable diseases, health insurance companies may wish to consider providing financial incentives for subscribers who cycle regularly.

**Recommendation 7.2. Integrate health- and cycling-related issues into formal and informal education and awareness-raising activities**

66. The health-related benefits of cycling should be promoted widely through formal and informal education at all educational stages, from early childhood. Ministries of health and education should include the health benefits of cycling, as well as traffic rules and road safety, in teaching curricula. For example, manuals written in a clear, concise and user-friendly style, followed by training and awareness-raising exercises, might be developed for teachers and parents. Children and youth should be given an opportunity to develop cycling skills and practise them safely. Opportunities to develop a safe cycling infrastructure, including protected parking places, and to facilitate regular cycling to school, university and other educational and recreational facilities should be sought. These measures should be integrated into schools' mobility management plans.

**Recommendation 7.3. Incorporate cycling into road safety policies**

67. Improving road safety for cyclists requires a holistic approach and should be integrated into road safety policies. Initiatives such as infrastructure and speed management are discussed in sections 2 and 3. Improving road users' behaviour through better information, education, awareness-raising and enforcement of traffic rules is an important aspect of road safety policy, as is vehicle – and especially motor vehicle – safety. Current technological developments such as Intelligent Speed Assistance (ISA) and Automatic Emergency Braking (AEB) and truck safety features such as better direct vision and turning assist will have a positive impact on cyclists and pedestrians and should be considered when setting ECE vehicle standards.

**8. Improve cycling statistics for use in efficient monitoring and benchmarking**

68. Assessing the benefits of cycle use requires the systematic collection of statistical data. A comparable, reliable statistical database for the pan-European region is a prerequisite for the monitoring and benchmarking of cycling promotion.

69. The first step will be to prepare an overview of existing data at the regional, national and pan-European levels. The next step will entail collecting comparable and reliable statistical data using a minimum set of indicators, including the modal share of cycling, the annual number of passenger-kilometres cycled per capita, the number of national cycling plans (status: developed, adopted or implemented), the annual number of cyclist fatalities per kilometre cycled, the number of countries that apply HEAT to cycling and walking, the number of kilometres of cycle infrastructure, the average number of bicycles per inhabitant and per household and the number of bicycles sold annually. With digitization and new technologies, new ways of collecting statistical data may be developed (see section 10). The aim is to collect baseline data at the national level for 2020.

70. This common database will have an immediate impact on the credibility stakeholders' arguments in favour of cycling and will be used in discussions with financial institutions and taxpayers regarding higher budget allocations to cycling. It will also serve as a powerful monitoring and evaluation tool for comparing the effectiveness of measures and identifying success factors (measures that might serve as best practice for other countries) that will attract available funds to the investments that promise the highest impact.

**Recommendation 8.1: Provide adequate and reliable statistical data for monitoring the level of cycling**

71. In order to assess the impact of cycling using a common methodology and to monitor progress in implementing the pan-European Master Plan for Cycling Promotion, a minimum set of data is needed. Based on the aforementioned overview of existing data at the regional, national and European levels (including quality), a minimum set of comparable, reliable and harmonized statistical data will be collected (e.g. by applying the Eurostat Passenger Mobility Guidelines or the outcome of the SHANTI Project).<sup>57</sup> Additionally, it is recommended that a national travel survey be conducted (or updated) in each country. This additional information will offer greater insight into the behaviour, needs and preferences of cyclists.

**Recommendation 8.2: Support countries' efforts to collect systematic, internationally-comparable data**

72. The ECE Inland Transport Committee Working Party on Transport Statistics, in cooperation with Eurostat and the International Transport Forum, already provides an internationally recognized framework and methodology for the collection of transport-related statistics, which should be expanded to include detailed cycling-related statistics (such as kilometres cycled and cycling fatalities), using existing data collection systems where possible.

**Recommendation 8.3: Highlight the benefits of cycling by developing and applying common tools**

73. HEAT can be used to estimate the value of the reduced mortality resulting from regular walking or cycling. The tool is designed to help urban planners, transport authorities and health practitioners to make the case for new investment in active mobility and quantify the economic value of active mobility. The newest version of HEAT includes modules on mortality from air pollution and road traffic injury and a module to estimate changes in carbon emissions resulting from modal shifts towards cycling and walking. Further improvements and tools are necessary in order to assess and highlight the impact of cycling on the economy using a common methodology and harmonized data.

## 9. Promote cycling tourism

74. Cycle tourism and recreational cycling are well established in many European countries and are making an increasingly significant contribution to national economies. According to a study commissioned by the European Parliament in 2012 and a THE PEP/ United Nations Environment Programme study on green jobs in cycling,<sup>58</sup> cycle tourism contributes more than €44 billion per year to the economy of the European Union, Norway and Switzerland combined, in addition to the related environmental and societal benefits. However, there is still a frequent lack of coordination between various levels of responsibility for the design of cycling tourism routes and accompanying services such as public transport and accommodation. In order to ensure the continued growth of cycle tourism and recreational cycling, it is vital to oversee their development at the national level by establishing national cycling tourism coordination centres and bringing together the relevant service providers through cycling-friendly service schemes. It is also necessary to adopt and implement a national standard for cycle route network signalization. If these measures are designed holistically, cycling tourism will reach a wider share of the market and become more accessible, acting as a gateway for subsequent use of bicycles in daily life.

<sup>57</sup> <https://circabc.europa.eu/sd/a/72b395b9-031e-424a-bee3-a34a1684d048/SHANTI%2520Eurostat%2520June%252017.pptx>.

<sup>58</sup> <https://thepep.unecce.org/node/86>.

**Recommendation 9.1: Establish national cycling tourism coordination centres**

75. The success of cycle tourism destinations requires the establishment of organizational structures to coordinate EuroVelo-related and other necessary actions at the national level. Such coordination would typically include the relevant national tourism ministry or authority, the national highway or transport ministry or authority, regional authorities, cycling organizations (representing users), organizations representing service providers (e.g. accommodation) and public transport operators. In addition to the identification of relevant stakeholders, the structure, legal status, tasks and responsibilities of the coordination centre must be established. While countries that are just beginning to promote cycling tourism might begin by establishing a working group with an initial contact point for inquiries, those with a long tradition of cycling tourism might set up a full coordination centre. Priorities and actions should be discussed during stakeholder workshops and financing secured.

**Recommendation 9.2: Introduce a national cycle-friendly service scheme**

76. Cycle tourists have specific needs (e.g. safe and secure bicycle parking and tools for repairing minor mechanical problems) and service providers that meet these requirements can advertise them to potential customers through national cycle-friendly service schemes; these have been established in many countries and are often run by the National EuroVelo Coordination Centre (see recommendation 3.1). However, some countries do not have such schemes and in others a variety of regional schemes create a confusing situation for users. Existing systems should be coordinated at the national level and a single set of criteria and financing model, including marketing, promotion and training activities, should be agreed.

**Recommendation 9.3: Adopt and implement national guidelines for the signalization of cycle route networks**

77. Some countries have no national guidelines or standard for the signalization of cycle routes. This entails the risk of signage that varies from one region to another or of a total absence of signage. National highway or transport authorities and governments should play a coordinating role in developing standards and adopting the corresponding regulations (see annex II of Plan). As they will be implemented at the local or regional level, the involvement of all stakeholders during the preparation phase is essential.

**10. Make use of new technology and innovation**

78. In recent years, technological development has accelerated and new types of bicycles, similar vehicles and tools that support cycling are ready for market and can make cycling more attractive, safer and more comfortable. Electric bicycles have become increasingly popular among both recreational users and commuters, who are discovering the advantages of electric support. The average distance covered during a daily commute can be almost doubled with the use of electric bicycles and speed pedelecs.

79. Innovative features such as travel and journey planners, data collection sensors and electric mobility have become available for cyclists as well. The Intelligent Transport System (ITS) can improve traffic management through communication between bicycles and traffic lights and with new technologies, the flow of cyclists can be recognized and prioritized. Data can be collected from tags placed on bicycles or through applications on cyclists' smartphones. Applications can also prevent bicycle theft, alert riders to open spaces in large bicycle parking areas, improve signage and provide Digital Information Services. It should also be borne in mind that the establishment of separate lanes for self-driving cars could reduce space for cyclists in inner cities and should be avoided.

80. The patchwork of technology associated with the bicycle sector is an unregulated industry that is difficult to compartmentalize. The role of government can be increased by setting agendas, adopting more open standards and encouraging cooperation, thus promoting cycling and benefiting users.

**Recommendation 10.1: Encourage vehicle and infrastructure innovation**

81. Governments can play an important role in promoting and funding innovation in bicycles and bicycle infrastructure. Bicycle innovations can, for example, help elderly people to keep cycling safely until a higher age. Such innovations include: saddles that lowers automatically when the cyclist stops, allowing elderly people to place both feet on the ground when stationary; and handle-bars that are automatically stabilized to allow the rider to keep cycling safely at low speeds. An example of a helpful infrastructure innovation is the rain sensor on traffic lights to give cyclists priority when it rains.

**Recommendation 10.2: Introduce open standards for data exchange and use smart data to improve cycling conditions**

82. The rise of numerous forms of data collection and innovative applications has resulted in a non-transparent patchwork of standards. As each developer focuses on the implementation of its own standards, data exchange is restricted. The introduction of open standards at the European Union or ECE level would make applications accessible to a broader public and promote better business collaboration. Possible applications include: multimodal travel information; public bicycle-sharing; bicycle parks; and theft prevention.

83. A better understanding of when and where people cycle and where they do not, which routes they choose and what speeds are most common will facilitate the development of strategies (see recommendations 8.1 and 8.2) that promote cycling and make it more comfortable.

84. Governments should cooperate with third parties and develop information-sharing strategies so that data collected from cyclists can be used to improve urban cycling and made available to interested stakeholders. For example, public bicycle-sharing systems in various cities and countries might benefit from open standards and interoperable systems, particularly given the growth of mobility as a service.

**Recommendation 10.3: Support innovative cycling approaches to last-mile services**

85. The issue of last-mile logistics for e-commerce and home shopping is essential to the sustainability of cities and the safety of pedestrians and cyclists. Innovative cargo bicycles provide solutions to this problem. Relevant products and vehicles must be identified and tested in the local environment with legislation or regulations amended where necessary. The benefits of newly-developed solutions should be evaluated carefully. Support and supervision should be provided by national ministries. To preserve the accessibility and liveability of cities, the number of cars entering inner cities needs to be decreased. Stimulating last-mile solutions for passenger transport, such as “Park and Bike” locations and encouraging bicycle sharing, combined with mobility management measures including higher parking rates, can be implemented in many cities.

**11. Promote cycling for a more resilient transport system**

87. On 11 March 2020, the WHO declared the COVID-19 outbreak to be a pandemic. The pandemic strongly affected societies and their economies, causing unplanned changes, including to mobility and transport.

88. During lockdown, transport emissions dramatically decreased, due to limited circulation of vehicles, including motorized ones. Public transportation was most hit, with travellers avoiding using it for fear of contagion, or because the passenger-carrying capacity of vehicles was reduced to maintain physical distancing. Walking and cycling emerged as viable mobility options for essential especially short and medium distance trips for three main reasons:

- (a) Provision of physical distancing while travelling;
- (b) Changing travel patterns, with many people and children practising teleworking or distance learning due to lockdown restrictions, therefore meeting their daily needs close to home;



## (c) Partial substitution of public transport.

89. The three above-mentioned reasons contribute to increasing cities' resilience to possible future shocks of a similar nature, in addition to contributing to health and environment, and bringing economic benefits. As such, WHO recommended walking and cycling for essential - especially short and medium distance - trips whenever feasible during lockdown (WHO, 2020)<sup>59</sup>.

90. The link between active mobility and urban resilience is two-fold. On the one hand, increases in cycling (and walking) support a modal shift towards active mobility for short and medium distance trips and help reduce the pressure on public transport during peak hours. On the other hand, these increases are enablers of shifts towards the "city of proximity", where citizens can meet their essential daily needs within distances that could be conveniently covered on foot or by bike.

91. The reallocation of space from cars allows a growing number of cyclists and pedestrians to move safely while maintaining physical distancing during the pandemic. Furthermore, these measures, even if temporary, allowed many citizens to experiment with cycling and walking under safer conditions, possibly contributing to unleashing a new demand and greater political backing for measures supporting active mobility. Many cities and central Governments began creating dedicated cycle paths, reducing speed limits and subsidizing bike purchases to encourage cycling.

**Recommendation 11.1: Redistribute road space fairly among all road users**

93. The situation during the pandemic demonstrated that urban areas should consider redistributing road space to include walking and cycling. The main principle should be that pedestrians and cyclists are equal road users on the street and public space should be divided equitably among all involved.

94. New cycling facilities, for instance (temporary bike lanes and widening pavements, make essential travel possible and safe. Reshaping roads in built up areas is another important mean to calm traffic and make it more safe and attractive for cyclists and pedestrians.

**Recommendation 11.2: Optimizing public spaces and making them attractive and enjoyable**

95. Besides widening pavements and introducing new cycling facilities, reallocating space from cars should create more enjoyable, attractive spaces for more liveable cities. Relevant strategies could include: creating parklets;<sup>60</sup> installing climate adaptation elements, such as shade; and installing urban art. During the pandemic, tactical urbanism interventions, such as the use of traffic cones, plastic bollards and construction separators, were low-cost, temporary changes in the built environment to reclaim street space from car parking and travel lanes. Properly designed shared spaces are permanent elements in the road network, which can easily be adapted to changing framework conditions Multifunctional street areas could provide adequate means to increase cities' resilience.

**Recommendation 11.3: Integrate cycling into recovery and resilience plans**

96. Even during lockdown restrictions, bicycles can be a means of transport (besides walking) that is still available for essential trips. In addition to ensuring that cycling infrastructure can accommodate a potential wave of new cyclists, decision-makers need to develop plans to increase safety (for instance, by introducing low-speed zones), install new bike parking facilities, provide additional (e-)bikes in existing rental/sharing schemes and introduce new or expand existing subsidy schemes for buying new (e-)bikes or cargo bikes. These measures should be part of recovery and resilience plans on different levels that make it easier to respond to the challenges of pandemic crisis.

<sup>59</sup> See <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/technical-guidance/moving-around-during-the-covid-19-outbreak>

<sup>60</sup> Pavement extension that provides more space and amenities for people using the street.

## **V. Joint actions towards more active mobility in the pan-European region**

97. . By joining forces to strengthen cooperation, to provide competence and know-how and to provide adequate infrastructure, funding and comprehensive statistical data on the international level, the implementation of appropriate recommendations of the Master Plan on the national level will be supported and accelerated and pan-European cooperation strengthened.

98. THE PEP Partnership on Cycling will intensify and strengthen its cooperative efforts by actively involving member states, ECF, ECE WHO/Europe, international financing institutions and relevant stakeholder after 2021. The Partnership will continue to share good practices and monitor implementation of the Plan and will seek to expand its geographical scope to include countries that have not been involved in the past. It will report annually to the Steering Committee of THE PEP and prepare for a mid-term review of the Master Plan at the Sixth High-level Meeting.

99. A Pan-European Competence Centre for Active Mobility (Recommendation 1.3) will be designed and established in the frame of THE PEP. As a centre of excellence it will support the implementation of the Pan-European Master Plan and facilitate the work of the Partnership in close liaison with THE PEP secretariat. It will act as a hub to build up and strengthen the know-how for the implementation of the Master Plan among the ECE and WHO/Europe member States.

100. The Pan European Competence Centre for Active Mobility will build upon and sustainably interlink the valuable experiences and tools elaborated by the Partnership, the Danube Cycle Plans project and other relevant transnational projects and initiatives as well as the competence and experience of the members of THE PEP Partnerships who are invited to support and contribute to the development of the Pan European Competence Centre. Close links between the Pan-European Competence Centre, THE PEP Partnerships, THE PEP Academy and national cycling competence centres will be established in order to facilitate the information and know-how exchange and to support the capacity-building required for successful implementation of the Master Plan.

101. The Pan European Competence Centre for Active Mobility in close liaison with THE PEP secretariat and ECF may facilitate the development of national cycling and walking plans, strategies and transnational cooperation projects in the pan-European region.

102. The Trans-European Cycle Network (TEC) will be further developed and implemented as a crucial element for achieving the objectives set in the Master Plan. Close cooperation with the ECE and WHO/Europe member States, THE PEP Steering Committee, ECE Working Parties, such as the Working Party on Transport Trends and Economics and the Global Forum for Road Traffic Safety, international financial institutions and other donors will be of importance in that regard.

103. The process to elaborate the Infrastructure Module for the pan-European Master Plan for Cycling Promotion, as initiated under the ECE Working Party on Transport Trends and Economics will continue in support of Recommendations 3.1 and 3.2 to designate the TEC.

104. The data collection process on the already designated national cycling routes as well as planned routes will continue and be strengthened as far as possible. ECE and WHO/Europe member States are invited to work closely with the ECE secretariat in uploading the cycling routes data in geographical information system environment.

105. The ECE secretariat in collaboration with THE PEP and its members will assist the analysis of the national network data and show its results to ECE and WHO/Europe member States as a basis for designation of the trans-European Cycle Network.

106. ECE and WHO/Europe member States are invited to work closely with the ECE secretariat and its partners in examining draft definitions for various types of cycling infrastructure. Member States may wish to take a leading role for this work.

107. In addition, discussion on possible new road signs in support of road safety and cycling facilitation will continue building on the suggestions from the Infrastructure Module, Chapter 1.

108. Definitions and suggestions for new road signs as discussed under THE PEP will be shared, preferably by the lead member State, with the ECE Global Forum for Road Traffic Safety. This intergovernmental body will be invited to consider these definitions and suggestions with the view to agree how to incorporate them into the United Nations legal instruments such as the Vienna Conventions of 1968.

109. Financing from International Financing Institutions could increase the available budget for cycling promotion activities beyond investment at the national and European Union levels. Moreover, the Plan's development and adoption meets an important precondition for approaching international financial institutions and other donors by providing structured data and information in a form that is attractive to them. The next step will be to organize funding workshops with representatives of the various financial institutions in order to discuss options for financing the infrastructure elements necessary to implement the Trans-European Cycling Network and investments related to that.

110. Cycling data regularly collected in cooperation with other international institutions (e.g. ECE Inland Transport Committee Working Party on Transport Statistics, in cooperation with Eurostat and the International Transport Forum) will provide the relevant baseline data for monitoring the progress in the promotion of cycling in the pan-European region. In combination with improved tools, reliable data will help to provide the relevant arguments to allocate more money for cycling (see recommendations in topic 8).

111. These activities will facilitate the implementation of the Plan. They may be followed, as appropriate with efforts for elaboration of a possible legal instrument to strengthen action in line with the agreed vision.

112. The engagement of member states within THE PEP should not end with boosting cycling, the benefits of which are also applicable to walking. Expanding the scope of work to include walking and the entire range of active mobility would be the next logical step towards THE PEP vision.