

**UNECE**

# Recommendations for Green and Healthy Sustainable Transport – “Building Forward Better”

## THE PEP

Transport, Health  
and Environment  
Pan-European Programme



**UNECE**



**World Health  
Organization**

REGIONAL OFFICE FOR  
**Europe**



**UNITED NATIONS**

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

# **Recommendations for Green and Healthy Sustainable Transport – “Building Forward Better”**



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THE PEP secretariat was able to compile this publication thanks to the contributions and dedication of the following task force members, who authored parts of the document:

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THE PEP Bureau and Steering Committee commented on an advanced draft of the publication.

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# I. INTRODUCTION

## A. BACKGROUND

The pan-European region has been at the forefront in the development of sustainable mobility solutions focusing on health, environment and prosperity. The Transport, Health and Environment Pan-European Programme (THE PEP) brings the countries of the region together, unites three core sectors of the economy – transport, health and environment – and provides countries with the opportunity to share best practice and develop new policies. It therefore provides a platform for accelerating transformation in the transport sector and making this transformation irreversible. The recommendations, developed by a task force under THE PEP, will allow member States to lock in sustainable transport solutions for the future, given the changes to the sector brought on by the coronavirus (COVID-19) pandemic.

At the meeting of the Bureau of the Steering Committee of THE PEP in April 2020, member States discussed the COVID-19 situation, its impact on transport, environment and health in their countries and the need to take action. Participants agreed to establish a THE PEP Task Force on “The Development of Green and Healthy Sustainable Transport Recommendations” to facilitate the transition to a new normal with sustainable and healthy transport solutions at the heart of decision-making and “building forward better”.

The objective of the Task Force was to make **a synthesis of the “main lessons” learned** from the COVID-19 crisis and to propose **a set of recommendations** in order to support countries in making the transition to green and healthy sustainable transport:<sup>1</sup> a transition in line with the goals of THE PEP,<sup>2</sup> the Vienna Declaration of the Fifth High-Level Meeting of the Ministers of Transport, Health and Environment, the 2030 Agenda for Sustainable Development and the Paris Agreement,<sup>3</sup> to name the key processes and instruments.

The Task Force was composed of over 50 experts from national ministries, international organizations, city authorities, intergovernmental and non-governmental organizations (NGOs), academia and industry. The Task Force was chaired by the Chair of THE PEP Steering Committee, Mr. Robert Thaler (Austria).

The Task Force held eight monthly virtual meetings and, based on agreed terms of reference:

- Exchanged experiences and best practice from national actions to counter the effects of COVID-19
- Established a framework under which the Task Force would function
- Developed common views on what should be the key themes for discussion in the recommendations
- Agreed on a set of recommendations for the final document.

<sup>1</sup> See ECE/AC.21/SC/2020/9-EUPCR2016697/5.3/9, paras. 1 and 2.

<sup>2</sup> UNECE/World Health Organization (WHO) Regional Office for Europe, “Transport Health and Environment Pan-European Programme: From Paris 2014 to Vienna 2019”, October 2015.

<sup>3</sup> Available at <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.



During this period, smaller, parallel drafting groups were set up to develop text for the key themes identified by the Task Force as being fundamental to the development of the recommendations.

The first draft of the recommendations was discussed at the meeting of the Steering Committee of THE PEP in November 2020 and, following further consultations, was finalized in January 2021.<sup>4</sup> The recommendations identified in chapter III below were then included in the Vienna Declaration to be signed at the Fifth High-level Meeting on Transport, Health and Environment in May 2021.

The remainder of this first chapter provides an overview of the current situation of the transport sector, looking at the pre-COVID-19 situation as well as the transport effects during the first lockdowns and the plans for the reopening phases. Chapter II opens with a call for action for the future and describes the main themes that have been identified as key areas for recommendations. Chapter III sets out the conclusions and recommendations for member States. Chapter IV sets out the next steps for this work following the adoption of the recommendations.

## **B. CURRENT SITUATION OF THE TRANSPORT SECTOR AND OUTLOOK**

### **1. THE TRANSPORT SECTOR PRE-2020**

The car remains the main mode of transport across the region. According to Eurostat, in relation to the European Union-28 member States,<sup>5</sup> the market share of passenger road vehicle transport in relation to all passenger transport increased from 82.5 per cent in 2000 to 83.3 per cent in 2018. In comparison, railways had a market share of 8 per cent in 2018, compared to 7.1 per cent in 2000 and coaches, trolleybuses and buses had a share of 8.7 per cent, down from 10.4 per cent in 2000. The share of passenger road vehicles is usually lower when looking at cities only, but still remains the commonest mode in terms of the share in most cases.

The same is also true across the wider region of the UNECE where the car remains the main mode of vehicle<sup>6</sup> transport. Using UNECE data,<sup>7</sup> passenger road vehicle transport market share decreased from 93 per cent in 2000 to 89 per cent in 2018.<sup>8</sup> In comparison, railways increased from 1.6 per cent in 2000 to 2.3 per cent in 2018, and coaches, trolleybuses and buses from 5 per cent to 8 per cent.

According to a 2014 Eurobarometer study,<sup>9</sup> 8 per cent of respondents said that, on a typical day, cycling was their most often used mode of transport. Countries also report their own data, though, data-collection methodologies can vary between countries, making data less comparable. Recent national data show that there can be significant differences between

<sup>4</sup> See ECE/AC.21/SC/2020/9-EUPCR2016697/5.3/9, paras. 3 and 4.

<sup>5</sup> The 28 member States of the European Union, prior to the exit of the United Kingdom. Data from the Eurostat statistical database <https://ec.europa.eu/eurostat/data/database>.

<sup>6</sup> Data used here includes passenger cars, motorcycles, buses, trolleybuses and coaches and rail.

<sup>7</sup> A selection of 13 countries based on data availability, data from the UNECE statistical database: <https://w3.unece.org/PX-Web/en>.

<sup>8</sup> Or latest available year.

<sup>9</sup> European Commission, “Quality of Transport”, Special Eurobarometer 422a (December 2014), p. 12. Available at [https://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs\\_422a\\_en.pdf](https://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_422a_en.pdf).

individual countries. For example, at the higher end, in 2016 the modal share of cycling was 27 per cent in the Netherlands,<sup>10</sup> while, in 2017, Germany<sup>11</sup> reported a share of 11 per cent. At the lower end, in Portugal<sup>12</sup> in 2016 the modal share of cycling was only 1 per cent, in Slovakia<sup>13</sup> in 2017, 2 per cent, the same as in the United Kingdom of Great Britain and Northern Ireland<sup>14</sup> in 2018. Although these numbers appear low, city-level data show that many cities have seen a large growth in cycling in recent years.

The mode distribution of the freight sector is different, with rail having a significantly higher share compared to passenger transport in many countries across the region, but as a whole, the road sector remains dominant. This is even more pronounced in urban environments and other settlements where rail and other non-road goods deliveries are extremely limited.

## 2. IMPACTS OF TRANSPORT ON ENVIRONMENT AND HEALTH

Transport, particularly road transport, has a negative effect on the environment and health. This effect is exemplified by air and noise pollution, injuries, illnesses and deaths caused by poor road safety, congestion and poor urban and spatial planning, and is exacerbated by physical inactivity resulting from the use of transport modes on a daily basis.

In addition, in June 2019, the European Commission revised its calculations of the societal and environmental impacts of transport.<sup>15</sup> The total external environmental costs of transport (linked to greenhouse gas emissions, local air pollution, noise, energy production, habitat damage), as well as the costs of congestion and crashes in the European Union add up to almost €1 trillion annually, with the urban share estimated to be at least 50 per cent. Road transport causes more than 80 per cent of such external costs (approximately €620 billion caused by passengers and €200 billion by freight), including road crash costs (some €280 billion), congestion costs (some €270 billion) and environmental costs (some €270 billion).<sup>16</sup>

This is a very substantial increase in relation to calculations included in the 2013 Impact Assessment, where total external costs of transport were estimated at €420 billion annually, with the urban share estimated at €230 billion.<sup>17</sup>

To ensure good quality of life in cities and to make them more accessible, clean and competitive, a modal shift towards sustainable modes of transport and public transport is necessary. Increasing car traffic in cities and metropolitan areas leads to rising external costs relating to air pollution and lost time, which consequently also negatively effects work-life balance.

<sup>10</sup> Lucas Harms and Maarten Kansen, Netherlands Institute for Transport Policy Analysis, “Cycling Facts”, April 2018. Available at <https://www.government.nl/binaries/government/documents/reports/2018/04/01/cycling-facts-2018/Cycling+facts+2018.pdf>.

<sup>11</sup> German Federal Ministry of Transport and Digital Infrastructure, “Mobilität in Deutschland – MiD: Grafiken zum Radverkehr und Fußverkehr”, p. 9 (in German only). Available at [www.bmvi.de/SharedDocs/DE/Anlage/G/mid-analysen-rad-fussverkehr-bilder.pdf?\\_\\_blob=publicationFile](http://www.bmvi.de/SharedDocs/DE/Anlage/G/mid-analysen-rad-fussverkehr-bilder.pdf?__blob=publicationFile).

<sup>12</sup> Mark Sutton, “Portugal’s answer to upping cycling’s modal share? Start with the students”, Cycling Industry News, 27 May 2016. Available at <https://cyclingindustry.news/portugals-answer-to-upping-cyclings-modal-share-start-with-the-students/>.

<sup>13</sup> Cyclurban, “Slovakia”. Available at [www.cyclurban.eu/countries/slovakia/#:~:text=In%20Slovakia%2C%20cycling%20has%20a,10%25%20cycling%20share%20by%202020](http://www.cyclurban.eu/countries/slovakia/#:~:text=In%20Slovakia%2C%20cycling%20has%20a,10%25%20cycling%20share%20by%202020).

<sup>14</sup> Isi Avbulimen, United Kingdom of Great Britain and Northern Ireland, Department for Transport, “Walking and Cycling Statistics, England: 2018”, 31 July 2019. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/821842/walking-and-cycling-statistics-2018-accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/821842/walking-and-cycling-statistics-2018-accessible.pdf).

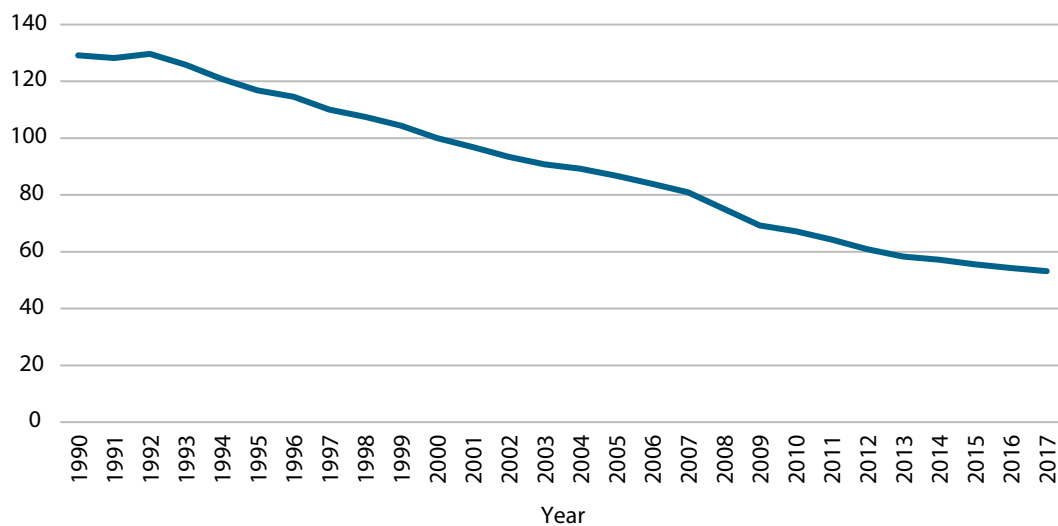
<sup>15</sup> European Commission, “Sustainable transport: Internalization of transport costs”, 29 January 2021. Available at [https://ec.europa.eu/transport/themes/sustainable/internalisation-transport-external-costs\\_en](https://ec.europa.eu/transport/themes/sustainable/internalisation-transport-external-costs_en)

<sup>16</sup> Arno Schrotten and others, “Sustainable Transport Infrastructure Charging and Internalization of Transport Externalities: Executive summary”, (Luxembourg, Publications Office of the European Union, 2019), p. 7.

<sup>17</sup> Ricardo-AEA, “Update of the Handbook on External Costs of Transport”, 8 January 2014. Available at <https://ec.europa.eu/transport/sites/transport/files/themes/sustainable/studies/doc/2014-handbook-external-costs-transport.pdf>.

Air pollution, of which transport is a significant cause, is a major health threat in Europe, causing premature deaths and disease. Although air pollution from transport has been steadily declining in the European Union in the past decades (see figure I below), it remains a concern. According to European Environment Agency (EEA) data,<sup>18</sup> inland transport (passenger and freight) is one of the largest contributors to greenhouse gas emissions, responsible for about 22 per cent of all emissions in the European Union, in 2017, with the road transport sector covering more than two-thirds of that. Coupled with this, the road sector remains one of the biggest sources of polluting emissions, including nitrogen oxides (NOx) (15 per cent) and 8 per cent of particulate matter (PM<sub>2.5</sub>) emissions (the fourth-largest pollutant), but also of non-exhaust related pollutants from brake, tyre and road wear.<sup>19</sup>

**FIGURE I POLLUTANT EMISSIONS FROM TRANSPORT (COMPOSITE INDEX OF NITROGEN OXIDES (NOX), NON-METHANE VOLATILE ORGANIC COMPOUNDS (NMVOCs) AND PARTICULATE MATTER (PM<sub>10</sub>)) IN EUROPEAN UNION-28, 1990–2017 (INDEX 2000 = 100)**



Source: Eurostat.<sup>20</sup>













EEA also estimates that, annually, 400,000 premature deaths in Europe are attributable to air pollution. During the period 2016–2018, a significant proportion of the urban population of the European Union was exposed to key air pollutants above European Union limit or target values and above the health-based guidance values of the World Health Organization (WHO) as set out in figure II below.

<sup>18</sup> European Environment Agency (EEA), “Healthy environment, healthy lives: How the environment influences health and well-being in Europe”, EEA Report, No. 21/2019 (Luxembourg, Publications Office of the European Union, 2020).

<sup>19</sup> Data from the Eurostat statistical database <https://ec.europa.eu/eurostat/data/database>.

<sup>20</sup> [https://ec.europa.eu/eurostat/databrowser/view/t2020\\_rk300/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/t2020_rk300/default/table?lang=en).

**FIGURE II PERCENTAGE OF THE URBAN POPULATION OF THE EUROPEAN UNION EXPOSED TO AIR POLLUTION CONCENTRATIONS ABOVE EUROPEAN UNION AND WORLD HEALTH ORGANIZATION REFERENCE VALUES DURING THE PERIOD 2016–2018**

		<i>EU limit/target values</i>		<i>WHO guidelines</i>
<b>PM<sub>2.5</sub></b>	4-8%		74-78%	
<b>PM<sub>10</sub></b>	13-17%		43-48%	
<b>O<sub>3</sub></b>	12-34%		96-99%	
<b>NO<sub>2</sub></b>	1-7%		4-7%	
<b>BaP</b>	15-20%		75-90%	
<b>SO<sub>2</sub></b>	< 1%		19-31%	

Source: European Environment Agency (EEA), “Healthy environment, healthy lives: How the environment influences health and well-being in Europe”, EEA Report, No. 21/2019 (Luxembourg, Publications Office of the European Union, 2020), p. 68.

Abbreviations: PM<sub>2.5</sub>, Particulate matter with a diameter of 2.5 µm or less; PM<sub>10</sub>, particulate matter with a diameter of 10 µm or less; O<sub>3</sub>, ozone; NO<sub>2</sub>, nitrogen dioxide; BaP, benzo[a]pyrene; SO<sub>2</sub>, sulphur dioxide.

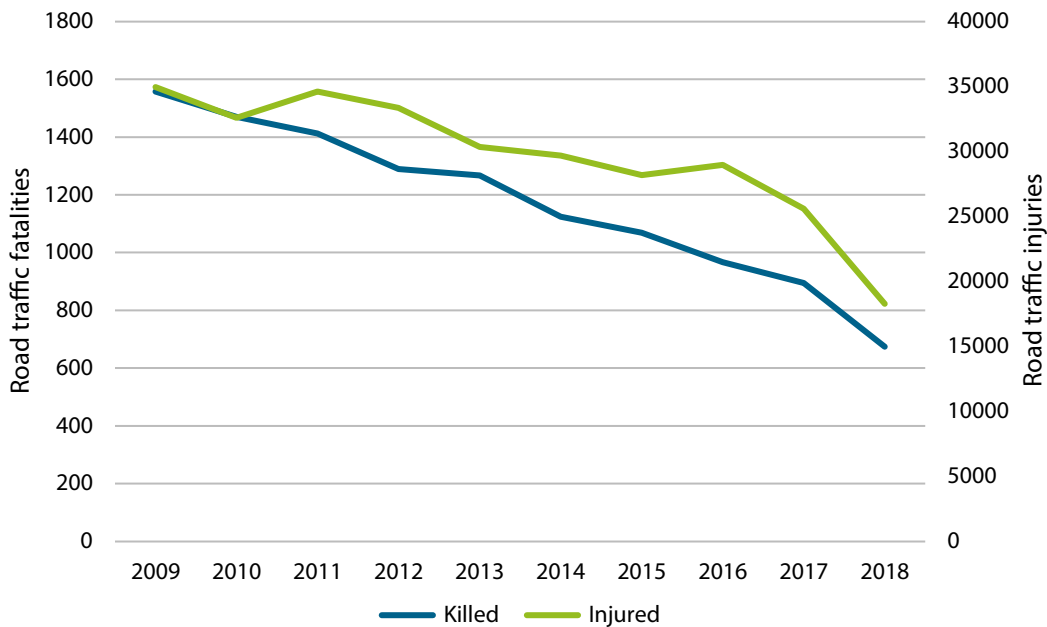
Maintaining a high level of road safety is one of the main challenges within the region. Significant progress has been made in reducing the number of deaths and injuries (see figure III below), but the numbers still remain too high. While the number of road deaths has been steadily decreasing on some types of roads (motorways) and for some types of road user (car drivers and passengers), the reductions have been much less marked for vulnerable road users.<sup>21</sup> Moreover, in the United States of America, mortality of pedestrians increased by 50 per cent in the last decade.<sup>22</sup>

Coupled with this is the problem of increased congestion. Rankings of cities made by a number of international companies for 2019, based on mobile phone and global positioning system (GPS) data, show that congestion levels in Europe decreased only in 30 out of 239 cities listed compared to 2018.<sup>23</sup>

<sup>21</sup> European Transport Safety Council (ETSC), “Safer roads, safer cities: How to improve urban road safety in the EU (PIN Flash 37)”, 10 June 2019. Available at <https://etsc.eu/safer-roads-safer-cities-how-to-improve-urban-road-safety-in-the-eu-pin-flash-37/>.

<sup>22</sup> Governors Highway Safety Association, “Pedestrian Traffic Fatalities by State: 2019 Preliminary data” February 2020, P5 <https://www.ghsa.org/sites/default/files/2020-02/GHSA-Pedestrian-Spotlight-FINAL-rev2.pdf>.

<sup>23</sup> INRIX, “INRIX 2019 Global Traffic Scorecard”. Available at <https://inrix.com/scorecard/> and TomTom Traffic Index Ranking 2019: [https://www.tomtom.com/en\\_gb/traffic-index/ranking/?country=AT,BE,BG,CZ,DK,EE,FI,FR,DE,GR,HU,IS,IE,IT,LV,LT,LU,NL,NO,PL,PT,RO,RU,SK,SI,ES,SE,CH,TR,UA,UK](https://www.tomtom.com/en_gb/traffic-index/ranking/?country=AT,BE,BG,CZ,DK,EE,FI,FR,DE,GR,HU,IS,IE,IT,LV,LT,LU,NL,NO,PL,PT,RO,RU,SK,SI,ES,SE,CH,TR,UA,UK).

**FIGURE III DEATHS AND INJURIES PER 100,000 PASSENGER CARS, ECE REGION, 2009–2018**

Source: UNECE Statistical Database.

Note: Only partial data available for 2018.

As a result of the increased use of motorized vehicles on a regular basis across the region, the urban population tends to be less physically active. According to WHO,<sup>24</sup> lack of physical activity is one of the leading risk factors for noncommunicable diseases mortality. Insufficiently active people have a 20 to 30 per cent increased risk of death compared to the sufficiently active.

Globally, 28 per cent of adults aged 18 or over were not sufficiently active in 2016 (23 per cent of men and 32 per cent of women). This means they do not meet the global recommendations of at least 150 minutes of moderate-intensity, or 75 minutes of vigorous-intensity, physical activity per week. In high-income countries, 26 per cent of men and 35 per cent of women were insufficiently physically active, compared to 12 per cent of men and 24 per cent of women in low-income countries. Low or decreasing physical activity levels often correspond to high or rising gross national product.<sup>25</sup>

The information provided in this section shows that, at the start of 2020, the transport sector still had a long way to go before it could be identified as being green and healthy. THE PEP has been working on a number of initiatives aimed at improving this sustainability through the implementation of actions necessary to achieve its five priority goals.<sup>26</sup> These initiatives have come about primarily through the main activities of the Steering Committee and through a number of partnerships including on cycling promotion, the Danube region, green jobs, eco-driving, the integration of environment and health issues in urban and transport planning, and other related activities such as on managed mobility.

<sup>24</sup> WHO, “Physical activity”, factsheet, 26 November 2020. Available at [www.who.int/news-room/fact-sheets/detail/physical-activity](http://www.who.int/news-room/fact-sheets/detail/physical-activity).

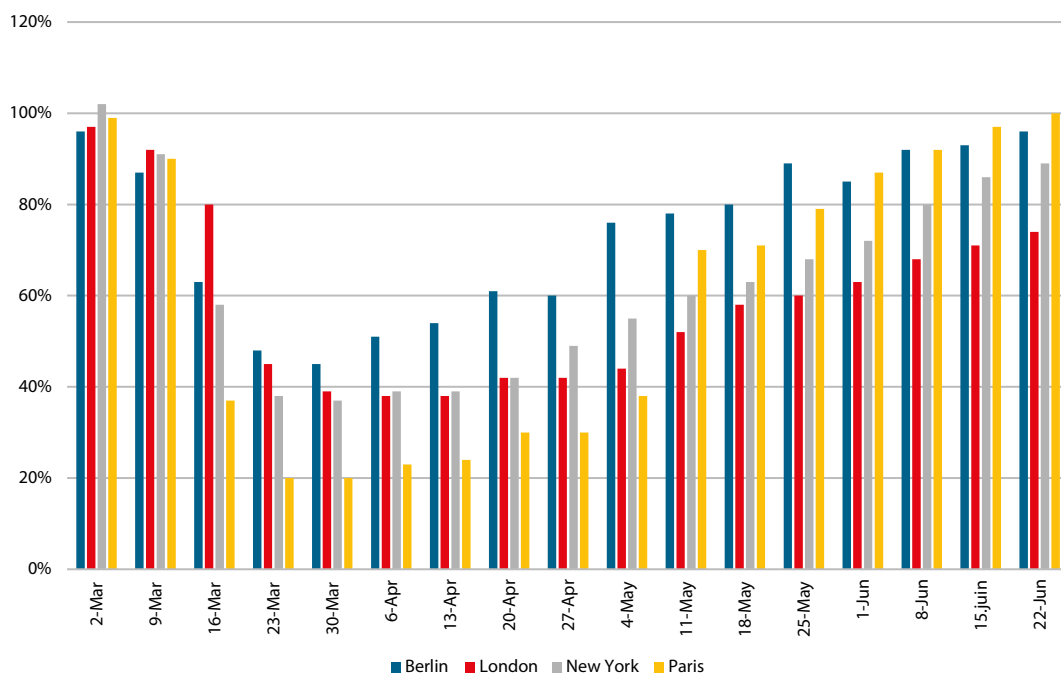
<sup>25</sup> Ibid.

<sup>26</sup> UNECE/World Health Organization (WHO) Regional Office for Europe, “Transport Health and Environment Pan-European Programme: From Paris 2014 to Vienna 2019”, October 2015.

### 3. THE IMPACT OF COVID-19 ON TRANSPORT

In the context described above, in spring 2020 the first wave of the COVID-19 pandemic triggered a drastic response in countries around the world, with many cities going into complete lockdown. This imposed restrictions on people’s movement, directly impacting traffic and the use of all forms of transport. GPS<sup>27</sup> and traffic volume data<sup>28</sup> show that, in many normally congested cities, traffic levels dropped by 70–80 per cent, and in some cities by even as much as over 95 per cent, during the first lockdown phase. For example, the decline in vehicle miles travelled between 2 March and 22 June 2020 in Berlin, London, New York and Paris ranged from above 40 per cent to 20 per cent compared to pre-COVID levels (see figure IV below). Of these cities, Paris was the hardest hit, but traffic there also recovered fast after restrictions were lifted in May 2020. In the other cities, traffic levels remained higher throughout the period, but recovery was slower.

**FIGURE IV WEEKLY VEHICLE MILES TRAVELLED IN BERLIN, LONDON, NEW YORK AND PARIS, AS A PERCENTAGE OF PRE-COVID-19 LEVEL, 2 MARCH–22 JUNE 2020**



Source: Traffic Technology Today, “New data assesses the impact of Covid-19 on UK and European traffic”. Available at [www.trafficechnologytoday.com/news/covid-19-news/feature-inrix-assesses-the-impact-of-covid-19-on-uk-and-european-traffic.html](http://www.trafficechnologytoday.com/news/covid-19-news/feature-inrix-assesses-the-impact-of-covid-19-on-uk-and-european-traffic.html).

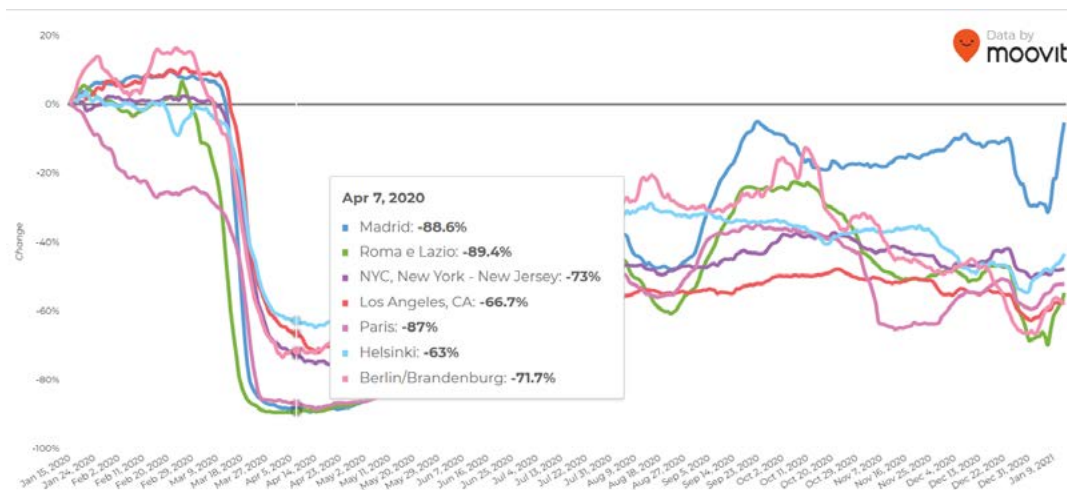
<sup>27</sup> Andy Marchant, “What can traffic data tell us about the impact of the coronavirus?”, TomTom, 17 April 2020. Available at [www.tomtom.com/blog/moving-world/covid-19-traffic/](http://www.tomtom.com/blog/moving-world/covid-19-traffic/).

<sup>28</sup> Ian Dickson, “Before and after COVID-19: Europe’s traffic congestion mapped”, HERE360, 10 April 2020. Available at <https://360.here.com/covid-19-impact-traffic-congestion>.

The freight transport sector was not immune to the effects of the first wave of COVID-19. According to the freight tracking company Sixfold,<sup>29</sup> truck traffic declined more than 50 per cent in Spain, 46 per cent in France and 37 per cent in Italy due to lockdowns. In April 2020, Transport Intelligence<sup>30</sup> estimated that the road freight market in Europe could decline by as much as 17 per cent in 2020 and even in the most optimistic scenario almost 5 per cent. The International Transport Forum<sup>31</sup> estimates the decline in freight transport to be even larger. In Europe, the reduction in inter-urban freight activity is projected to be about 40 per cent. However, the decline in urban freight activity in Europe is estimated to be much less than this, around 12–14 per cent, due to growth in online shopping and associated deliveries.

Similar impacts were reported on public transport. The mobility-as-a-service company Moovit tracks the usage of public transport in cities around the world. Moovit’s Public Transit Index shows a considerable fall in public transport use during the first wave of the COVID-19 pandemic, which subsequently fluctuated at a lower-than-normal level in many cities (see figure V below) also into 2021.

**FIGURE V USE OF PUBLIC TRANSPORT IN SELECTED CITIES, 15 JANUARY 2020–9 JANUARY 2021**



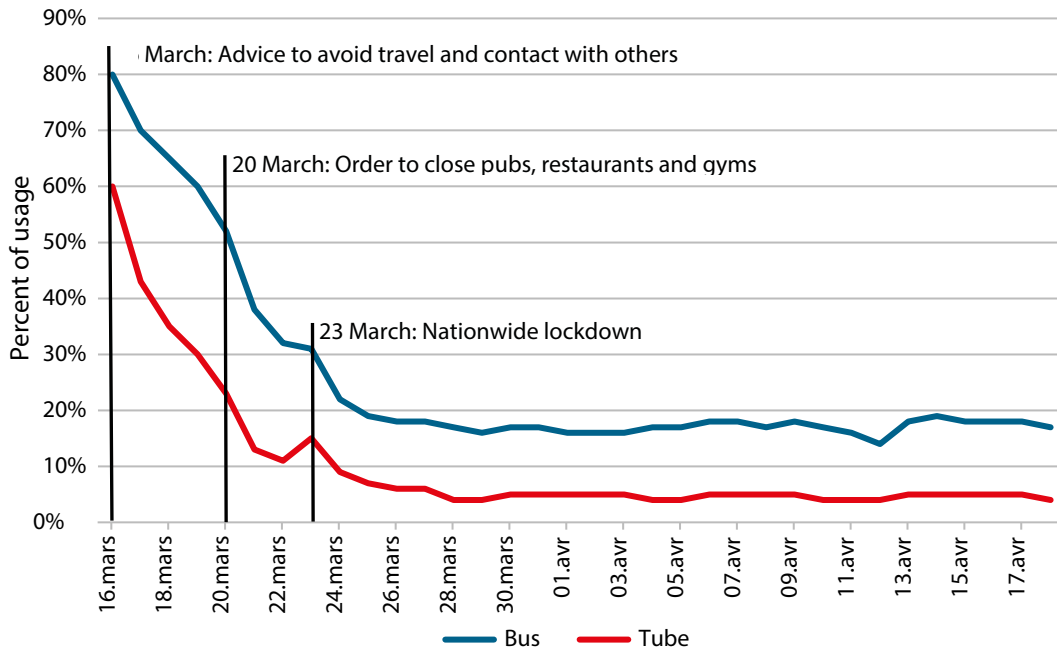
Source: Moovit, Moovit Global Public Transport Report 2020. Available at [https://moovitapp.com/insights/en/Moovit\\_Insights\\_Public\\_Transit\\_Index-countries](https://moovitapp.com/insights/en/Moovit_Insights_Public_Transit_Index-countries).

Based on public transport data from London, the lockdown measures taken to respond to the first wave of the pandemic were reflected in bus and underground railway usage, which fell to only about 15 and 5 per cent, respectively, of the pre-pandemic level, from the end of March 2020 (see figure VI below).

<sup>29</sup> Sixfold, “Effects of Covid-19 on Europe’s Road Freight Market”, 12 May 2020. Available at <https://sixfold.com/news/effects-of-covid-19-on-europe-s-road-freight-market>.

<sup>30</sup> Transport Intelligence, “European Road Freight Market Sizing 2020: COVID-19 impact analysis”, 15 April 2020. Available at [www.ti-insight.com/whitepapers/european-road-freight-market-sizing-2020-covid-19-impact-analysis-2/](http://www.ti-insight.com/whitepapers/european-road-freight-market-sizing-2020-covid-19-impact-analysis-2/).

<sup>31</sup> International Transport Forum, “How badly will the coronavirus crisis hit global freight?”, COVID-19 transport brief, 11 May 2020. Available at [www.itf-oecd.org/sites/default/files/global-freight-covid-19.pdf](http://www.itf-oecd.org/sites/default/files/global-freight-covid-19.pdf).

**FIGURE VI USE OF BUS AND UNDERGROUND RAILWAY IN LONDON, 16 MARCH–17 APRIL 2020**

Source: Government of the United Kingdom of Great Britain and Northern Ireland, Available at [www.gov.uk/government/publications/slides-and-datasets-to-accompany-coronavirus-press-conference-22-april-2020](http://www.gov.uk/government/publications/slides-and-datasets-to-accompany-coronavirus-press-conference-22-april-2020).

Abbreviations: Tube, underground railway.

Similar evidence on the impact of lockdowns during the first wave of COVID-19 has been gathered in other cities. Research<sup>32</sup> on the impact of COVID-19 on transport in Budapest shows that the demand for transport halved during the spring 2020 lockdown, with an 80 per cent decline in demand for public transport. There was also a significant shift in transport modes: the use of private cars grew from 43 to 65 per cent compared to a 2018 baseline. Conversely, the share of public transport decreased from 43 to 18 per cent.

During the pandemic, many people have shied away from using public transport for fear of contracting COVID-19. Some of these passengers have shifted to using a private car as a result of national authorities discouraging the use of public transport, but in many areas there is evidence of growing enthusiasm for cycling. Several cities have responded positively to the increase in cycling by improving infrastructure, although in some cases solutions have been temporary. The European Cyclists' Federation<sup>33</sup> follows measures taken by authorities to promote or facilitate cycling in cities. To date, over 2,000 km of infrastructural measures have been announced, of which about 1,000 km have been implemented.

A study<sup>34</sup> looking at different transport scenarios after the first COVID-19 lockdown in Italy estimates the social costs and benefits of different policy choices. Under the assumption that there are no policy interventions, in the most optimistic scenario after the lockdown, the modal split between private cars and public transport is assumed to be 50-50. In this case, car-related

<sup>32</sup> Peter Bucsky, "Modal share changes due to COVID-19: The case of Budapest", *Transportation Research Interdisciplinary Perspectives*, 12 June 2020. Available at [www.ncbi.nlm.nih.gov/pmc/articles/PMC7290209/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC7290209/).

<sup>33</sup> European Cyclists' Federation, "COVID-19 Cycling Measures Tracker". Available at <https://ecf.com/dashboard>.

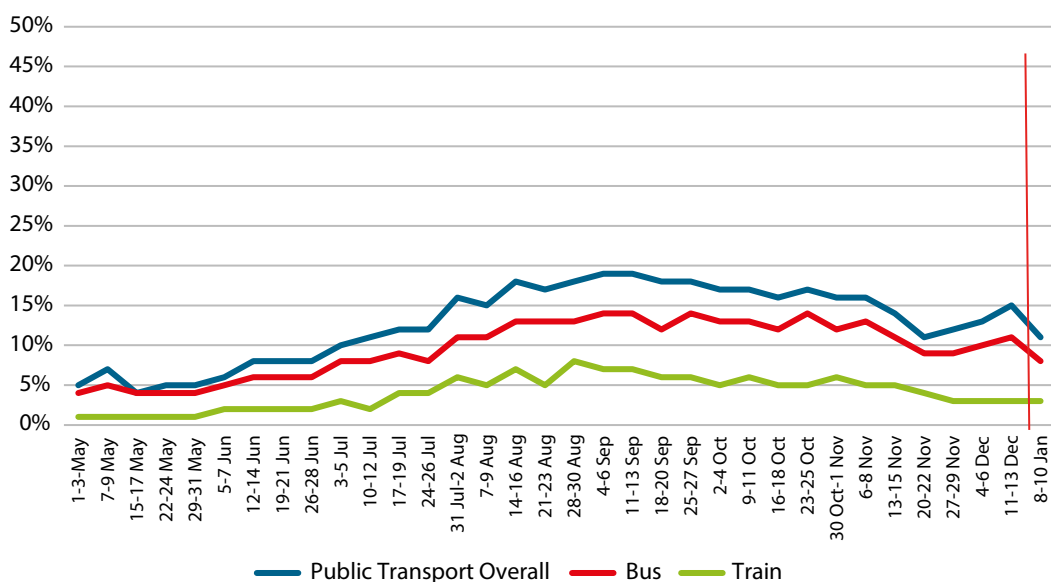
<sup>34</sup> Paolo Ruffino, Matteo Jarre and Kees van Ommeren, "Social costs and benefits of post COVID-19 lockdown mobility scenarios in Italy: Summary report", Decisio (The Hague, Netherlands Enterprise Agency, 2020), pp. 10–15.



social costs and congestion costs are estimated to be about €11 billion annually. In the worst-case scenario, where all public transport users switch to cars, such costs would rise to €21 billion. These costs would arise from increased congestion, longer journey times and increased risk of road crashes. The study compares the “no policy intervention” scenario to a situation where walking and cycling are encouraged. In this case, the assumption is that a portion of car journeys are done by foot or bicycle instead. In the best case scenario, public transport would capture 33 per cent of users, while 38 per cent of the remaining journeys would be made by car, 50 per cent by cycling or e-cycling and 12 per cent by foot, with the study estimating net benefits of €20 billion per year. The benefits arise mainly from increased life expectancy, increased productivity and lower health-care costs. The authors conclude that there is a strong basis for investing in and promoting walking and cycling in cities.

According to a weekly survey conducted in the United Kingdom of Great Britain and Northern Ireland since May 2020, after a slight recovery during the summer, the use of public transport declined again in the autumn of 2020 during the second wave of COVID-19 (see figure VII below). Road use has, after an increase in the summer, stayed relatively stable, with around 60 per cent of those surveyed saying that they had driven a car or a van in the last seven days. The decline in the use of public transport has not translated into a higher proportion of people walking or cycling either. According to the survey, the proportion of cyclists has remained at 5–10 per cent throughout the period. During the last quarter of 2020, the proportion of journeys made on foot fluctuated around 40 per cent, down from a high of 50 per cent in September. Since mid-December 2020, the use of public transport has shown signs of falling again, following new lockdown measures introduced due to the worsening of the pandemic.

**FIGURE VII USE OF PUBLIC TRANSPORT IN THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND, 1–3 MAY 2020 TO 8–10 JANUARY 2021**



Source: Transport Focus, “Travel during Covid-19: Tracking research – week 34”, 15 January 2020, p. 2. Available at <https://d3cez36w5wymxj.cloudfront.net/wp-content/uploads/2021/01/14174435/Travel-during-Covid-19-survey-15-January-2021.pdf>.

By actively discouraging public transport use, many national and local authorities have sent negative signals on the long-term sustainability of the transport sector. There is the risk that the

short-term measures introduced to limit the spread of the virus (there is currently no evidence to show that public transport is a vector for the virus)<sup>35</sup> could have long-term impacts on the use of public transport and its perceived risk.

#### 4. AIR POLLUTION DURING COVID-19 RESTRICTIONS

Data show that the stark declines in transport use during lockdowns positively contributed to air quality, with nitrogen dioxide (NO<sub>2</sub>) levels dropping in many countries. Menut and others (2020)<sup>36</sup> show that the lockdown measures in the United Kingdom of Great Britain and Northern Ireland, the Netherlands, Germany, Spain, France and Italy resulted in a reduction of NO<sub>2</sub> concentrations of 20–50 per cent. Slightly smaller declines were visible for PM<sub>2.5</sub> and there was almost no change in ozone (O<sub>3</sub>) levels. This decline was of course accompanied by a general decline in economic activity, the resulting temporary closure of factories and the consequential fall in mobility.

Indeed, in several European cities, NO<sub>2</sub> levels halved as a result of the first set of lockdowns (see table below). However, data collected by the Centre for Research on Energy and Clean Air show that pollution levels returned to previous levels after lockdown measures were lifted. Cities with the largest reductions in pollution levels also saw the largest rebounds, indicating that, in these cities, policies targeting transport-related emissions could lead to the largest improvements in air quality.

##### Reduction in NO<sub>2</sub> levels in selected European cities due to COVID-19 lockdown measures

City	Reduction %	City	Reduction %
Bucharest	65	London	33
Paris	60	Copenhagen	42
Lisbon	44	Bern	37
Milan	47	Oslo	34
Zagreb	54	Munich	22
Brussels	49	Prague	29
Madrid	49	Ljubljana	31
Warsaw	35	Vienna	23
Moscow	35	Hamburg	20
Athens	32	Budapest	16
Barcelona	43	Berlin	18
Helsinki	47		

Source: Hubert Thieriot and Lauri Myllyvirta, “Air pollution returns to European capitals: Paris faces largest rebound”, Centre for Research on Energy and Clean Air. Available at <https://energyandcleanair.org/wp/wp-content/uploads/2020/06/202006-Europe-Rebound-4.pdf>; and Moscow data from the Department of Natural Resources Use and Environmental Protection, Government of Moscow.

While a fall in air pollution is welcome, the fact that it occurred against this background cannot be seen as good news given the economic hardships that ensued and the fact that it is likely to only be temporary.

<sup>35</sup> University of Southampton (United Kingdom of Great Britain and Northern Ireland), “Study reveals COVID-19 transmission rate on trains”, 31 July 2020. Available at [www.southampton.ac.uk/news/2020/07/train-transmission.page](http://www.southampton.ac.uk/news/2020/07/train-transmission.page); and Railtech.com, “Research Deutsche Bahn: No increased risk corona infection train personnel”, 17 October 2020. Available at [www.railtech.com/coronavirus/2020/09/17/research-deutsche-bahn-no-increased-risk-corona-infection-train-personnel/?gclid=accept](http://www.railtech.com/coronavirus/2020/09/17/research-deutsche-bahn-no-increased-risk-corona-infection-train-personnel/?gclid=accept).

<sup>36</sup> Laurent Menut and others, “Impact of lockdown measures to combat Covid-19 on air quality over Western Europe”, *Science of the Total Environment*, vol. 741, November 2020.

## II. ACTIONS FOR GREEN AND HEALTHY SUSTAINABLE TRANSPORT

### A. A NEW FUTURE FOR TRANSPORT – A CALL FOR ACTION

It is difficult to say how transport and mobility will evolve in the future based on the information provided in the chapter above. What is clear is that transport and mobility as we know them today are not sustainable. Traffic is the cause of several environmental, economic, social and health challenges. Moreover, under the influence of the global increase in population and welfare, the demand for transport will continue to grow. Public transport is fundamental to urban and inter-urban transport but in many areas, it is not as competitive as the private car. Some parts of the region are starting to embrace active mobility solutions, but this is still in its infancy across many countries. This makes transforming transport and mobility for the better around public transport and active mobility fundamental for a better future.

The COVID-19 pandemic has done untold damage to the economies of the region and has exacerbated social inequality by increasing the socioeconomic divide and the gender gap in many countries, with low-wage and part-time employees particularly affected. It has also created some short-term benefits in terms of reduced air and noise pollution and increased attention to promoting and providing for active mobility solutions. Furthermore, as traffic has fallen so too has the number of road deaths (although in no way in a proportional manner). However, it is also true that people have been encouraged to get back into their cars for their commute as the common perception, often fuelled by advice from official sources, has been that public transport is less safe; this has yet to be proved but is creating the need for increased investment in public transport to match new requirements.

These positive and negative outcomes provide the international community with a springboard to take action to facilitate the achievement of the Sustainable Development Goals (SDGs)<sup>37</sup> and the Paris Agreement.<sup>38</sup> We must move beyond business-as-usual and work together to build forward (not back) a cleaner, healthier and more prosperous community to meet mobility and freight transport needs, focusing on creating a more sustainable future for the sector, in which accessibility, efficiency, environment, safety and security are given an equal footing. This evolution needs to consider the direct impacts of the COVID-19 pandemic, but also demographic changes caused by an aging population and resilience in the face of future pandemics or similar national and international disasters.

This aim needs to be embraced by Governments, city planners and citizens alike by integrating transport planning and spatial planning, noting the central role of public transport, understanding the key role that new technologies can play in sustainable mobility and incentivizing healthy and environmentally aware consumer choices. Implementing actions need to induce behavioural change by providing users with the capability, the opportunity and the motivation to change their transport habits. This approach to rethinking and reorganizing the transport sector offers economies a smart recovery and creates opportunities for green investments and a reduction in inequalities, whilst recognizing that the (zero emission) private car will still have a role, albeit significantly reduced, in the transport mix in member States.

<sup>37</sup> See <https://sdgs.un.org/goals>.

<sup>38</sup> See <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

A new approach offers opportunities and possibilities. It is important, therefore, to face the challenges together, by developing a common set of recommendations that can deal with the current situation and stand the test of time to facilitate the transition to more sustainable transport and mobility.

The Task Force recognizes that this will not be easy to achieve as the themes and solutions identified below will need considerable time, effort and resources for successful implementation. Although it is also true that quick wins can be garnered from some of the proposed policy actions, the recommendations provided below should be seen as a framework for action. There is never a “one-size-fits-all” solution and good governance and patience, accompanied by tailored language and approaches, as well as the involvement of the sectors as a whole, will be fundamental in achieving success.

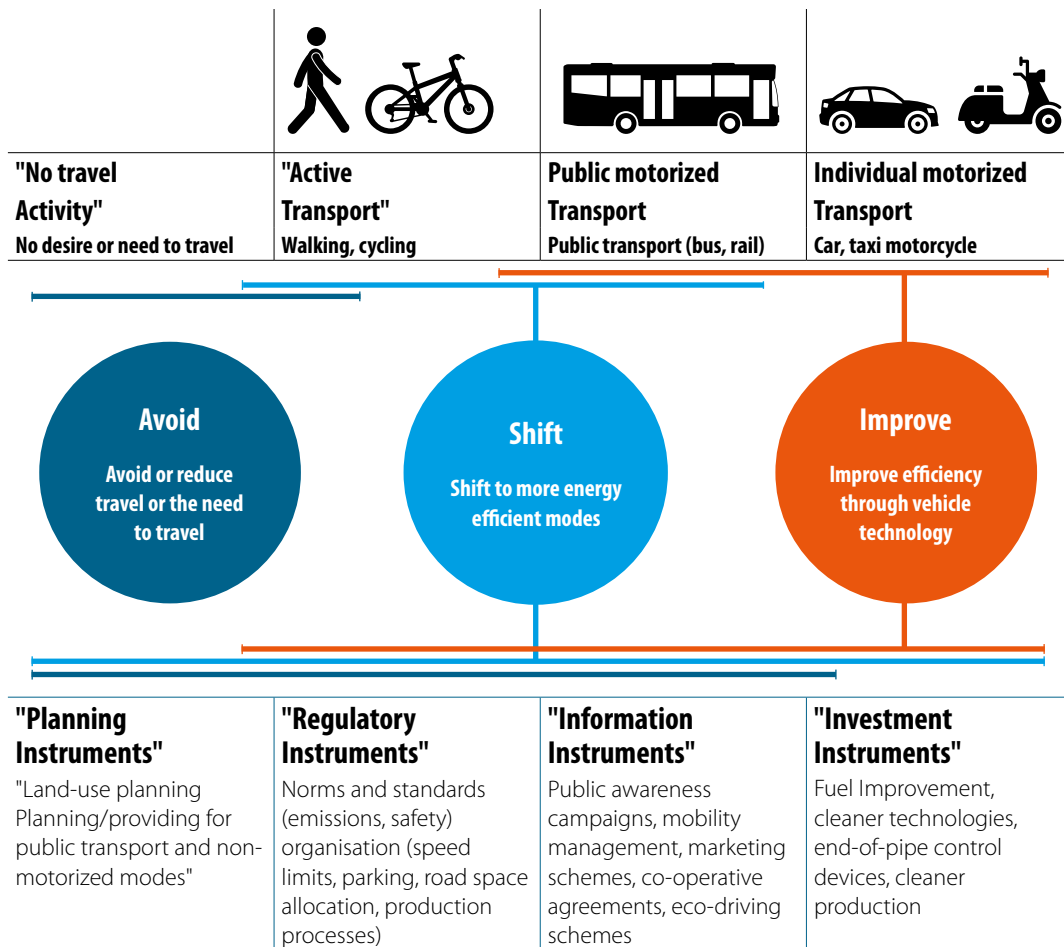
## **B. THE DEVELOPMENT OF KEY RECOMMENDATIONS**

In order to develop a concrete set of recommendations, the Task Force agreed on the development of a key set of themes where a strong focus was placed on ensuring that the principle of “Avoid– Shift–Improve” (see figure VIII below) remains at the centre of actions to be taken. The principle seeks to achieve significant greenhouse gas emission reductions, reduced energy consumption and less congestion. Initially developed in the early 1990s in Germany, it is now considered as the “gold standard” in terms of how Governments can define policy initiatives to minimize the environmental impact of transport, leading to an improvement in citizens’ living standards. Inspired by the principles of sustainability, the approach focuses on people’s mobility needs instead of on car infrastructure.

This principle has been applied throughout this document in a wholistic manner, taking into consideration the interaction of the three sectors of THE PEP, whilst at the same time recognizing that the transport and mobility sector needs to evolve beyond established practices and policies.

Based on this, and on discussions within the Task Force, the following macro themes were agreed on as a basis for the recommendations:

1. Theme 1: Consider public space allocation for all modes of movement in the urban, peri-urban and rural environments with emphasis on the opportunities offered through spatial planning and infrastructure investment.
2. Theme 2: Increase investment in public transport to meet current and future needs as well as to ensure that it is safe (and attractive to use) for users and workers.
3. Theme 3: Encourage the adoption of e-mobility solutions as a fundamental part of powering public transport and active mobility.
4. Theme 4: Introduce mobility management solutions to manage transport demand in an environment-friendly and healthy way taking into account the user-perspective and raising awareness of transport users, to facilitate the switch to greener modes of transport and to make the transport system more efficient. A focus should also be on innovative solutions such as sharing mobility, tele-work or home office, green logistics and delivery and environment-friendly solutions for the “first and last mile” in the transport chain.
5. Theme 5: Facilitate the adoption of innovation and technology in transport to increase accessibility and safety and to reduce emissions and environmental impacts leading to increased health benefits.

**FIGURE VIII AVOID-SHIFT-IMPROVE INSTRUMENTS**

Source : Transport Urban Mobility Initiative, “Sustainable Urban Transport: Avoid–Shift–Improve (A–S–I)” (Eschborn, German Agency for International Cooperation, 2019).

Note: Modified for translation purposes, original available at [https://www.transformative-mobility.org/assets/publications/ASI\\_TUMI\\_SUTP\\_iNUA\\_No-9\\_April-2019.pdf](https://www.transformative-mobility.org/assets/publications/ASI_TUMI_SUTP_iNUA_No-9_April-2019.pdf).

6. Theme 6: Support active mobility as a sustainable and healthy mode of transport.
7. Theme 7: Rebuild the transport system in a fair and inclusive way while avoiding social disparities and particularly considering the needs of vulnerable and disadvantaged groups in society. Take into account the social dimension of pandemics as well as the need for a just transition towards a green and healthy transport system.

The recommendations identified for each of these themes aim to reinforce positive actions that have taken place during the pandemic but also to avoid a “lock-in” situation of negative practices that have evolved. In doing so, the recommendations seek to set challenging but achievable targets for member States. Each theme is structured as follows:

- Introduction
- The issue at hand (with the inclusion of relevant examples)
- Outcomes and conclusions (then summarized in the form of key recommendations in chapter III).

The themes and related recommendations have been developed with the aim of going beyond what has been the crux of activities within THE PEP in order to set the foundations for a transport sector that can lead and shape the transformation of the urban and peri-urban environment, including through appropriate spatial planning and economic policies, rather than having to catch up as has been the case in the past.

## **C. THEME 1 “CONSIDERATION OF PUBLIC SPACE ALLOCATION FOR ALL MODES OF MOVEMENT IN THE URBAN, PERI-URBAN AND RURAL ENVIRONMENTS, WITH EMPHASIS ON THE OPPORTUNITIES OFFERED THROUGH SPATIAL PLANNING AND INFRASTRUCTURE INVESTMENT”**

### **INTRODUCTION**

Theme 1 examines social, economic and environmental considerations, reviews the emerging importance of developing practices and explores their impact on mobility and on the communities these systems serve, with particular emphasis on public space and spatial planning. Wherever possible, the work is illustrated by examples of best practice that highlight where the issue has been addressed successfully.

### **THE ISSUE AT HAND**

What is the impetus for *Green and Healthy Sustainable Transport*? This Task Force title plainly implies more than a recognition of the interaction between transportation, health and the environment and underlines that the effectiveness and efficiency of transportation (from the point of view of the public authority, the operator and the user) between nodes cannot be an end in itself but rather must, of itself, be green, healthy and sustainable in respect of those that it serves. In other words, there is implied a higher purpose to enable mobility for people to access goods and services in a healthy, efficient, comfortable and environmentally friendly manner. That this is true has been clear for some time. In the midst of a global pandemic that shows little sign of abating until a vaccine can be found, this aim becomes an imperative.<sup>39</sup> Nowhere is this imperative more clearly evident than in the need for the balanced and well-designed allocation of public space where the day-to-day interactions of people’s lives are played out.

Today it is recognized globally that physical activity is important for physical and mental health for all and therefore active travel for everyone becomes extremely important. The mobility systems provided to deliver access to goods and services need to be designed in a manner that encourages walking, cycling and wheeling,<sup>40</sup> with an emphasis on connectivity at the start and end of journeys and interchange along the route,<sup>41</sup> and which help tackle

<sup>39</sup> Paolo Ruffino, Matteo Jarre and Kees van Ommeren, “Social costs and benefits of post COVID-19 lockdown mobility scenarios in Italy: Summary report”, Decisio (The Hague, Netherlands Enterprise Agency, 2020). Available at <https://www.rvo.nl/sites/default/files/2020/11/Social-costs-and-benefits-of-post-COVID-19-lockdown-mobility-scenarios-in-Italy.pdf>.

<sup>40</sup> Wheeling refers to all other forms of wheeled personal transportation (excluding cars and motorbikes).

<sup>41</sup> European Environment Agency (EEA), “The first and last mile – the key to sustainable urban transport, Transport and environment report 2019”, (Luxembourg, Publications Office of the European Union, 2019). Available at <https://www.eea.europa.eu/publications/the-first-and-last-mile>.

urban congestion, the costs of which put a drag of several hundreds of billions of euros or United States dollars on the world economy.<sup>42</sup> Of equal importance is the recognition by most countries that decarbonization must proceed hand-in-hand with this aspiration to deliver widely accessible active and eco-friendly movement systems.

There is a need therefore for an ambitious and imaginative aspiration or vision for transportation across the ECE region that, within the overarching context of the SDGs connects the issues of decarbonization, physical activity, environmental consciousness and public health.

The first step in achieving this aim is to realise that all these objectives are inter-related and action in pursuit of their achievement has to be integrated. It can no longer be the case that programme for decarbonization, health and mobility can be seen and addressed as separate matters.

As Higgs remarks in his recent book, “if we are to build the city of the future, it follows that we must first of all imagine it.”<sup>43</sup> Imagining and delivering such interconnection and integration cannot be achieved only by analysis and quantification. It requires design solutions that place people and their needs at the heart of the process. This means understanding not only the principles of engineering and physical design of artefacts. It also requires that we must master the opportunities presented by both *service design* (people-centred service design is the activity of planning and organizing people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between the service provider and its customers and their quality of life)<sup>44</sup> and *universal design* (the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, gender, ability or disability).<sup>45</sup> The allocation of public space should be designed to meet the needs of all people who wish to use it, for example through the implementation of initiatives such as the “super blocks” in Barcelona, Spain.<sup>46</sup> While quick solutions of converting road space to cycle lanes can provide benefits, it is also important to consider longer-term planning where a better solution may be to create routes for cyclists through other public spaces.

Good examples include The Mayor of London Transport Strategy,<sup>47</sup> adopted in 2018, that revolves around the Healthy Street Approach. This approach uses 10 evidence-based indicators of what makes streets attractive places. Working towards targets for these indicators will help to create a healthier city, in which all people are included and can live well, and where inequalities are reduced.<sup>48</sup> The overarching goal of the Mayor’s Transport Strategy is that by 2041:

<sup>42</sup> European Commission, “Sustainable transport infrastructure charging and internalisation of transport externalities Executive summary”, (European Commission, Brussels, May 2019). Available at <https://ec.europa.eu/transport/themes/sustainable/internalisation-transport-external-costs>.

<sup>43</sup> Higgs, J., “The Future Starts Here: Adventures in the 21<sup>st</sup> Century”, Weidenfeld & Nicolson, London, 2019.

<sup>44</sup> See for example: Stickdorn, M. & Hormess, M., “This is Service Design Doing: Using Research and Customer Journey Maps to Create Successful Services: Applying Service Design Thinking in the Real World”, 2016 and Down, L. *Good Services: How to Design Services that Work*, BIS Publishers, Amsterdam, 2020.

<sup>45</sup> The term *universal design* was coined by the architect Ronald Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their abilities. See for example: Steinfeld, E. & Maisel, J., “Universal Design: Creating Inclusive Environments”, 2012.

<sup>46</sup> Feargus O’Sullivan, Bloomberg, “Barcelona Will Supersize its Car-Free ‘Superblocks’”, 11 November 2020. Available at <https://www.bloomberg.com/news/articles/2020-11-11/barcelona-s-new-car-free-superblock-will-be-big>

<sup>47</sup> Mayor’s Transport Strategy 2018, Mayor of London. <https://www.london.gov.uk/what-we-do/transport/our-vision-transport/mayors-transport-strategy-2018?intcmp=46686>.

<sup>48</sup> Transport for London, “Healthy Streets for London”, (Transport for London, London, 2017). Available at <http://content.tfl.gov.uk/healthy-streets-for-london.pdf>.

- 80 per cent of journeys are to be made by walking, cycling and public transport
- All Londoners get 10 minutes of active travel twice each day
- 70 per cent of Londoners will live within 400 m of the London-wide cycle network.

The strategy puts public health at the heart of city planning processes, highlighting the link between free movement of people, environmental benefit and public health in every measure undertaken.

In the Netherlands, the Ghent Circulation Plan adopted in April 2017 is another great example of people centric urban planning.<sup>49</sup> The ultimate goal of the Circulation Plan is to unburden the city centre of car traffic, while improving the liveability of the city for citizens and visitors and guaranteeing accessibility for pedestrians, cyclists, buses and trams. To prevent cars from needlessly crossing the city centre, the Circulation Plan divides the city into six sectors and one extensive car-free and pedestrian zone. Whoever wants to move from one sector to the other needs to make use of the inner city ring, therefore freeing up a lot of space within the sectors, space that has been reallocated to public transport, cycling and walking. Thanks to the Circulation Plan, cars that absolutely need to be in the city centre – such as suppliers, health care providers or elderly people – can reach their destination faster. One of the most inspiring aspects of the Ghent work is that very little new infrastructure was necessary and instead space was repurposed and given over to people for walking, cycling and wheeling.

Related to this example is also the concept of creating green corridors where natural planting and water systems can be integrated into paths and routes used by those walking, cycling and wheeling creating a symbiotic relationship between the natural environment and the people using it for their mobility needs. These corridors need to be planned effectively to maximize the benefits for the environment and the general public by either retrofitting green infrastructure into existing transport solutions, or by ensuring that *ex novo* urban planning merges current green infrastructure into mobility design. Examples of this approach include the Brussels Green Belt, which is a 63 km route that circles Brussels allowing pedestrians and cyclists to travel along a natural environment,<sup>50</sup> and the “landscape axes” developed in Hamburg (Germany), linking the green rings on the outskirts of the city to the city centre.<sup>51</sup>

It is only by these processes that we may properly achieve the interconnected and integrated design we seek. This vision needs to be supported by action intended to deliver on its aim. Beyond action, it is imperative to describe the outcomes that we seek and the enabling processes and actors that can deliver these outcomes.

<sup>49</sup> Ghent circulation plan aims to make the city car-free; see video at <https://vimeo.com/379854529>.

<sup>50</sup> See <https://www.discoveringbelgium.com/walk-cycle-promenade-verte/#:~:text=The%20Promenade%20Verte%20is%20a,discovering%20its%20history%20and%20nature.&text=Its%20route%20makes%20the%20most,between%20urban-ized%20and%20industrialized%20areas>.

<sup>51</sup> As described in “Grünes Netz Hamburg – Masterplan and strategy for a green active travel network at city scale”, available at <http://www.central-scotland-green-network.org/resources/publications/category/116-green-active-travel-route-case-studies?download=409:green-active-travel-grunes-netz-hamburg>.



The current crisis is setting the scene for doing what so many cities wanted but lacked the opportunity to do. Through transport-oriented development, the need for motorized travel and trip lengths can be reduced. Residential, work and leisure districts must become more closely connected and intermixed. Cities must prioritize accessible, safe, breathable and walkable streets through urban planning, putting people at the heart of the city and implementing the careful coordination of land use, spatial and long-term mobility planning with the engagement of all stakeholders from project start. There is now a golden opportunity for policymakers to integrate and strengthen these policies.

## OUTCOMES AND CONCLUSIONS

As much as action is important, progress towards good outcomes is essential. The vertical integration of the SDGs (particularly SDG 11 on Sustainable cities and communities and its target 11.2) with policy and design practice at the level of member States and regional and local government will be important. A number of desirable outcomes and conclusions can be identified with their respective enablers that are particular for this theme.

### **Outcome: Enhancing accessibility for all, including to green, blue and quiet places, and ensuring the needs of vulnerable groups**

Enablers:

- Ensuring an optimal density of development that integrates housing, essential services (for example, education, health, retail and leisure) and employment.
- Increasing digital connectivity.
- Ensuring a common and coordinated approach to integrated spatial and transport planning.
- Ensuring all-encompassing transport and mobility impact and cost benefit assessments are carried out as a precondition for any significant development, with the support of tools such as HEAT<sup>52</sup> to enable robust financing of initiatives.
- Routinely assessing the city by mapping access to green, blue and quiet places, gross domestic product (GDP) and health to inform future planning decisions.
- Designing new houses (for example, social housing) with access to green and blue spaces within walking distance.
- Creating green corridors that combine the benefits of ecological corridors with active mobility options (for example, the Brussels Green Belt and the landscape axes in Hamburg).
- Capitalizing on the low traffic levels in cities around the world to undertake tactical cost-efficient investments such as widening sidewalks, facilitating step-free access and establishing dedicated bus lanes, to name but a few possibilities.
- Balancing social development incentivized by economic, fiscal and regulatory incentives (for example, provision of social housing).
- Ensuring that spatial planning guidelines and policy decisions have a strong focus on responding to the needs of vulnerable users, in particular people with reduced mobility.

<sup>52</sup> <https://www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/activities/guidance-and-tools/health-economic-assessment-tool-heat-for-cycling-and-walking>.

Developing, where possible, short-distance cities (the 15-minute city and the ecosystem of the last mile) designed to bring about urban and transport planning and design aimed at improving the quality of people’s lives and meeting their needs by providing access to everything they need within a 15-minute radius of their home.

**Outcome: Minimizing the adverse impact of motorized road vehicles on urban settlements and the prioritization of sustainable mobility**

Enablers:

- Prioritizing public transport for longer trips and active travel for short trips where public transport is not available (see Theme 2).
- Facilitating connectivity through efficient hubs for interchange to public transport.
- Weatherproofing of parcel, pushchair, bicycle storage facilities at secure and welcoming hubs.
- Focusing motorized traffic on fit-for-purpose routes.
- Discouraging motorized vehicles through use of fiscal and physical measures and the elimination of “rat runs” with the aim of internalizing external costs (Ghent (Belgium) and Barcelona (Spain) examples).
- Facilitating the development of urban logistics hubs outside urban centres to enable consolidation of “last mile” deliveries.
- User-friendly parking policies.

**Outcome: Ensuring informed public support and participation in the planning process for a just transition**

Enablers (see also the box below):

- Accelerating comprehensive efforts by public authorities to identify public concerns relevant to the future of sustainable mobility.
- Ensuring that there is a strong partnership between local authorities, transport operators, the community and the private sector.
- Executing information programmes directed at showing how improved public transport and active travel, together with appropriate spatial planning initiatives, can ameliorate concerns related to the lack of transparency.
- Carrying out continuing educational and information campaigns analogous to that discouraging cigarette smoking.

## INVOLVING THE COMMUNITY

**Partnerships:** Creating partnerships with actors in the local community is an essential tool to deliver long-lasting transformative change. Some examples of these include:

- Partnerships with local business owners, for example Dublin pedestrian street trials.<sup>53</sup> A success story in Dublin began when a local coffee shop owner wrote a message on Twitter asking what would happen if his street was pedestrianized in an effort to revamp his business post-lockdown. The city council got in touch and the whole street was trialed as a pedestrian street for a few months. People are asking to keep it pedestrian.<sup>54</sup>
- Partnerships with schools, for example Dublin “back to school”.<sup>55</sup>
- Partnerships with urban logistics players: Thanks to a visionary partnership between bpost (the Belgian company responsible for the delivery of national and international mail) and the City of Mechelen, a new “Ecozone” for delivery and pick-up of parcels was established in the summer of 2020. A two-year pilot project has been launched to tackle the challenges of the rising on-demand economy, while addressing congestion, improving air quality and finding best ways to serve the citizens. The Ecozone is an area in the centre of Mechelen that has been equipped with 19 pick-up points with a total of 50 new parcel lockers spread across the city centre. Moreover, delivery to the new lockers is done with bicycle trailers in the inner car-free city core and with electric vehicles in the overall zone. The parcel lockers – located in open spaces – are accessible 24 hours a day and 7 days a week, easily movable and operate without electricity and anchoring. The collaboration between bpost and the city was essential to identify the best locations to place the lockers within the city, the objective in the location hunting was to place the Lockers within a maximum 400 m radius from housing, public transport hubs, shopping streets and other strategic locations, or “within slippers distance”, as described by bpost and the city.<sup>56</sup>
- Partnerships with employers, for example “Smart ways to Antwerp”:<sup>57</sup> The City of Antwerp in Belgium offers tailored support to employers in the region to help them create sustainable mobility policies for their companies. The companies can get in touch with the Smart Ways to Antwerp team within the city administration and:
  - Receive support in developing a company mobility policy.
  - Request a “mobility scan” for the company. A mobility scan is developed by inputting the home addresses of the employees and of their children’s schools – if they would have to bring the children to school before work on a daily commute – in order to assess what travel alternatives to using a car each employee would have. Once the mobility scan is developed, the city also offers one-on-one meetings with employees willing to switch their travel behaviour. The mobility scan helps highlight what impact switching to sustainable travel modes would have in terms of reducing the carbon dioxide (CO<sub>2</sub>) footprint of the company, the health benefits for the employees and the financial benefit for the company. (Research show that employees who use active travel to reach work have on average 1.3 days less sickness absence per year, while also being more productive and concentrated throughout the day.)

<sup>53</sup> See <https://www.dublincycling.com/cycling/pedestrian-street-trials-extended-after-positive-feedback> or <https://www.thejournal.ie/pedestrianised-streets-in-dublin-city-5139746-Jul2020/>.

<sup>54</sup> For further good examples from Dublin, see also: <https://twitter.com/DubCityCouncil/status/1298650758829740032>, <https://twitter.com/DubCityCouncil/status/1295293915831181313>, <https://twitter.com/DubCityCouncil/status/1296466273296154625>.

<sup>55</sup> See <https://greenschoolsireland.org/dublins-first-school-zone-is-launched-at-francis-street-cbs/#:~:text=%E2%80%9CWe%20are%20delighted%20that%20Dublin,dominated%2C%20front%20of%20school%20environments>.

<sup>56</sup> Bpost partnership in Mechelen: <https://www.bpost.be/nl/ecozone-mechelen>.

<sup>57</sup> Smart ways to Antwerp: <https://www.slimnaarantwerpen.be/en/employers>.

- Receive custom advice and various specific products and services, such as company packages for electric bicycle trials at a discounted price, public transport subscription and car-pooling options.

**Engagement:** Participatory consultations need to be initiated with all relevant stakeholders to ensure that there is significant buy-in from the various community members.

**Communication:** “The single biggest problem in communication is the illusion that it has taken place”, wrote George Bernard Shaw. While the link between decarbonization, physical activity, environmental consciousness and public health might seem obvious, there is a substantial risk in assuming that it constitutes general knowledge. While the first step should always be putting in place physical infrastructure that equips people with the possibility of making the right choice – for example, a well-developed, safe cycling network, park and ride facilities and last-mile options – incredible opportunities lie in powerful communication. A great example of integrating vision, infrastructure planning and communication efforts is offered by the work done by Transport for London.<sup>58</sup>

## D. THEME 2 “INCREASING INVESTMENT IN PUBLIC TRANSPORT TO MEET CURRENT AND FUTURE NEEDS, AS WELL AS TO ENSURE THAT IT IS SAFE (AND ATTRACTIVE TO USE) FOR USERS AND WORKERS”

### INTRODUCTION

Public transport has been, and remains, the heart of mass urban transport mobility solutions. It is a fundamental tool for ensuring accessibility for citizens to jobs, schools and leisure. According to data from the International Association of Public Transport (UITP), 60 billion passenger journeys are made per year on public transport, which contributes between €130 billion and €150 billion per year to the economy of the European Union alone, equivalent to 1-1.2 per cent of the block’s GDP.<sup>59</sup>

The central role of public transport in accessibility has been identified in SDG target 11.2 which states: “By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons”. The related indicator seeks to measure “the proportion of population that has convenient access to public transport, by sex, age and persons with disabilities”. The main goal here is to: “Provide access to safe, fast, comfortable, affordable, accessible and sustainable transport systems for all by 2030”. While there are concerns with this indicator, public transport is clearly the cornerstone and highlights the importance of the sector in improving the liveability of cities. In order to achieve this goal, it is essential that key metrics (including proxy indicators frequently used by the sector) are developed, looking at the use and frequency of public transport, with the ultimate aim of increasing customer satisfaction and, consequently,

<sup>58</sup> Mayor of London, “London infrastructure plan 2050: Transport supporting paper”. Available at [https://www.london.gov.uk/sites/default/files/gla\\_migrate\\_files\\_destination/Transport%20Supporting%20Paper.pdf](https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Transport%20Supporting%20Paper.pdf).

<sup>59</sup> Pere Calvet and others, “OPEN LETTER: European CEOs and city representatives call for local public transport to be a key sector in the European recovery plan”, 13 May 2020. Available at <https://cms.uitp.org/wp/wp-content/uploads/2020/08/PUBLIC-TRANSPORT-IS-CRITICAL-FOR-EUROPEAN-RECOVERY-FINAL-VERSION.pdf>.

increased use. Launched under the European Union Urban Agenda, a list of common indicators<sup>60</sup> and best practice case studies on the walkability of cities and access to public transport (SDG target 11.2 metrics) have been developed to complement the core SDG target 11.2 indicator, and which can facilitate and better report progress against the SDG target. The list will allow cities to learn and benchmark themselves against each other to enable achievement of SDG target 11.2.

The COVID-19 situation has not changed the central role of public transport but has meant that some important changes need to be made to how it is used going forward. Before COVID-19 there existed significant underinvestment in public transport solutions across the region, and the COVID-19 situation has accentuated this shortfall. While policies towards improving public transport have always been at the heart of the activities of THE PEP (see Priority Goal 2<sup>61</sup> for example) the COVID-19 situation has pushed the role of public transport in a safe and secure transport environment to the forefront and strengthened its importance as a key tool for member States to achieve the 2030 Agenda for Sustainable Development.

## THE ISSUE AT HAND

For public transport to be an effective spoke in the transport wheel, it needs to meet the needs of its customers and users, something that is not always the case across the ECE region. Furthermore, it needs to be safe and secure for its users and workers and provide for likely future needs as demand grows.

Public transport does not, however, exist in a vacuum and needs to be part of an integrated transport and spatial planning system with a long-term vision on sustainable transport solutions (see Theme 1). For this integration to be effective it needs significant investment, above what is already being made available through current schemes, with investment focused both on the infrastructure side (including such things as dedicated lanes and prioritized intersections) and on the vehicles. However, public transport also needs to lead the transformation of transport systems rather than follow: sufficient public transport needs to be the cornerstone of a successful transport system, which is well integrated with other modes in the urban environment, before any user will willingly switch away from their private vehicle.

Too often the level of investment is insufficient to fund the minimal level of service required by customers. Furthermore, it is sometimes not allocated appropriately to meet these needs.

Increased investment in public transport can lead to a number of benefits for the community. For example, the recent THE PEP study on Jobs in Green and Healthy Transport<sup>62</sup> showed that a doubling of investment in public transport would lead to an increase of employment across all sectors in the ECE region of 2.9 million jobs, of which 1.8 million jobs in the ECE region transport sector alone. A previous study undertaken for UITP showed that doubling the public transport market share would see the number of employees working in public transport operating companies double from 7 million to 14 million, including a labour productivity increase of 1 per cent.<sup>63</sup>

<sup>60</sup> International Association of Public Transport and Walk21 Foundation, “Urban Mobility Indicators for Walking and Public Transport”. Available at <https://ec.europa.eu/futurium/en/system/files/ged/convenient-access-to-public-transport.pdf>.

<sup>61</sup> UNECE/World Health Organization (WHO) Regional Office for Europe, “Transport Health and Environment Pan-European Programme: From Paris 2014 to Vienna 2019”, October 2015.

<sup>62</sup> UNECE and International Labour Organization (ILO), “Jobs in green and healthy transport”, May 2020. Available at <https://thepep.unece.org/node/808>.

<sup>63</sup> Philip Turner, International Association of Public Transport (UITP), “Doubling the market share of public transport worldwide by 2025”. Available at [https://slocat.net/wp-content/uploads/legacy/u10/vc\\_report-doubling\\_the\\_market\\_share\\_of\\_public\\_transport\\_worldwide\\_by\\_2025.pdf](https://slocat.net/wp-content/uploads/legacy/u10/vc_report-doubling_the_market_share_of_public_transport_worldwide_by_2025.pdf).

The introduction of automation in public transport is also likely to have an impact on employment in public transport. In this framework attention needs to be focused on identifying appropriate funding mechanisms to finance public transport. Relying on farebox revenue and local authority contributions will not be enough going forward. Grants to assist in the improvement of public transport from other national and supra-national authorities will have to play a role, as will collaboration with the private sector. The flexible use of green bonds to finance these investments will also be important in maximizing the clear environmental benefits of public transport, while ensuring that they are framed in a wider drive to extract environmental benefits in cities (as seen in Gothenburg, Sweden, for example) in line with THE PEP Goal 5.<sup>64</sup>

However, inadequate public transport is not only an issue of insufficient investment. The ultimate purpose of public transport is to provide a service focused on facilitating access to jobs, education and wider opportunities as identified in the SDG mentioned above. Therefore, it is important to ensure that better targeted investments in public transport, focusing on ensuring accessibility for all, also offers good value for users and for funders.

According to UITP, at the start of the lockdown period, public transport farebox revenue fell by up to 90 per cent while operators maintained between 70 and 100 per cent of services, with an estimated loss in farebox revenue for 2020 as a whole of around €40 billion.<sup>65</sup> In many cases, local authorities providing the non-farebox funding have not been able to take up the slack of this shortfall, as funding support from central government in this period has been limited.

The fall in public transport usage mentioned above was initially due to the generalized lockdown but also due to some authorities discouraging its use, either through the imposition of maximum capacity requirements due to physical distancing, or through statements suggesting that people stay away. Currently, there is no evidence to support the assertion that public transport can be a hotspot for the spreading of the virus, with operators significantly ramping up cleaning and disinfection regimes to ensure the maximum safety of passengers. Notwithstanding these efforts, confidence in the safety of the public transport system remains low, with the population perceiving public transport to be less safe and secure even if this is not the case. Reversing this misconception remains the number one short-term priority for local authorities and operators as without an increase in confidence in the sector, passenger numbers will not return.

Even if it is acknowledged that a zero risk does not exist, public transport remains one of the safest ways to move around cities and keep them alive even in the context of COVID-19. Today, there is enough evidence to demonstrate that, when measures recommended by the health authorities are implemented, the risk in public transport is very low.

The current pandemic has also highlighted the fact that an insufficient public transport network and fleet will lead to users switching back to private car transportation when users do not feel it is safe. It has also shown that there is a risk of social divisions and inequalities growing, as those in disadvantaged groups, with lower income, often have limited options thus restricting their mobility choices. Public transport provides the possibility of increasing social cohesion. However, this service needs to be affordable, shared, high quality and integrated into the local environment and with other transport solutions.

<sup>64</sup> UNECE/World Health Organization (WHO) Regional Office for Europe, “Transport Health and Environment Pan-European Programme: From Paris 2014 to Vienna 2019”, October 2015.

<sup>65</sup> Pere Calvet and others, “OPEN LETTER: European CEOs and city representatives call for local public transport to be a key sector in the European recovery plan”, 13 May 2020. Available at <https://cms.uitp.org/wp/wp-content/uploads/2020/08/PUBLIC-TRANSPORT-IS-CRITICAL-FOR-EUROPEAN-RECOVERY-FINAL-VERSION.pdf>.

COVID-19 has also had a strong impact on behaviour, with workers at many companies embracing smart working, staggered hours and digital conferencing as a replacement for business travel. Some of these changes could remain in place in the future, and public transport will need to adapt to reflect this and other changes, such as a shift of cultural and economic activities away from city centres, for example by providing a more comfortable and reliable service and offering ancillary services to draw customers out of the private car and back to the bus and train. This will further impact the finances of operators.

In this respect, many cities are seeing the death of their urban centres as commuters are staying away and preferring or being required to work from home. Anecdotal evidence has shown that, while in most of Europe 70-80 per cent of commuters have returned to city centres after the summer period and before the second wave of lockdowns, the United Kingdom of Great Britain and Northern Ireland, in the same period, had seen a return of below 40 per cent, with London seeing less than 20 per cent of commuters coming back. It has been estimated that for every employee who works from home, there is one person who loses their job in a city centre.<sup>66</sup> To some extent, these trends may be counter-balanced by a marked growth in the popularity of local centres.<sup>67</sup>

### **Examples of positive investments in public transport**

To regain people's confidence in public transport after the COVID-19 crisis, the recovery plan of France devotes €1.2 billion to the development of public transport, such as metro, tram, bus and metropolitan train services, to provide mobility solutions that are eco-friendly in the densest urban areas. These resources complement financing by local authorities and could allow for total investment in public transport to be close to €5 billion. This measure will generate over 55,000 full-time equivalent jobs.

In addition, the French recovery plan devotes €4.7 billion to support the rail sector, to offer an attractive and efficient alternative to road transport, both for passengers and for goods. The plan will regenerate and modernize the national network and invest in branch lines to increase the offer in less densely populated areas and better connect them to urban centres.

The Ministry of Infrastructure and Environment of the Netherlands has pledged that all new buses in the Netherlands will be zero-emission vehicles from 2025. An agreement was signed with representatives of all 12 provinces of the Netherlands in 2016. Several transport authorities already have bus companies that use electric vehicles. A requirement of the agreement is that electricity used by the new vehicles must be generated by renewable sources, such as solar panels or wind turbines. The use of hydrogen is also foreseen within the agreement. In 2020, 750 out of 5 000 public transport buses were zero-emission vehicles.

In Kazan (Russian Federation) further to the principle of the sustainable development of the transport system, the city is contributing to the development of urban above-ground electric transport, including by creating a tram network, maintaining and developing a trolleybus network and renewing the public transport fleet. In Kazan, public transport has been segregated from other traffic and routes of communication. Furthermore, the introduction of priority public

<sup>66</sup> *Corriere della Sera*, “La crisi di Londra: City svuotata come le miniere?” (7 September 2020). Available at [https://www.corriere.it/editoriali/20\\_settembre\\_07/crisi-londra-city-svuotatacome-miniery-c9e1d6cc-f12d-11ea-9f2b-89b4229fc5bf.shtml](https://www.corriere.it/editoriali/20_settembre_07/crisi-londra-city-svuotatacome-miniery-c9e1d6cc-f12d-11ea-9f2b-89b4229fc5bf.shtml).

<sup>67</sup> Connor Ibbetson, Yougov, “Could COVID-19 ultimately save the high street?”, 10 July 2020. Available at <https://yougov.co.uk/topics/consumer/articles-reports/2020/07/10/-covid-19-coronavirus-UK-high-street-local-effect>.

transport lanes in the main streets has helped to establish transport links between the residential areas, the city centre and streets with access to external roadways.<sup>68</sup>

Similarly, in Moscow, a number of initiatives have been pursued recently to promote the use of public transport. A number of infrastructure improvements have been introduced including the creation of bus lanes and priorities at intersections, the creation of dedicated public transport streets, the renovation of tram lines and the introduction of transit hubs, such as the Kutusovskaya hub, aimed at facilitating the switch between transport modes. In addition, efforts have been targeted at making public transport more attractive through improved information at bus stops and the installation of more automatic ticket machines. These activities have been coupled with the upgrading of the tram, train and bus fleets to electric traction where possible and the addition of other amenities to the fleets to make them more comfortable.<sup>69</sup>

## OUTCOMES AND CONCLUSIONS

Accessibility for all can only be guaranteed with public transport at the heart of an integrated urban transport system. Investing in the development and improvement of public transport, especially in the take-up of electrified public transport solutions, is also one of the best strategies to improve road safety. Recent messages encouraging people to avoid public transport for COVID-19 reasons need to be reversed, as there is little evidence to date that the virus has been transmitted through public transport. This misinformation has created a negative perception amongst users that could have a long-term impact. Updated messages should focus on highlighting the extra efforts that are being made by operators and local authorities in reducing the risk of exposure during pandemics, and that currently it is safe to return to using public transport with the protocols that have been enacted aimed at, for example, reducing capacity and increasing cleaning. These messages will need to highlight how the cleaning measures will continue to ensure that confidence is maintained and because users will demand it. Cities and countries should invest in recovery and resilience for a systemic socioeconomic transformation, where public transport and active mobility play a key role to build back better.

Member States should consider how to maximize the use and efficiency of public transport systems in the post-COVID-19 world considering the following:

Efficiency, by:

- Ensuring appropriate priority is given to public transport in the city environment through dedicated or separated infrastructure to make it faster and more reliable than the private car.
- Ensuring that the public transport solutions adopted as the backbone of urban transport solutions, are planned effectively to create a well-connected and integrated system across transport modes (including active and shared mobility solutions) to facilitate an increase in usage and reduce car use.

Placing the user at the centre of decision-making by:

- Ensuring that accessible solutions are found for all sections of society, thus providing easy access to public transport for all communities with particular focus on vulnerable users and persons with reduced mobility. This accessibility must be set in the framework of ensuring that the service that is provided meets the needs of the users in order to drive efficiency.

<sup>68</sup> UNECE, “A Handbook on Sustainable Urban Mobility and Spatial Planning” (United Nations, Geneva, 2020). Available at <https://thepep.unece.org/node/815>, 2020.

<sup>69</sup> Ibid.



- Ensuring that what is offered is affordable, reliable and provides door-to-door solutions for users, with public transport at the centre, especially given new travel patterns post-COVID-19. A thorough analysis of the change in demand patterns is essential.
- Facilitating the introduction of integrated ticketing solutions across public transport modes and, where possible with active and shared e-mobility solutions.
- Pursuing clear measures to restore the trust of public transport passengers by highlighting the efforts made by operators to provide a safe and high quality service in the face of the pandemic, coupled with information campaigns on the long-term safety benefits of public transport.
- Ensuring that the information provided online is accurate, simple, understandable, up-to-date and accessible to all, as recommended in Theme 1 on communication with stakeholders.

Guaranteeing appropriate levels of investment for the creation of safe public transport for passengers and workers by:

- Highlighting public transport as the priority for decision makers in all countries. Public authorities should take a leading role in this awareness-raising by ensuring that there is coordination of funding and planning between local, regional and national authorities, each with their clearly identified tasks.
- Using alternative sources of funding for public transport, such as green bonds, public private partnerships and getting local businesses to invest in public transport to allow them to extract the benefits of greater usage.
- Ensuring that existing funding for public transport is focused on ensuring comfort, reliability and frequency to encourage further modal shift. The funding should be closely linked to the level of service offered.
- Re-directing public sector funding to sustainable transport solutions, such as public transport, in particular by focusing on investment in the electrification of public transport.
- Ensuring that local authorities have funding certainty for public transport (potentially through allowing the creation of ring-fenced funding schemes where the revenue from a specific existing or new tax could be earmarked exclusively for public transport).
- Including, prioritizing and securing funding for public transport in COVID-19 financial recovery plans, as Governments decide how to allocate some of the biggest public funds in history, and maintain and even step up planned investments in public transport infrastructure and services, due to their various positive multiplier factors, which will help deliver on multiple SDGs.

## **E. THEME 3 “ENCOURAGE THE ADOPTION OF E-MOBILITY SOLUTIONS AS A FUNDAMENTAL PART OF POWERING PUBLIC TRANSPORT AND ACTIVE MOBILITY”**

### **INTRODUCTION**

The introduction of electric mobility solutions into the transport environment has gradually increased throughout the ECE region in the form of electric private cars, electric public transport solutions and electric micromobility solutions.

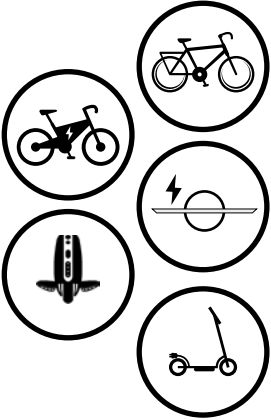
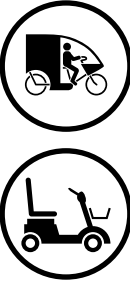
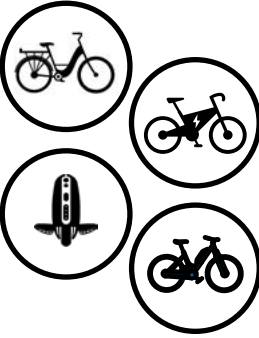

The introduction of electric cars has been gradually increasing with varying degrees of take up across different countries in the region. EEA estimates<sup>70</sup> for 2019 show that the share of newly registered electric vehicles (battery electric and full hybrid) ranges from 56 per cent in Norway to below 1 per cent in Italy and Spain. A wider uptake of electric private vehicles would reduce the direct emissions of the road vehicle fleet but does not address the other key pillars of the development of sustainable transport including safety, health and reducing congestion. It would, however, cover those urban freight movements that cannot be carried out by other forms of transport (such as cargo bikes and barges – see Theme 4).

The electrification of public transport, especially above-ground public transport through the introduction of electric buses, trolleybuses and the installation and upgrading of tram lines, is a key tool for increasing the sustainability of urban transport solutions. The switch away from diesel-powered buses can have a strong direct impact on emissions in cities as well as making the use of public transport more desirable.

Various types of e-micromobility can be found on the market. A typology of the different vehicles was developed by the International Transport Forum in its Safe Micromobility Report (see figure IX below).

<sup>70</sup> See <https://www.eea.europa.eu/data-and-maps/indicators/proportion-of-vehicle-fleet-meeting-5/assessment>.

**FIGURE IX PROPOSED MICROMOBILITY DEFINITION AND CLASSIFICATION**

Type A	Type B	Type C	Type D
"unpowered or powered up to 25 km/h (16 mph)"		"powered with top speed between 25-45 km/h (16-28 mph)"	
"< 35 kg (77 lb)"	"35-350 kg (77-770 lb)"	"< 35 kg (77 lb)"	"35-350 kg (77-770 lb)"
			

Source: International Transport Forum.<sup>71</sup>

E-micromobility vehicle sales have experienced significant growth over the past years. As an example, about 20 million bicycles and e-bikes are sold in the European Union annually. The overall sales value continues to rise due to the increase in pedal-assisted e-bikes sold, which grew by 23 per cent from 2018 to 2019, reaching 3.4 million units in 2019. This represents 17 per cent of the total bicycle sales in the European Union, rising to 50 per cent in some countries like the Netherlands and Belgium. The Confederation of the European Bicycle Industry (CONEBI) expects this positive trend to continue over the coming years, predicting e-bikes sales up to more than 8.5 million units in 2025.<sup>72</sup>

A recent study by BCG<sup>73</sup> (Boston Consulting Group) looks at how COVID-19 will shape urban mobility. The study examined at urban residents' movement patterns in China, Europe and the United States of America. During the first lockdowns, the use of nearly every mode of transportation fell strongly. Only the usage of privately-owned bicycles, e-scooters and walking increased in all three regions. Bicycle sharing usage increased in the United States of America and China as some operators implemented sanitizing and other hygienic measures as well as reducing their prices.

<sup>71</sup> International Transport Forum (ITF), "Safe Micromobility" (OECD/ITF, 2020). Available at <https://www.itf-oecd.org/safe-micromobility>.

<sup>72</sup> Confederation of the European Bicycle Industry (CONEBI), "2020 Bicycle Industry and Market Profile" (July 2020). Available at <http://www.conebi.eu/the-2020-conebi-bicycle-industry-market-profile-with-2019-figures-is-now-available/>.

<sup>73</sup> Julien Bert, Daniel Schellong, Markus Hagenmaier, David Hornstein, Augustin K. Wegscheider, and Thomas Palme, "How COVID-19 Will Shape Urban Mobility", 16 June 2020. Available at <https://www.bcg.com/publications/2020/how-covid-19-will-shape-urban-mobility>.

Looking at the change in urban mobility use immediately post-lockdown, it is expected that people will use their own vehicles, be they bicycle, scooter or, more often, car. For example, in the Netherlands there has been a surge in the sale of e-bikes during the pandemic. A consumer survey conducted in October 2020 by the European Consumer Organization (BEUC) shows consumers are likely to prefer individual forms of transport and more local travel following the pandemic.<sup>74</sup>

The growth of e-mobility also concerns cargo e-bikes and other e-vehicles used for freight and delivery. During lockdown, many citizens have turned to online shopping and the parcel and package delivery sector has grown. Large operators such as DHL and GLS, as well as local suppliers, have added electric vehicles to their fleets. Cargo e-bikes can contribute to reducing emissions and congestion as demand for city logistics services continues to grow.<sup>75</sup>

## THE ISSUE AT HAND

The use of e-mobility solutions can have a positive impact in several areas. On **accessibility**, the availability of micromobility solutions plays a role in catering for last-mile mobility needs in large cities and widens the catchment area of public transport hubs, reducing the time needed to reach them from across the city. The availability and distribution of shared electric vehicles is key to ensure that they effectively complement public transport networks. The use of electric public transport solutions further improves accessibility by introducing modern mass transit solutions that increase the comfort of users.

The environmental impact of electric public transport is lower compared to cars, diesel-powered buses and traditional fuel-powered scooters, as electric public transport emits both less CO<sub>2</sub> and less particulate matter, when coupled with charging infrastructure that is fuelled by electricity from renewable sources. As part of the urban mobility ecosystem, e-micromobility has the potential to reduce end-use environmental emissions.<sup>76</sup> However, life-cycle assessments (LCAs) are necessary to reveal the total environment cost of large-scale deployment of e-mobility solutions, as shown in recent work at the European<sup>77, 78</sup> and international<sup>79</sup> level, and to be able to compare the costs and benefits of the different e-mobility solutions available. LCAs will help mobility actors understand the upstream impacts of large-scale e-mobility on environmental resources.

<sup>74</sup> European Consumer Organization (BEUC), “Mobility habits following COVID-19”. Available at [https://www.beuc.eu/publications/beuc-x-2020-124\\_mobility\\_habits\\_following\\_covid-19.pdf](https://www.beuc.eu/publications/beuc-x-2020-124_mobility_habits_following_covid-19.pdf).

<sup>75</sup> Miguel Jaller, Carlos Otero-Palencia, Anmol Pahwa, “Automation, electrification, and shared mobility in urban freight: opportunities and challenges.” *Transportation Research Procedia*, Volume 46, pp. 13-20. April 2020. Available at [https://trimis.ec.europa.eu/sites/default/files/documents/1\\_opportunities\\_and\\_challenges.pdf?utm\\_source=Ricardo-AEA%20Ltd&utm\\_medium=email&utm\\_campaign=11810012\\_TRIMIS%2FJD%2F%2FED60132008%2FDigest\\_September&dm\\_t=0,0,0,0](https://trimis.ec.europa.eu/sites/default/files/documents/1_opportunities_and_challenges.pdf?utm_source=Ricardo-AEA%20Ltd&utm_medium=email&utm_campaign=11810012_TRIMIS%2FJD%2F%2FED60132008%2FDigest_September&dm_t=0,0,0,0).

<sup>76</sup> EEA, “The first and last mile — the key to sustainable urban transport, Transport and environment report 2019” (Luxembourg, Publications Office of the European Union, 2019). Available at <https://www.eea.europa.eu/publications/the-first-and-last-mile>.

<sup>77</sup> <https://ricardo.com/news-and-media/news-and-press/ricardo-delivers-major-european-report-on-the-lifecycle-impacts-of-road-vehicles>.

<sup>78</sup> Anne de Bortoli, “Are shared e-scooters good for climate change? Analyzing the case of Paris.” Available at <https://www.itf-oecd.org/sites/default/files/docs/e-scooters-climate-change-young-researcher-award-2020-de-bortoli.pdf>.

<sup>79</sup> Lisa Abend, *Time*, “Cyclists and E-Scooters Are Clashing in the Battle for Europe’s Streets”, 27 August 2019. Available at <https://time.com/5659653/e-scooters-cycles-europe/>.

People worldwide are becoming more and more sedentary and are often not meeting the standards of physical activity suggested by WHO. As identified in chapter I, this can have a negative effect on their **health**. Encouraging the use of some e-micromobility solutions that require physical activity such as e-bikes, especially for the first and last mile, and as a complement to electric public transport solutions, could be an important contribution to getting people more active and improving air quality.

E-mobility solutions can be more **inclusive and affordable** for users, although they may not be the most economical solution for public authorities interested in investing in electric public transport. Shared electric vehicles or bicycles, easily rented by non-regular users through mobile phone apps, relieve passengers from the burden of ownership and related maintenance costs and make use of public transport in combination with shared vehicles more attractive. Incentives in this field should be focused on sustainable transport mechanisms, zero- or low-emission vehicles, electrification of public transport by road, or new operational services leading to low-emission mobility. At the same time, incentives should reverse existing “wrong” incentives, financial advantages or fiscal privileges like exemptions, or refunds of mineral oil taxes linked to traditional fossil fuels, for both, private individual and public transport.

Often the adoption of these solutions for micromobility is not accompanied by the introduction of dedicated and appropriately **protected infrastructure**, which can have a consequential effect on **safety** for users and those around them, a rising concern in the use of e-micromobility solutions. There are synergies between infrastructure for public transport and e-micromobility, including in the development of charging infrastructure, that can lead to greater efficiency of urban transport systems as a whole.

Both themes 1 and 2 speak of the need to ensure that both planning and public transport take into consideration the role of e-mobility and related solutions.

The common thread across each of the issues highlighted above is a lack of regulation for some of the new forms of micromobility. As discussed in more detail in Eltis,<sup>80</sup> there is a lack of consistent regulation to manage micromobility across Europe. Confusion and illegal behaviour will grow in the absence of clear rules on where micromobility can operate and how (for example, speed limits and priority). It is generally agreed that legislation is required for micromobility solutions to work in harmony with conventional transport.

### Examples of promotion of e-micromobility solutions

France made €60 million available to boost e-micromobility solutions after the first lockdown. This money will be used for a variety of measures including the construction of new cycling infrastructure. As a part of investment, Paris and several other large cities have announced large rollouts of cycle lanes for during and after the lockdowns. Paris alone is planning to create 650 km of cycle paths.

In Greece a subsidy for the purchase of bicycles, scooters and electric cars was announced. The law provides a discount equal to 15 per cent of the retail price of cars (with a limit of €5,500), 20 per cent for scooters and 40 per cent for bicycles.<sup>81</sup>

<sup>80</sup> Eltis is the urban mobility observatory, a knowledge-sharing portal managed by Ricardo and partners on behalf of the European Commission. <https://www.eltis.org/in-brief/news/new-micromobility-data-platform-launched-help-cities-and-operators>.

<sup>81</sup> Sarantis Michalopoulos, EURACTIV.com, “Greek law gives strong push for electromobility”, 22 June 2020. Available at [https://www.euractiv.com/section/all/short\\_news/greek-law-gives-strong-push-for-electromobility/](https://www.euractiv.com/section/all/short_news/greek-law-gives-strong-push-for-electromobility/).

During the 2020 COVID-19 crisis, the Government of Italy introduced a “mobility bonus”, giving citizens living in the larger urban areas a one-off voucher of up to €500 (or 60 per cent of the purchase cost) to buy bicycles, e-bikes or scooters. The bonus scheme appears to have boosted sales of two-wheelers. Recent surveys show that more than 2.5 per cent of the population owned an e-scooter by September 2020 and Italian bicycle retailers remarked a 60 per cent increase in sales in May 2020 in comparison to the year before.

## OUTCOMES AND CONCLUSIONS

Given the important role that e-mobility is likely to have in the future development of the transport sector, it is important to ensure that:

- A comprehensive assessment is carried out of the impact of large-scale implementation of all types of e-mobility solutions on pollutant emissions, health and congestion of street and road networks. In terms of emissions, the assessment should look at end-use emissions, for which tools such as urban transport roadmaps can be used, and emissions in the “life cycle”.
- Long-term infrastructure investments are promoted that make the use of e-micromobility more attractive and safer for users.
- Incentives to use e-mobility vehicles are applied if their use provides environmental and health benefits.
- Local governments and solution providers cooperate and coordinate well in the sharing of e-mobility facilities.
- E-mobility vehicles, and especially lightweight electric vehicles, being marketed meet high standards to make them safe to use.
- Cooperation is possible between the public and private sectors to encourage investment in e-mobility infrastructure and related services.
- Linked to the recommendations on public information accessibility raised in previous themes, there is support to cities to set up interoperable infrastructure and better cross-modal information. Better infrastructure (both digital and technical) will encourage light electric vehicle sharing solutions, such as bicycle sharing systems. Furthermore, better infrastructure will also encourage intramodality in general, meaning a seamless use of different modes of transport, for instance the combination of public transport with e-micromobility solutions.

## **F. THEME 4 “INTRODUCE MOBILITY MANAGEMENT SOLUTIONS TO MANAGE TRANSPORT DEMAND IN AN ENVIRONMENT-FRIENDLY AND HEALTHY WAY, TAKING INTO ACCOUNT THE USER-PERSPECTIVE AND RAISING AWARENESS OF TRANSPORT USERS, TO FACILITATE THE SWITCH TO GREENER MODES OF TRANSPORT AND TO MAKE THE TRANSPORT SYSTEM MORE EFFICIENT IN THE URBAN, SUBURBAN AND RURAL ENVIRONMENTS”**

### **INTRODUCTION**

Priority Goal 3 of THE PEP identifies the need: “to manage sustainable mobility and promote a more efficient transport system” thereby already identifying the important role of mobility management in the creation of green and healthy sustainable transport systems. Since the inclusion of this goal as one of the key activities of THE PEP in the Amsterdam declaration<sup>82</sup> in 2009, and following the creation of initiatives such as the European Platform on Mobility Management, the role of incentivizing the switch away from private car use through mobility management has grown significantly.

As a cornerstone of its urban mobility policy, the European Commission strongly recommends that European towns and cities of all sizes embrace its concept of Sustainable Urban Mobility Plans (SUMP). Implementation of these plans can vastly improve the overall quality of life for residents by addressing major challenges such as congestion, air and noise pollution, climate change, road accidents, unsightly on-street parking and the integration of new mobility services. The guidelines for SUMP were updated in 2019<sup>83</sup> and are available in English, Chinese and Hungarian, with more translations following during 2021.

The attractiveness of adopting mobility management solutions in cities, industrialized but also rural communities is that they are often low-cost solutions that can have a significant impact on reducing car usage. This can be through mass public transport solutions in cities but also through micro public transport solutions in rural or suburban areas integrated with ride sharing and active mobility solutions.

The solutions that have been adopted over the years have focused on the first and last mile, often on home/work or home/school trips, but are increasingly including shared mobility solutions, leisure and tourist mobility, as well as solutions around major sporting events and urban freight initiatives. Often these solutions have been closely integrated with local public transport options.

### **THE ISSUE AT HAND**

Even though the use of such solutions is growing, many parts of the ECE region have yet to implement such practices or to fully pursue cross-modal integration options. The aim of this theme is to introduce mobility management solutions to manage transport demand in an environment-friendly and healthy way, taking into account the user-perspective and raising

<sup>82</sup> UNECE and WHO Regional Office for Europe, “Amsterdam Declaration, Making THE link: Transport choices for our health, environment and prosperity” (United Nations, New York and Geneva, 2010). Available at <https://thepep.unece.org/node/95>, 2010.

<sup>83</sup> [https://ec.europa.eu/transport/themes/urban/urban-mobility/urban-mobility-actions/sustainable-urban\\_en](https://ec.europa.eu/transport/themes/urban/urban-mobility/urban-mobility-actions/sustainable-urban_en).

awareness of transport users, to facilitate the switch to greener modes of transport and to make the transport system more efficient.

The current COVID-19 situation has allowed for the possibility for alternative mobility management solutions to be identified, coupling working at home solutions with staggered working hours and increased home delivery of goods and services. It has also meant that many people have returned to the private car and have adopted active mobility solutions, especially cycling, as authorities have sought to discourage the use of public transport (see discussion in Theme 2).

In this framework it is also important to consider the role of freight movements in the urban environment. Managed mobility solutions have focused historically on passenger movements with only a small number of projects addressing urban freight movements. However, a large volume of traffic is caused by freight deliveries to the centre of cities. COVID-19 has, to a certain extent, decentralized these freight movements away from city centres to residential areas, potentially reducing congestion, but not reducing overall emissions. On the contrary, emissions from delivery may have increased as a result of this shift. On the one hand, local shops that may have previously been reached on foot from the place of employment or place of residence now deliver purchased items to homes. However, on the other hand, the efficient delivery of goods by an integrator (for example a courier company) rather than each household driving to the stores may have reduced emissions.

In every field of action aimed at promoting low-emission, sustainable and healthy mobility, it should be ensured that private initiatives and business-innovators (as mentioned in Theme 5) can be easily integrated into the actions of public authorities, also through appropriate stakeholder consultation.

Now is the time to accelerate the implementation of such initiatives in order to capitalize on the restructuring of work commitments in the light of COVID-19 restrictions, as well as the potential evolution of the home-school routine. It is also important to facilitate the adoption of such initiatives so that those who need to return to some form of commute have the tools at their disposal to do so in a sustainable manner. For those that do not, good digital connectivity will be key.

While many of the solutions that have been adopted have been local in nature, in some cases, such as in Austria, these initiatives have been coordinated at a national level to ensure that national priorities are pursued when implementing these schemes.

### **Examples of positive implementation solutions**

THE PEP study on this subject – “Mobility Management: A Guide of International good practices”<sup>84</sup> – published in the first half of 2020 identifies a number of good practice examples of managed mobility solutions adopted across the region. Three of these examples that are of particular relevance here for their innovative approach are:

*“National mobility management campaign in Austria: Klimaaktiv mobil”*

The Klimaaktiv mobil programme, Austria’s climate protection initiative in transport, is the main source for supporting and funding mobility management measures contributing to greenhouse gas mitigation. Through this programme, the Federal Ministry of Agriculture, Regions and Tourism provides active support in the transformation towards clean mobility for Austria’s cities, municipalities and regions, businesses, fleet operators and associations, tourism operators,

<sup>84</sup> UNECE, “Mobility Management: A guide of international good practices” (United Nations, Geneva, April 2020). Available at <https://thepep.unece.org/node/805>, 2020.



schools, youth initiatives and citizens. The financial support programme covers alternative vehicles, hydrogen vehicles and electromobility, always based on renewable energy sources, the promotion of active mobility as well as mobility management and innovative mobility services. In addition to subsidies, the klimaaktiv mobil programme comprises targeted group-specific consulting and awareness-raising programmes, partnerships and training and certification initiatives.

The five pillars of klimaaktiv mobil are:

- Consulting programmes
- Financial-support programmes
- Awareness-raising programmes
- Training and certification
- Partnerships.

The successes of the klimaaktiv mobil programme (numbers up to 2018) are:

- More than 15,000 climate-friendly mobility projects initiated, implemented by around 12,500 businesses, 1,200 cities, municipalities and regions, 900 tourism and leisure organizations and 400 schools.
- Current annual savings of approximately 450,000 tonnes of CO<sub>2</sub>.
- Financial support for mobility projects amounting to approximately €122.4 million, including approximately €112.6 million from the national funds of the Federal Ministry of Agriculture, Regions and Tourism, the Climate and Energy Fund and the national environmental support scheme and €9.8 million from European Union funds (European Agricultural Fund for Rural Development), having triggered an environment-related investment volume of €816 million.
- Around 7,000 “green jobs” secured or created.
- Financial support for about 34,300 alternative fuel vehicles, including more than 31,600 electric vehicles, and approximately 280 cycling projects, including the expansion of cycling infrastructure.
- Training of roughly 2,100 klimaaktiv mobil competence partners, such as eco-driving trainers, bicycle technicians, cycling instructors, youth mobility coaches and graduates of the “E-Mob-Train” training course on electromobility, carried out in cooperation with partners and the certification of 38 driving schools.
- Around 77,500 children and young people and 5,000 teachers reached so far, and approximately 985,200 car trips and thus more than 800 tonnes of CO<sub>2</sub> saved. In addition, 115 youth mobility projects were implemented, and more than 15,900 young people were involved.

#### *“Home to work mobility”*

In 2016 Infineon Technologies Austria AG launched the mobility management initiative “Green Way” in order to promote sustainable mobility as an alternative to the daily trip to work by car. A mobility survey and an analysis of employees’ residential location was carried out at the beginning of the project, which provided useful insights into the mobility habits for home-work trips:<sup>85</sup>

<sup>85</sup> Wukovitsch, Florian, “Green Way: das Infineon-Mobilitätsmanagement. Wirtschaft & Umwelt – Zeitschrift für Umweltpolitik und Nachhaltigkeit”, April 2018. Available at <http://www.ak-umwelt.at/betrieb/?issue=2018-04#> accessed on 18 March 2019.

- (a) More than 70 per cent of the employees travelled to work by car due to inadequate public transport connections, long commuting distances, shorter travel times and the perceived lack of alternatives;
- (b) Only 25 per cent of the employees live within 5 km (by road) of the company, around 50 per cent live within 10 km and more than 20 per cent over 30 km away;
- (c) A considerable number of employees were willing to carry out at least part of their home-work journey by bicycle.

With this background, a number of specific mobility management schemes were adopted to facilitate modal shift:

- Improvement of public transport
- Upgrading of cycling related infrastructure
- Introduction of reserved carpooling parking spaces and the development of a dedicated app
- Creation of electric mobility parking spaces
- Allowing smart working
- Communication and visibility programmes to facilitate take-up
- Other measures and local collaborations.

As a result of these actions the number of car trips fell from 76 per cent to 50 per cent, with the result that 50 per cent of employees commute with sustainable modes of transport and efforts continue to increase this percentage with a particular focus on public transport.

Other home to work solutions include the railways of the Netherlands working closely with large companies to offer integrated train and cycle-hire tickets to all employees and Google working on an application aimed at providing the quickest cycling route to a destination.

#### *“Urban freight mobility management”*

The City of Utrecht was concerned about the negative impacts of freight distribution in the city centre including damage, blocking of streets due to loading and unloading, crashes, noise and air pollution. As a result, over the years it has introduced different vehicle restrictions such as time windows for freight traffic to deliver goods and a low-emission zone. One of the most successful initiatives was the introduction of waterborne freight distribution for last-mile deliveries to the city centre to decrease city centre traffic and make full use of waterborne freight distribution.

The Municipality of Utrecht introduced waterborne freight deliveries through the establishment of the Beer Boat, a specially adapted diesel barge that carried out beer deliveries to bars and restaurants along the canals. This measure proved very effective in reducing the number of trucks and the related negative impacts on the city centre, while guaranteeing the delivery of beer and compliance with labour laws (for carrying barrels and crates). Following the success of this service, an electrically-powered vessel was introduced, increasing the load capacity to 18 tons while reducing emissions.

The development of this service has reduced congestion in the city and the electric vessel has led to a reduction of annual emissions of CO<sub>2</sub> by 17 tonnes, nitrogen oxides (NO<sub>x</sub>) by 35 kg and PM<sub>10</sub> by 2 kg. Deliveries have also become more efficient and faster. The success of this service has led to a further vessel being introduced for the collection of waste in the city centre and to similar services being introduced for construction equipment in other cities in the Netherlands.

The key lessons learned from this study were to:

- Ensure that there are alternatives to the car (public transport, cycling, etc.) and that these alternatives are accessible, affordable and efficient;
- Introduce both push and pull measures;
- Know the target group;
- Ensure there is a long-term approach with commitments from all stakeholders in the area and integration with other programmes;
- Dedicate resources to awareness raising and communication;
- Make it fun and rewarding.

These lessons are still of significant importance in the post-COVID-19 situation, as the return to commuting to offices slowly picks up. Mobility management solutions can influence the manner in which people move around cities and to and from them.

## **OUTCOMES AND CONCLUSIONS**

To ensure a holistic approach to encouraging green and healthy sustainable transport, the use of managed mobility solutions for passenger and freight movements across the region must be intensified by drawing on existing experiences and coordinating their implementation at national and international levels. A key part of this approach will be to facilitate innovation and investment in managed mobility to adapt also to the post-COVID-19 situation. In so doing, it is important to ensure that national mobility management strategies are prepared with a strong focus on the use of new technologies, digitalization and smart mobility solutions that seek to incentivise the user, appropriately supported by strong awareness raising. Building on these technological advancements, member States should facilitate the development of sustainable national, regional and urban plans for mobility management and mobility planning, including through the introduction of Sustainable Urban Mobility Plans or similar planning tools.

## **G. THEME 5 “FACILITATE THE ADOPTION OF INNOVATION AND TECHNOLOGY IN TRANSPORT TO INCREASE ACCESSIBILITY AND SAFETY AND TO REDUCE EMISSIONS AND ENVIRONMENTAL IMPACTS, LEADING TO INCREASED HEALTH BENEFITS”**

### **INTRODUCTION**

In the post-COVID-19 era, in what may come to herald a green and just recovery for global and local economies, transportation modes and networks will need to respond to new forms of urban and rural living, work patterns and modes of mobility. E-commerce has rapidly transformed consumerism and delivery logistics, leading to an increase in the last-mile delivery to homes rather than businesses in city centres. For those wealthy enough, spending on online shopping worldwide increased by 40 per cent in March 2020 compared to 2019 values.<sup>86</sup> New forms of production have promoted working from home, and will create new residential and commuting patterns. Freight and personal transport sectors will seek to innovate, or apply existing technologies, to cater for these different transport and mobility demands.<sup>87</sup>

Before the start of the COVID-19 pandemic technology was already changing the way we moved and worked. The “fourth industrial revolution” as it is often known,<sup>88</sup> through its increased automation and the use of smart technologies, had already found its way into our mobility patterns through our mobile phones, the sharing economy and the trials of automated vehicles on the road and on rails. This revolution has been the basis for the acceleration of technological take-up during the pandemic and has laid the foundation for a step change in innovative transport solutions post-COVID-19.

### **THE ISSUE AT HAND**

The challenge ahead for a green recovery, enhanced by technological innovation, will be to prioritize active travel and more integrated mass transit.<sup>89</sup> Private vehicle usage, with the move to more affordable e-mobility and zero-emission vehicles, will remain a factor. Transformative action, however, will not only come about by technological innovation, but by human determination to ensure that transportation policies are centred on moving people, not cars, around cities and rural areas.

People and freight mobility, perhaps increasingly embedded in a mainstream adoption of the 15-minute city, will move towards more active travel modes such as e-cargo bikes, or zero-emission boats and trains, maximizing the efficiency of existing linear infrastructure.

Now established GPS and radio frequency identification technologies to enable time-spatial positioning have been complemented by movement tracking via fixed objects, such as mobile phone towers, entrance gates to urban rail and bus systems and bicycle-sharing docking stations. So-called smarter technologies provide not only management and warning functions to regulate and advise traffic flow. Artificial intelligence advances have moved beyond the successes of

<sup>86</sup> <https://www.statista.com/topics/871/online-shopping/>.

<sup>87</sup> <https://www.eltis.org/discover/case-studies/utrechts-sustainable-freight-transport-netherlands>.

<sup>88</sup> Schwab, K., “The Fourth Industrial Revolution”, World Economic Forum, 2015.

<sup>89</sup> <https://search.proquest.com/docview/2410837866/fulltextPDF/278EC054FF3043A9PQ/1?accountid=13042>.

accurate sensing, fast processing and reliable control, to possess higher order capacities for prediction, self-optimization and interoperability.

The analysis of big data has fed into new forms of network analysis, but while technology has rapidly opened up these new frontiers of live data-driven transport planning and management, future steps should be careful not to let the macro override the particular context of the local – the key social, environmental and political contexts that shape consumer experience and responsive transportation delivery.

Cities and societies that are unable to adopt and adapt to innovate transport technologies face the risks of broken and outdated transport and regulatory systems; increasing air pollution, congestion and the diseconomies of dated, inoperative transport networks; disgruntled customers and users; and a lack of evidence-based, data-driven planning and management.

## **OUTCOMES AND CONCLUSIONS**

Innovation and smart mobility solutions will be the cornerstone of a swift move towards sustainable transport solutions and the public and private sectors need to be in a position to embrace these developments. At the same time these new technologies need to be introduced in a manner that makes take-up by the consumer easy and inclusive. To do this, a step-by-step process needs to be followed that puts the customer at the centre of the implementation of any solution. In doing so, attention needs to be placed on:

- Expanding integrated mobility as a service platform;
- Encouraging the switch to zero-emission vehicles;
- Ensuring that technology is focused on traffic monitoring and management solutions and enforcement requirements;
- Considering the use of alternative technology solutions such as blockchain information systems to provide transparency in transportation management, planning and delivery;
- Implementing flexible, responsive and fair revenue management systems that facilitate equal access to sustainable transport.

## H. THEME 6 “SUPPORTING ACTIVE MOBILITY AS A SUSTAINABLE AND HEALTHY MODE OF TRANSPORT”

### INTRODUCTION

The wellbeing and happiness of our societies is essential to sustainable development and is driven by health, safety, freedom and natural surroundings. Sustainable transport and, in particular, active mobility must have a key role in achieving all this.

Active mobility in the form of walking and cycling, as the healthiest and most affordable travel modes, can help to mitigate the adverse effects of current transport trends, especially in urban areas. Regular walking and cycling as a means of transportation:

- Reduces the risk of hypertension, coronary heart disease, stroke, type-2 diabetes, breast and colon cancer and depression;
- Improves muscular and cardiorespiratory fitness, bone and functional health;
- Is fundamental to energy balance and weight control;
- Improves road safety (where active mobility infrastructure is segregated and safe) and air quality;
- Reduces congestion, noise, energy consumption and CO<sub>2</sub> emissions (when coupled with less car use);
- Reduces the need for more expensive infrastructure for cars and maintenance costs for existing roads (which need to be compensated by public transport and active mobility infrastructure expenditure);
- Improves accessibility and quality of urban life;
- Contributes to the creation of inclusive, safe, liveable and resilient space;
- Ensures social equality and gender benefits;
- Supports the rural and local economy and job creation.

Active mobility solutions cannot be considered in isolation though and need to be coupled with a strong backbone of public transport (Theme 2) and with appropriate mobility management initiatives (Theme 4). They also need to be supported by a strong policy and regulatory framework. This is why ministers of transport, health and environment decided to initiate the development of a pan-European Master Plan for Cycling Promotion, which has been elaborated by THE PEP partnership on cycling. The partnership involves 25 countries, the European Cyclists’ Federation and the secretariats of the UNECE Sustainable Transport and Environment Divisions and WHO Regional Office for Europe (WHO/Europe).

### THE ISSUE AT HAND

There are many studies that point towards the positive health benefits of safe cycling and walking, including longer and healthier lives, improved mental health, reduced deaths, reduced serious injuries and reduced light injuries that also happen to e-cyclists.<sup>90</sup>

<sup>90</sup> De Geus, Bas, and Ingrid Hendriksen, “Cycling for transport, physical activity and health: What about Pedelecs?”, 2015. Available at [https://www.researchgate.net/publication/282752633\\_Cycling\\_for\\_transport\\_physical\\_activity\\_and\\_health\\_What\\_about\\_Pedelecs](https://www.researchgate.net/publication/282752633_Cycling_for_transport_physical_activity_and_health_What_about_Pedelecs).

During the pandemic crisis, the role of cycling and walking has grown as they emerged as viable mobility options for essential trips, while supporting physical distancing and relieving the burden on public transport.

British Cycling, an advocacy group, estimates that COVID-19 might prompt some 14 million Britons to choose a bicycle over a car, according to the World Economic Forum<sup>91</sup>. Despite fewer people travelling overall during the crisis, the United Kingdom has seen an approximate doubling in weekday cycling. At weekends, that increase has been up to around 200 per cent, compared to pre-COVID-19 levels. Cycling has seen a big increase in Scotland. Edinburgh for example saw weekday increases of up to 252 per cent and weekend increases of up to 454 per cent in the first three weeks of April 2020. In Glasgow, cycle traffic rose by 74 per cent.

Other European countries show similar trends for bicycles. In Paris, cycling increased by 40 per cent from March 2020 to the beginning of June 2020. In France, overall, cycling increased by 85 per cent in June in comparison to before the lockdown period (January–March 2020). Post-lockdown Germans<sup>92</sup> were cycling twice as much as they did before COVID-19. At one point, Germans were using their bicycles even four times as much as during this period in previous years.

In the United States of America, bicycle sales are booming. Sales of bicycles, related equipment and repair services almost doubled in March 2020 compared with the same period in 2019.

### How to support active mobility

The measures for enabling the promotion of active mobility fall under the three overarching categories of: division of responsibilities; regulations and laws; and infrastructure.

Despite the technical, legal and administrative challenges of improving safety for cyclists and pedestrians, during the pandemic measures were implemented almost overnight. This experience has demonstrated that authorities can be responsive and agile in times of need, and that promoting active travel does not always require time-consuming administrative processes. Authorities should encourage the **appropriate division of responsibilities** and review these practices and identify lessons learned for application under future similar circumstances, but also in regular, everyday business.

Road traffic and traffic safety have a significant impact on active mobility; they are particularly important as pedestrians and cyclists are the most vulnerable road users and encompass all age groups. In this framework, **regulations and laws** need to be improved with increased focus on enforcing speed limits and prioritizing pedestrians and cyclists on roads to improve their safety.

Active mobility needs to be supported by dense, well-connected, well-designed, safe and comfortable **infrastructure** that is fit for purpose and not focused on favouring the use of motor vehicles.

The disproportionate use of public space by motorized traffic gave the opportunity to decision makers to create the dedicated infrastructure needed for active mobility during the pandemic crisis, as mentioned above, by providing safe room for pedestrians and cyclists. “Emergency cycle lanes” make essential travel possible and safe. “Tactical urbanism” interventions such as traffic

<sup>91</sup> World Economic Forum, “Britain’s “transport revolution” could see 14 million people start cycling”, 19 May 2020. Available at <https://www.weforum.org/agenda/2020/05/fourteen-million-britons-cycling-covid19>.

<sup>92</sup> [https://www.bike-eu.com/market/nieuws/2020/05/german-e-bike-sales-increase-rapidly-after-shop-re-openings-10137814?vakmedianet-approve-cookies=1&\\_ga=2.55744107.1599539742.1598968039-111020963.1578917399](https://www.bike-eu.com/market/nieuws/2020/05/german-e-bike-sales-increase-rapidly-after-shop-re-openings-10137814?vakmedianet-approve-cookies=1&_ga=2.55744107.1599539742.1598968039-111020963.1578917399).

cones, plastic bollards and construction separators help to reclaim street space from car parking and travel lanes and give this space to cycling and walking.

Narrowing roads can also help traffic calming, slowing down drivers. This should be coupled with increased efforts to ensure that pedestrians and cyclists are treated as equal road users, with street and public space divided equally between all users. Furthermore, cycling and walking infrastructure should be integral to urban planning policies and building regulations (including secure bicycle parking, chargers, wide entrance doors and appropriately designed lifts). Active mobility infrastructure also needs to be better integrated with public transport solutions, as most public transport trips include at least two legs covered on foot.

Active mobility also needs to be supported by **appropriate economic and fiscal measures** to incentivise sustainable mobility choices, for example, implementing parking management schemes, or subsidizing zero-emissions vehicles and bicycle-sharing schemes. During the pandemic some authorities even made bicycle-sharing systems free for use by health sector professionals and other essential workers. For the long term, it will be essential to provide those people who used these services during the pandemic incentives for purchasing bicycles, e-bikes or cargo bikes, coupled with possible congestion charging or other mobility management schemes as identified under Theme 4.

The United Kingdom announced a £2 billion package putting cycling and walking at the heart of Britain's post-COVID transportation plan. With the help of this money<sup>93</sup> new infrastructure for walking and cycling will be built and a “fix your bike voucher scheme,” through which citizens can apply for a £50 voucher to repair their bicycle, will be introduced.

In addition to economic and financial incentives, behaviour can be changed to increase the use of active mobility through **education and communication**. Education, awareness-raising, mass-media and community-wide campaigns related to the benefits of safe walking and cycling can play a significant role in encouraging people to shift to active mobility. However, education alone is not enough to influence or change attitudes. Incentives and innovative approaches that make it fun, such as cycling lessons or the use of games and apps, are needed to create change as identified in Theme 4 above.

In these awareness-raising initiatives, it is also important to target specific user groups such as speeding offenders, school children, the elderly or new residents moving into a city. Furthermore, parents can influence and shape their children's travel behaviour - the more parents travel by bicycle or by foot, the higher the probability of their children going by bicycle or walking. In communicating initiatives, community buy-in and involvement in the development of active mobility schemes is important, as only with the involvement of the potential users will optimal solutions be found.

In order to achieve modal shift towards active mobility, it is crucial to provide **adequate funding** for investments. The allocation of sufficient budgetary resources to address all the points mentioned above should be an integral part of the national development plans. During the pandemic crisis, some local, regional and national governments have actively supported this shift with new or additional funds for investments in infrastructure or by encouraging use.

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<sup>93</sup> United Kingdom of Great Britain and Northern Ireland Department for Transport, Office for Zero Emission Vehicles, Office for Low Emission Vehicles, and The Rt Hon Grant Shapps MP, “£2 billion package to create new era for cycling and walking”, 9 May 2020. Available at <https://www.gov.uk/government/news/2-billion-package-to-create-new-era-for-cycling-and-walking>.



Providing enough funds for improving cycling and walking infrastructure will guarantee a high rate of return on investment. Applying policy tools like HEAT and ForFITS<sup>94</sup> can help urban planners, transport authorities and health practitioners to estimate the value of the reduced mortality resulting from regular walking or cycling or the CO<sub>2</sub> impact of increased active mobility. They can make the case for new investment in active mobility and quantify its economic value.

## OUTCOMES AND CONCLUSIONS

As a cornerstone of effective transport and urban planning, active mobility can make a large contribution to a resilient city with healthy and happy citizens. It can also help to create vibrant public spaces where people can meet, and the local economy can thrive. For a more resilient future with more people having the possibility to cycle and walk safely, the need is not to implement single measures, but to deploy all of them to radically restructure urban space.

To ensure this shift, it is fundamental that there is a focus on:

- Building consensus and facilitating coordination between the various regional, national and local authorities;
- Ensuring that there is a robust regulatory framework on which to build active mobility solutions;
- Seamlessly integrating other modes of transport, in particular public transport solutions;
- Building and adapting infrastructure to promote active mobility;
- Incentivizing users economically and fiscally to switch modes;
- Communicating and raising awareness of the benefits of greater active mobility use;
- Leveraging data solutions to develop increased use;
- Taking steps to ensure that solutions adopted are equal for all, with particular focus on vulnerable users and gender differences;
- Supporting the implementation of all these solutions with appropriate funding.

<sup>94</sup> UNECE, For Future Inland Transport Systems. Available at <https://unece.org/forfits-model-assessing-future-co2-emissions>.

## **I. THEME 7 “REBUILDING THE TRANSPORT SYSTEM IN A FAIR AND INCLUSIVE WAY, WHILE AVOIDING SOCIAL DISPARITIES AND PARTICULARLY TAKING INTO ACCOUNT THE NEEDS OF VULNERABLE AND DISADVANTAGED GROUPS IN SOCIETY. TAKING INTO ACCOUNT THE SOCIAL DIMENSION OF PANDEMICS, AS WELL AS THE NEED FOR A JUST TRANSITION TOWARDS A GREEN AND HEALTHY TRANSPORT SYSTEM”**

### **INTRODUCTION**

Addressing inequality of access has been at the heart of the work of THE PEP for many years. Inequalities and social disparities are not caused by transport systems, but lack of mobility options can accentuate them. Therefore, wider planning policies need to ensure that they also identify transport solutions to these problems. As part of addressing these inequalities, it is important that local and national authorities focus on the rebuilding of the transport system, particularly public transport in this framework. In so doing, they should make transport solutions fair and inclusive in terms of availability, affordability, time budget, adequacy and accessibility.<sup>95</sup>

The positive and negative consequences of responses to the COVID-19 pandemic have been widely discussed in relation to transport. However, the social disparities related to COVID-19 and mobility have been less documented. In this regard, re“building” the transport system could be sustainable but may exacerbate social disparities if it does not consider the needs of vulnerable and disadvantaged groups. The COVID-19 pandemic has also highlighted that individuals who are considered vulnerable or disadvantaged change over time, so policymakers need to be able to adapt their approaches accordingly.

Public authorities need to plan and develop transport policies and infrastructure by paying particular attention, in line with the policies identified in previous themes, to: (i) individuals who are part of vulnerable groups (for example, the elderly and children); and (ii) disadvantaged individuals.

Workers and employment opportunities must be taken into consideration in this rebuilding, for example in terms of skills transfer and development, and countries should make sure to abide by the positive and negative obligations of fundamental labour rights.

Furthermore, the current efforts aimed at the reclamation of road space and public walkways for active mobility and local businesses, as mentioned in previous themes, need to ensure that they do not negatively affect persons with reduced mobility.

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<sup>95</sup> See, Fred Dotter, “CIVITAS Thematic Policy Note: Transport Poverty”. Available at [https://civitas.eu/sites/default/files/civitas\\_policy\\_note\\_transport\\_poverty.pdf](https://civitas.eu/sites/default/files/civitas_policy_note_transport_poverty.pdf), accessed 13 August 2020; Tobias Kuttler and others, “Mobility in Prioritised Areas: Mapping the Field”, 25. Available at [https://hireach-project.eu/sites/default/files/HiReach\\_D2.1%20Mapping%20the%20field\\_v2\\_20190524\\_TRT.pdf](https://hireach-project.eu/sites/default/files/HiReach_D2.1%20Mapping%20the%20field_v2_20190524_TRT.pdf).

## THE ISSUE AT HAND

Research has well documented that poor transport systems have negative effects on mobility.<sup>96</sup> However, poor transport systems affect individuals and groups differently. For example, individuals may be disadvantaged by public transport systems that do not provide sufficient access to important destinations, including employment opportunities, everyday services and social exchanges to allow an individual to fully participate in society. The lack of adequate transport services has a disproportionate effect on individuals living in certain areas, notably rural areas, but also densely populated urban areas for example. In more deprived parts of urban areas, individuals may have limited or no access to safe, clean and reliable public transport, or to safe environments for active mobility. These areas may also have high levels of air and noise pollution, as a result of road congestion, and greater risk of injury on road networks, which further exacerbates social disparities related to mobility.<sup>97</sup> Moreover, vulnerable and disadvantaged groups, such as the elderly, youth, persons with reduced mobility and those living in informal settlements, are more exposed to inequalities.

As these few examples have demonstrated, current transport systems could be considered unfair and non-inclusive systems that perpetuate social disparities in many ways. These negative consequences come together and have been identified as transport poverty, which combines transport affordability (the cost of transport being too high), mobility poverty (the lack of transport availability – usually motorized transport), accessibility poverty (the lack of transport solutions to reach employment, essential services and leisure) and exposure to transport externalities (bearing an undue burden from such things as pollution and congestion).<sup>98</sup>

This disparity has been further highlighted and widened by the COVID-19 pandemic, which has emphasized and, in many cases, widened social disparities in society and has had a disproportionate effect on the mobility of members of vulnerable and disadvantaged groups. For example, lockdowns implemented by countries drastically changed individuals' patterns of movement, and those individuals who do not have the ability to work from home and those who have less secure labour conditions have been more exposed to the virus. Generally, these individuals are women, migrants or racial and ethnic minorities who are disproportionately represented in essential work settings such as healthcare facilities, factories, client-facing roles and public transportation. In such settings, they may be in close contact with the public or other

<sup>96</sup> Sylvia Beales and others, “Falling Through the Cracks: Exposing Inequalities in the EU and Beyond”. Available at <https://www.sdgwatcheurope.org/wp-content/uploads/2019/06/FALLING-THROUGH-THE-CRACKS-JUNE-2019.pdf>; Mélanie Levasseur and others, “Importance of Proximity to Resources, Social Support, Transportation and Neighborhood Security for Mobility and Social Participation in Older Adults: Results from a Scoping Study”, (2015) 15 *BMC Public Health* 503; Thomas W Sanchez, “Poverty, Policy, and Public Transportation”, (2008) 42 *Transportation Research Part A: Policy and Practice* 833; Jamie EL Spinney, Darren M Scott and K Bruce Newbold, “Transport Mobility Benefits and Quality of Life: A Time-Use Perspective of Elderly Canadians”, (2009) 16 *Transport Policy* 1; Anne E Dickerson and others, “Transportation and Aging: A Research Agenda for Advancing Safe Mobility” (2007) *The Gerontologist* 47, p. 578-580. Importance of Proximity to Resources, Social Support, Transportation and Neighborhood Security for Mobility and Social Participation in Older Adults: Results from a Scoping Study (2015)

<sup>97</sup> Copenhagen: WHO Regional Office for Europe, “Environmental Health Inequalities Resource Package. A Tool for Understanding and Reducing Inequalities in Environmental Risk.” Available at [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0018/420543/WHO-EH-inequalities-resource-package.pdf](https://www.euro.who.int/__data/assets/pdf_file/0018/420543/WHO-EH-inequalities-resource-package.pdf); plainCitation: “Copenhagen: WHO Regional Office for Europe, ‘Environmental Health Inequalities Resource Package. A Tool for Understanding and Reducing Inequalities in Environmental Risk.’ 22 <[https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0018/420543/WHO-EH-inequalities-resource-package.pdf](https://www.euro.who.int/__data/assets/pdf_file/0018/420543/WHO-EH-inequalities-resource-package.pdf)> accessed 9 July 2020.”; notelIndex: “62”; citationItems: [{"id": “bSvSl8cU/N5BwZq9q”, uris: [“http://zotero.org/users/local/LBQcniEY/items/2D-D5PRJL”], uri: [“http://zotero.org/users/local/LBQcniEY/items/2DD5PRJL”], itemData: {“id”: “12”, type: “article”, title: “Environmental health inequalities resource package. A tool for understanding and reducing inequalities in environmental risk”, URL: “https://www.euro.who.int/\_\_data/assets/pdf\_file/0018/420543/WHO-EH-inequalities-resource-package.pdf”, author: [“family”: “Copenhagen: WHO Regional Office for Europe”, given: “”], accessed: {“date-parts”: [“2020”, 7, 9]}; issued: {“date-parts”: [“2019”]}; locator: “22”}], schema: “https://github.com/citation-style-language/schema/raw/master/csl-citation.json”]

<sup>98</sup> Karen Lucas and others, “Transport poverty and its adverse social consequences”, (2016) *ICE Proceedings Transport* vol. 169, No. 6, pp. 353-365.

workers during their working hours. Moreover, many of these individuals have to use public transport to get to their place of work, and may not have a private car. Therefore, it is important that service levels of public transport are maintained, or at least provided at an adequate level in order not to fail those who need it most.

Socioeconomic sustainability requires a transition to sustainable modes of transport to be just, so as to ensure that workers and vulnerable and disadvantaged groups are not left behind. Even in the global north, there are great inequalities. Two thirds of the households in the poorer parts of Berlin do not have access to a car. Nor do 50 per cent of the households across Brussels.

Rebuilding the transport system in a way that encompasses all elements of sustainability, but that also takes into consideration the need for a just transition and is also fair and inclusive, is indeed a challenge. However, the rebuilding recovery after the COVID-19 pandemic offers an opportunity to move towards cleaner and healthier transport systems that are more sensitive to the needs of vulnerable (for example, elderly) and disadvantaged groups.

### **Examples of where the issue has been addressed in a positive manner**

A project for the first Bus Rapid Transport line was recently introduced in Almaty, Kazakhstan. The advantages listed included: saved surrounding space; minimum station-to-sidewalk distance; accessibility for people with reduced mobility; and passengers being able to board or alight at stops quickly with the height of the platform allowing for unhindered access to low-floor public transport vehicles for people with reduced mobility.<sup>99</sup>

In response to the pandemic, the Government of Ireland is implementing a €250 million jobs stimulus package. This stimulus package includes €40 million for pedestrian infrastructure, €42 million to support urban and rural cyclists, €21 million towards improving rail journeys, €10 million for the adaptation of the road network to protect it in respect of climate change (including repairs to damaged roads as a result of severe weather events), €2 million for new and expanded local bus services and €250,000 to support the transition of local link services to zero-emission vehicles in areas of rural Ireland.<sup>100</sup>

In Switzerland a pilot carpooling application project was introduced for rural areas. This project addresses the problem of public transport in rural areas being under even greater pressure as a result of COVID-19. It also seeks to provide cost-effective services by trialling carpooling services to help increase the number of people sharing privately owned vehicles, thus reducing the overall traffic volume.<sup>101</sup>

The Sustainable Urban Mobility Plan (SUMP) for Lyon (2017–2030) has, as one of its main pillars, the promotion of independent mobility. It includes 122 actions along eight strategic themes. One of these themes is promoting access to mobility for all. All metro stations in Lyon, except one, are now accessible, with sound-system lifts and embossed buttons and braille. Seventy percent of bus stops are equipped for people with reduced mobility.<sup>102</sup> Similarly, the SUMP for Madrid, approved in 2014, puts a strong emphasis on the peripheral districts of the city. Among its main aims is more inclusive mobility, which takes into account the needs of all citizens, in terms of gender and accessibility.

<sup>99</sup> UNECE, “A Handbook on Sustainable Urban Mobility and Spatial Planning” (United Nations, Geneva, October 2020). Available at <https://thepep.uncece.org/node/815>, 2020.

<sup>100</sup> Government of Ireland, Department of Transport, Tourism and Sport, ‘Ministers Ryan and Naughton welcome Jobs Stimulus Plan totalling €250m’, 24 July 2020. Available at <https://www.gov.ie/en/press-release/95f23-ministers-ryan-and-naughton-welcome-jobs-stimulus-plan-totalling-250m/>.

<sup>101</sup> <https://www.alpine-space.eu/projects/melinda/en/pilot-projects/pilot-projects2/-carpooling-in-rural-areas-of-switzerland->.

<sup>102</sup> <https://www.eltis.org/discover/case-studies/lyon-putting-accessibility-heart-city-life>.

## OUTCOMES AND CONCLUSIONS

Whilst keeping in mind the overall long-term goal of securing SDG targets 11.2, 11.3, 11.7 and 11.a<sup>103</sup> and that transport systems should seek to address social disparities in mobility, it is important to consider when considering how to make transport more fair and inclusive that social disparities are affected by a multitude of socioeconomic factors. Rebuilding transport systems may not be sufficient to address such disparities.

Governance issues related to rebuilding transport in a fair and inclusive way are fundamental to ensuring no one is left behind. Rebuilding will entail deciding on who will be responsible for addressing social disparities in transport systems, such as which departments at national and local level may be best suited for this task. Civil society can play an important role, though countries should not seek to leave these issues solely to civil society.

Furthermore, transport investments and innovation focused on digitalization, supported by appropriate training and simple user interfaces, can help disadvantaged populations to access mobility services to increase their opportunities.

Finally, the lack of data on social disparities in transport mobility and the lack of capacity for data collection of this kind need to be overcome to assist policymakers in identifying these inequalities.

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<sup>103</sup> Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons; Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries; Target 11.7: By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities; Target 11.a: Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning. Available at <https://sdgs.un.org/goals/goal11>.

### III. KEY RECOMMENDATIONS

Reflecting the analysis of the current situation and in addressing concerns raised during the COVID-19 pandemic situation, the following recommendations have been developed, while considering the underlying framework of the “Avoid–Shift–Improve” approach. These recommendations are framed to focus firmly on the needs of the users for whom transport and mobility systems are designed and built, to ensure the accessibility to major population centres and suburban and rural areas. The recommendations have been developed within the context of the objectives of THE PEP,<sup>104</sup> the Vienna Declaration of the Fifth High-level Meeting on Transport, Health and Environment, the Paris Climate Agreement and the SDGs.

#### **Recommendation 1: Implementing sustainable urban and transport planning solutions (“Avoid”):**

Introduce modern principles of and tools for spatial and urban planning in the urban, suburban and rural environments, ensuring accessibility to other people, goods, services and the main points of interest, while minimizing the generation of demand for transport and optimizing investments in infrastructure and services, including through:

- Ensuring an optimal density in urban development and promoting mixed-use urban areas and buildings, combined with appropriate green and healthy transport capacity, by integrating spatial and transport planning.
- Implementing urban planning initiatives to improve people’s quality of life by providing safe access to goods and services and to “green” and “blue” areas within the “15-minute” neighbourhood, applying the principles of a short-distance city.
- Ensuring that spatial and urban planning guidelines and policies primarily focus on the accessibility needs of the entire population, including vulnerable users, in particular children and youth, as well as senior citizens and persons with reduced mobility.
- Ensuring the assessment of the impacts of major construction projects on transport and mobility, as well as on the economy, environment and health.
- Introducing new urban assessment methodologies that map access to “green”, “blue” and quiet places as well as data on GDP and public health in order to inform future planning decisions.
- Orienting urban development towards high-capacity green, safe, healthy and high-quality public transport systems.
- Creating “green” corridors that combine the advantages of environmental corridors with opportunities for active mobility.
- Developing engagement and communication programmes to involve people, engage users and generate public support, particularly during the planning phase, to help ensure public buy-in for the solutions proposed.
- Implementing the recommendations of the UNECE and THE PEP Handbook on Sustainable Urban Mobility and Spatial Planning<sup>105</sup> in line with the goal of THE PEP to integrate transport, health and environmental objectives into urban and spatial planning policies.

<sup>104</sup> UNECE and WHO Regional Office for Europe, “Transport Health and Environment Pan-European Programme: From Paris 2014 to Vienna 2019” (United Nations, Geneva, October 2015). Available at <https://thepep.unece.org/node/87>, 2015.

<sup>105</sup> UNECE, “A Handbook on Sustainable Urban Mobility and Spatial Planning” (United Nations, Geneva, October 2020). Available at <https://thepep.unece.org/node/815>, 2020.

### **Recommendation 2: Putting effective, high-quality and safe public transport at the centre of mobility (“Shift” and “Improve”)**

- Prioritize the development of public transport. The provision and use of high quality and attractive public transport services should be an integral part of wider planning for recovery, resilience and sustainable urban mobility, in line with the goal of THE PEP to integrate transport, health and environmental objectives into urban and spatial planning policies.
- Plan public transport services around passenger needs and expectations to ensure a system that is attractive to users and that integrates services, ticketing and modes to provide a reliable, affordable, easily accessible, safe and comprehensive door-to-door network. At the same time, ensure that these services provide an environmentally-friendly solution to mass mobility, for example, through the use of electric public transport fleets and the provision of appropriate, dedicated public transport infrastructure.
- Support public transport services with public information campaigns that reverse the current negative language and highlight the benefits of public transport for its users and society (with a particular focus on the positive safety elements of public transport in the current and post-COVID-19 pandemic era) to entice passengers back to such services. A fundamental part of this support should be easy access to timely, personalized journey information and integrated ticketing.
- Ensure that public transport service providers can rely on the assurance of multi-annual funding arrangements, notably in the context of COVID-19 pandemic recovery plans.
- Enable public authorities to explore new sources of funding for public transport such as green bonds, public-private partnerships, land development levies and revenue from incentives introduced to encourage modal shift, etc. Furthermore, funding decisions should be based on the full range of full cost-benefit and impact assessments that also consider land value capture.

### **Recommendation 3: Capitalizing on micromobility (“Shift” and “Improve”)**

- Establish legal certainty with regard to micromobility for service providers and users, with effective enforcement of safety standards (building on, for example, the international standards developed by the industry for pedal-assist electric bicycles), and clarity regarding the use of micromobility vehicles. Disseminate this information through large-scale public information campaigns.
- Carry out comprehensive assessments of the large-scale implementation of electric micromobility solutions to better understand the impacts on:
  - Pollutant emissions and material use (both in terms of end-use emissions, for which tools such as urban transport roadmaps can be used, and in terms of emissions and material use in the life cycle of the solutions).
  - Health (for example, in terms of physical (in-)activity and safety of users).
  - Modal shift, with a focus on the means of transport replaced by micromobility vehicles.
  - Congestion of street and road networks (for example, in terms of modal shift and traffic generation effects).
- Promote micromobility including related sharing solutions, in particular for the first and last mile, for example, through infrastructure investments, cooperation schemes between local authorities and mobility providers or financial incentives, based on robust data on the health and environmental benefits of this type of mobility and considering the safety implications for other users. Micromobility needs to be supported by better infrastructure (both digital and technical) to encourage sharing solutions, such as bicycle and electric scooter sharing systems, and pre-empt issues that might emerge in relation to charging and parking.

- Collect, manage and make best use of data collected in order to:
  - Identify gaps in the transportation network.
  - Monitor equitable service standards.
  - Offer multi-modal real-time transport information.
  - Evaluate respective policies.
- When establishing, expanding and promoting micromobility solutions, take into account social inclusion and equity issues such as low-income affordability or digital impoverishment, and the needs of disadvantaged groups.

#### **Recommendation 4: Introduce effective mobility management (“Shift”)**

- Prepare national mobility management strategies, to be developed in coordination with other member States under THE PEP. These strategies should provide guidance and support aimed at offering sustainable mobility choices and options at the national, sub-national and local levels, involve also the private sector and cover both passenger and freight initiatives. These strategies should focus on the following key elements:
  - Strengthening the efficient and smart management of mobility needs and transport demand to ensure inclusive access to mobility and the efficient use of multifunctional infrastructure and transport systems.
  - Implementing measures to make public transport and active mobility the preferred option particularly in cities, including by implementing effective parking policies and other fiscal, regulatory and physical measures that incentivize people to switch away from using private cars.
  - Making the best possible use of the potential of new transport technologies and zero-emission vehicles by combining them with climate-friendly mobility services and logistics, in particular to ensure the quality and safety of public transport services.
  - Embedding digitization and mobility, smartly and cost-efficiently, as service approaches, and incorporating automated vehicles into the mobility system, while ensuring transparent data-sharing practices, the incorporation of the user’s perspective and adaptation to the post-pandemic situation.
  - Identifying targeted incentives and developing support programmes aimed at multimodal, clean, safe and inclusive mobility management and planning for cities, regions, companies, tourism, schools and youth, by placing the needs of the user at the centre of potential solutions.
  - Supporting awareness-raising, sustainable mobility planning and land-use policies to counteract urban sprawl, and providing incentives for modal shift and environment- and climate-friendly connectivity and accessibility in cities and regions.
- Building on the national strategies, facilitating the development of sustainable regional and urban plans for mobility management and mobility planning, including through the introduction of Sustainable Urban Mobility Plans (SUMP) or similar planning tools, the exchange of good practice in this area and the identification of common frameworks, based on which individual authorities can customize their systems.
- Promoting the development of urban logistics hubs outside the city centres in combination with the implementation of CO<sub>2</sub>-neutral delivery and city logistics.



### **Recommendation 5: Innovate to make transport green and healthy (“Improve”)**

Innovation is the key means by which current modes of travel can be improved to create more sustainable transport networks, services and mobility options. Promote more secure, safer and greener travel, by increasing active travel, introducing more integrated networks and reducing harmful emissions through technological advances in engineering, and the digital enhancement of transport services and efficient infrastructure by taking the following actions:

- Further develop the digitalization of society and transport through the expansion of integrated mobility-as-a-service platforms, combining modes of transport with potential consumer, State and business interests.
- Replace internal combustion engine vehicles with zero-emission ones, supported by the investment in the necessary infrastructure, encouraging active mobility and maximizing the positive health effects of emission reductions and physical activity.
- Implement “Vision Zero”<sup>106</sup> by improving road safety, taking into account the possibilities created by digitalization, such as the communication between vehicles and between vehicles and their environment, to ensure appropriate driving and compliance with speed limits to significantly reduce the number of road crash injuries and deaths.
- Support the evolution of monitoring and enforcement systems. Improved digitization of networks and travel patterns generates anonymized data, while protecting privacy and greater knowledge to provide more responsive, efficient and adaptable management of public and private modes of transport.
- Ensuring the adoption of flexible, responsive, integrated, affordable and fair pricing, ticketing and revenue management systems that facilitate equity in access to transport.

### **Recommendation 6: Encourage active mobility (“Shift”)**

During the pandemic, the role of cycling and walking became even more important as they emerged as viable mobility options for essential trips, while supporting physical distancing and relieving the burden on public transport. To support safe cycling and walking as means of making cities more liveable and resilient, the countries of the pan-European region are encouraged to act according to the following principles:

- Build strong and long-term political consensus, including on investment strategies and fiscal measures to promote active mobility, and ensure coordination and cooperation across all levels of Government and other key stakeholders.
- Accelerate the implementation of the Pan-European Master Plan for Cycling Promotion (Annex III to the Vienna Declaration) and develop and implement an equivalent plan for walking.
- Address the following three pillars to promote active mobility:
  - Improve infrastructure by, for example, adapting street design and amending traffic regulations and ensure adequate financing to facilitate the creation of safe infrastructure and spaces for cyclists and pedestrians, while also ensuring attractive multimodal solutions with public transport.

<sup>106</sup> <http://www.welivevisionzero.com/vision-zero/>.

- Raise awareness and skills by, for example, communicating the benefits of cycling and walking, and encourage children’s training in safe walking and cycling, including by developing appropriate manuals.
- Improve governance and accountability by, for example, ensuring clear attribution of responsibility, resources and accountability for walking and cycling to specific authorities at the national and/or local levels, and create “knowledge hubs” to facilitate the exchange of good practices among all relevant stakeholders.
- Link decisions on infrastructure development in emergency conditions with long-term goals formulated in relevant strategic documents (national transport, cycling, active mobility and health plans) and integrate cycling and walking into emergency, recovery and resilience plans when they deal with transportation measures.
- Change urban planning, land-use and transportation policies, building on the principle of the fair allocation of public space and ensuring that people and essential services and goods are accessible, safely and healthily, by walking and cycling.

### **Recommendation 7: Leave no one behind (“Improve”)**

Whilst keeping in mind the overall long-term goal of achieving SDG targets 11.2, 11.3, 11.7 and 11.a, the following measures should be taken into consideration when rebuilding the transport system in a fair and inclusive way:

- Collect data to assess the level of transport inequalities and reduce transport poverty.
- Plan:
  - Transport networks to avoid creating disadvantaged neighbourhoods and transport-isolated areas.
  - New developments by keeping in mind accessibility and public transport.
  - New developments and transport infrastructures so that various actors, especially grassroots and community initiatives, are involved, in order to understand and address social disparities in communities affected by poor transport services.
  - Public transport with vulnerable groups in mind.
- Focus on:
  - Future transport investments in multifunctional infrastructure for sustainable development, paying particular attention to developments in deprived areas and areas with low levels of transit accessibility.
  - Implementation of urban planning initiatives aimed at improving the quality of life of people (socially, economically, environmentally, medically and through transport) by providing efficient access to essential services and goods.
  - Making public transport, transport infrastructure and related services more accessible with vulnerable groups in mind, for instance by implementing guiding systems for persons with visual impairments and barrier-free stations or adapting trains and buses for persons with reduced mobility.

## IV. NEXT STEPS

After having developed and agreed on the recommendations on green and healthy sustainable transport, and after having adopted them as part of the Vienna Declaration, it will be necessary to assist member States in their implementation, with a focus on ensuring that they can “build forward better” their transport and mobility systems for a more resilient future.

The following mechanisms can be proposed:

- (a) Establishment of a **Partnership** (possibly called the “Partnership on Building Forward Better”) to assist countries in implementing the recommendations. The main objectives of this Partnership could be:
  - (i) Assessment and forecasting of the development of the situation with changes in transport demand and transport behaviour in the “new normal” for various countries of the ECE region;
  - (ii) Analysis of best practices in improving the sustainability of transport systems, their resilience in post-pandemic economic development and the likelihood of new global threats;
  - (iii) Development of proposals and methodological documents to improve the sustainability of transport systems, including taking into account the implementation of the latest developments in science and technology, covering also the improved epidemiological safety of transport.
- (b) Further development of initiatives in the field of THE PEP “Relay Race”, by holding international conferences, seminars and round-table discussions on topics related to the activities in the framework of the Partnership mentioned in item (a).
- (c) Increased promotion of and use of THE PEP Clearing House as an instrument to ensure information support for the implementation of the recommendations in the countries of the region and in support of the activities identified in item (a).
- (d) Further development and support within the framework of THE PEP of initiatives of universities and scientific organizations to create and implement training programs for specialists aimed at ensuring the sustainability and resilience of transport systems in the new economic and social development conditions (through “THE PEP Academy”). Actions might include giving such programmes an international character, providing for the unification of training programmes, exchange of students and teachers and issuance of international diplomas.
- (e) Expansion of publishing activities of THE PEP through, for example, the publication of THE PEP online journal, important scientific articles and reports on Partnership issues and relevant materials of conferences, seminars and symposiums. This activity would also include the publication of methodological documents developed within the framework of the Partnership mentioned in item (a).

It is envisaged that the Partnership would be set up to function in a manner similar to existing partnerships and with a clear mandate and terms of reference focused on assisting the implementation of the recommendations, with a view to contributing to the implementation of the 2030 Agenda for Sustainable Development. The partnership would report to THE PEP Steering Committee at its annual session, as do all other partnerships. THE PEP secretariat would provide secretariat services to the Partnership in the same manner as for other partnerships.

This Partnership would not duplicate the activities of existing partnerships or the activities of the Steering Committee, but would fill a void that exists between the very technical initiatives that are currently undertaken in the existing partnerships and the high-level policy directions provided by the Steering Committee. As an example, the Partnership on Building Forward Better would take the recommendations from the Cycling and Eco-Driving Partnerships and include them in the development of proposals, along with other transport system sustainability points (as identified in sub-item (a)(iii) above) that are of relevance to the implementation plans of individual member States.

The Partnership would also, through collaborative and peer learning, initiate the preparation of national action plans, led by member States, for the implementation of the recommendations, with the possible support of external resources funded by specific donations. These action plans would use the recommendations as a framework for targeted policy initiatives that are relevant to each country's particular circumstances, with indicative timescales for the implementation of the action plans and agreed targets on sustainable mobility. Member States would, on a voluntary basis, request for action plans to be developed by the Partnership.

In a process similar to the UNECE Environmental Performance Reviews,<sup>107</sup> a mechanism that supports countries in assessing the implementation of their action plans could be set up to review the implementation after 5 and 10 years, with the possibility to adjust plans to account for changes in the transport or wider economic environment.

THE PEP Steering Committee would initiate the creation of the “Partnership on Building Forward Better” at the Fifth High-level Meeting on Transport, Health and Environment.

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<sup>107</sup> See <https://unece.org/environment-policy/environmental-performance-reviews>.

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# Recommendations for Green and Healthy Sustainable Transport – “Building Forward Better”

As a reaction to the developments and challenges arising from the COVID-19 pandemic a dedicated Task Force was established by the Steering Committee of the Transport, Health and Environment Pan-European Programme to develop recommendations for member States to build forward better and transition their transport sector to a more sustainable footing.

This document: The Recommendations for Green and Healthy Sustainable Transport – “Building Forward Better” provides the conclusions of this Task Force and highlight seven key recommendations that member States should follow to guide the evolution of their transport system on a more sustainable path.

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