



THE PEP Partnership on Cycling
Pan-European Master Plan for Cycling Promotion
2nd Draft for discussion at THE PEP Steering Committee

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THE PEP

Transport, Health
and Environment
Pan-European Programme



CONTENT

CONTENT	2
1 FRAMEWORK CONDITIONS	3
1.1 Transport, Health and Environment Pan-European Programme	3
1.2 Master plan development process	3
1.3 Target groups of the pan-European master plan	4
1.4 Main benefits resulting from the pan-European master plan for cycling promotion	5
1.5 Structure of the master plan and expected outputs	5
2 CYCLING – A SUCCESS STORY	6
2.1 Bicycle usage	8
2.2 Safety	10
2.3 National Cycling Policy	10
3 OBJECTIVES OF THE MASTER PLAN	12
4 BENEFITS OF CYCLING	13
4.1 Contribution to Sustainable economic development and job creation	13
4.2 Supported sustainable mobility	16
4.3 Reduced emissions and energy savings	18
4.4 Healthier and safer transport	20
4.5 Overview of the indirect economic benefits of cycling	23
4.6 National Cycling Policies for cycling promotion	24
5 RECOMMENDATIONS	25
5.1 Develop and implement national cycling policies supported by a national cycling plan	27
5.2 Improve regulatory framework for cycling	37
5.3 Provide appropriate cycling infrastructure	45
5.4 Provide appropriate funding	54
5.5 Include Cycling in the planning processes and facilitate multimodality	62
5.6 Promote cycling through incentives and behaviour change	72
5.7 Improve Health and safety	80
5.8 Enable and Foster Monitoring and benchmarking	88
5.9 Develop cycling tourism	96
5.10 Technology and Innovation	103
6 IMPLEMENTATION	109
7 CONTACT DETAILS	110
7.1 Members of THE PEP Partnership	110

1 FRAMEWORK CONDITIONS

At the 4th High-level meeting on Transport, Health and Environment governments from across Europe adopted the Paris Declaration in April 2014, including a clear call for member states to promote cycling and to develop a pan-European master plan for cycling within the framework of the Transport, Health and Environment Pan-European Programme (THE PEP).

1.1 TRANSPORT, HEALTH AND ENVIRONMENT PAN-EUROPEAN PROGRAMME

Supported by the secretariats of the United Nations Economic Commission for Europe (UNECE) Transport and Environment Divisions in Geneva and the World Health Organization Regional Office for Europe (WHO/Europe) in Copenhagen, THE PEP is a unique policy platform that seeks to encourage transport policymakers and urban planners to consider the health and environmental impacts of transport and address them through shared policy approaches.

By bringing together the ministries of transport, health and environment, THE PEP acknowledges the importance of linking these different sectors.

At the 4th High-level meeting countries adopted the Paris Declaration, which carries forward the five priority goals¹:

- contribute to sustainable economic development and stimulate job creation through investment in environment and health-friendly transport (PG1)
- manage sustainable mobility and promote a more efficient transport system (PG2)
- reduce emissions of transport-related greenhouse gases, air pollutants and noise (PG3)
- promote policies and actions conducive to healthy and safe modes of transport (PG4)
- integrate transport, health and environmental objectives into urban and spatial planning policies (PG5)

With its objectives and recommendations, the pan-European master plan for cycling promotion will support the implementation of the five priority goals.

1.2 MASTER PLAN DEVELOPMENT PROCESS

Based on the decisions taken at the 4HLM on Transport Health Environment in Paris and laid down in the Paris Declaration the Master-plan for cycling has been developed within THE PEP Partnership on Cycling. During the partnership meetings participants agreed on the procedure for the development of the master plan. This process has been endorsed by the Steering Committee of THE PEP at its 12th Session:

1. Preparation phase: Definition of priority areas (Nov 2014 -March 2015)

¹ <http://www.unece.org/index.php?id=40211&L=0>

2. Elaboration phase: Elaboration of inputs for priority areas + consolidation → draft master plan (March 2015 - Dec 2016)
3. Negotiation phase: Negotiation of draft master plan among THE PEP member countries (Jan 2017 - Dec 2018)
4. Adoption of pan-European master plan for cycling promotion (5th High-level meeting on Transport, Health and Environment in spring 2019 in Vienna)
5. Implementation phase: Identification of projects and funds

The development of the pan-European master plan has been initiated by the lead partners of THE PEP Partnership on Cycling: the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management, together with the French Ministry in charge of environment and transport.

The master plan has been developed cooperatively among the members of THE PEP Partnership on Cycling. Individual partners have taken over the responsibilities to elaborate the different topics and chapters to be covered by the master plan. Main content related input was given by:

- Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management supported by the Environment Agency Austria
- Belgian Federal Ministry of Transport
- German Ministry of Transport and Digital Infrastructure supported by TÜV Rheinland Consulting Ltd.
- French Ministry of Environment and Transport
- Hungarian Transport Authority,
- European Cyclists' Federation
- THE PEP Secretariat (WHO and the Sustainable Transport & Environment Division of the United Nations Economic Commission for Europe - UNECE).

1.3 TARGET GROUPS OF THE PAN-EUROPEAN MASTER PLAN

The main target group of the masterplan are the national ministries (national ministries of health, environment and transport) of THE PEP member states. In all countries, the responsibilities for cycling are split between different administrative levels, not only national, but also regional and local. The combination varies from country to country. The masterplan addresses national ministries in their role as coordinators of countrywide activities, involving all other relevant authorities and stakeholders.

However, the masterplan also meets the level of transnational policy as some recommendations within this document indirectly address transnational target groups, such as

- European Commission
- WHO, UNECE
- International Financing Institutions

These additional target groups are addressed by recommending national ministries to advocate at international level for change. As the national states are members of these international organisations and institutions they have a powerful voice in the decision-making process and can thus influence activities in favour of cycling at international level, too.

The above-mentioned authorities, institutions and organisations are not only target groups but also (besides the International Financing Institutions), direct beneficiaries of the activities set by the masterplan. Additionally, the private sector (incl. the bicycle economy) and civil society are the final beneficiaries.

Several meetings of THE PEP Partnership on Cycling were organised during the elaboration of the masterplan to incorporate the feedback of national cycling coordinators/officers from 24 countries. Representatives of the other target groups were invited to the meetings to discuss the recommendations and to provide inputs.

Furthermore, feedback of the national ministries of transport, health and environment was given during the annual meetings of THE PEP Steering Committee meetings.

1.4 MAIN BENEFITS RESULTING FROM THE PAN-EUROPEAN MASTER PLAN FOR CYCLING PROMOTION

Besides the increased awareness of the importance of cycling for economy, health, transport and environment at the pan-European level there will be benefits for all the member states:

- Know-how exchange with experienced countries
- Guidelines and support in building up a national cycling policy and for the national cycling officers (NCO) the master plan will be an additional backing at political level to bring forward the topic of cycling in their countries and regions
- Access to international partnerships
- For some countries, even image as cycling nation
- Possibility to export national know-how and expertise (“Cycling Embassy”)

1.5 STRUCTURE OF THE MASTER PLAN AND EXPECTED OUTPUTS

The master plan will provide answers to the following questions:

1. What are we dealing with? Status of cycling in THE PEP member states (see chapter 2)
2. Why are we dealing with it? Highlighting the benefits of cycling for environment, health and transport (see chapter 4)
3. What do we want to achieve/Where would we like to go? A joint objective to increase the level of cycling in THE PEP member countries (see chapter 3)
4. What do we have to do? Concrete measures and recommendations for all relevant target groups (see chapter 5)
5. How can the required resources be secured? Recommendations for national budgeting and guidance on working in partnership with international financial institutions and infrastructure plans for cycling (see chapter 5)

2 CYCLING – A SUCCESS STORY

The bicycle was invented in Europe. Its current worldwide renaissance started in Europe. Bicycle innovation is spreading from Europe to all parts of the globe. 21 million bicycles were sold in the EU in 2014², outnumbering newly registered passenger cars by more than eight million³. Public bike-share systems, as pioneered in the EU less than a decade ago, have been implemented in more than 800 cities on four continents⁴. Today, cycling creates approximately 750,000 jobs⁵ (in the UNECE European Region) with rising tendency over the past years.

In our world of advancing urbanisation, promoting cycling is an essential tool to relief the negative effects that come along with motorised means of transport (especially individual car use). Compared to cars, bicycles consume seven to ten times less space while moving in urban areas⁶, and eight to 50 times less space while parked⁷. Walking and cycling are the most environmentally friendly modes of transport, especially effective in urban areas where air and noise pollution is the biggest problem! Most European cities consist of historically grown structures (with short distances and mixed residential areas) that act in favour of cycling – and vice versa: A high share of cycling influences urban planners and supports the local economy (as cyclists prefer shorter distances to a local shop over a shopping mall in the periphery of urban areas). Cycling shapes our immediate environment!

Cycling is a serious means of transport. Given proper infrastructure, cycling is the fastest and the most efficient way to get ‘from kitchen table to office desk’ on distances of up to five kilometres, depending on traffic congestion and parking availability. New inventions, such as the electric bicycles, even compete favourably with cars for trips of up to 10 kilometres⁸.

Cycling leads to positive health effects as, by enabling a moderate intensity of physical activity, it reduces the risk of non-communicable diseases or depression and helps controlling body weight.⁹ Recent evidence shows that individuals who transitioned from car commuting to active or public transportation modes

²European Bicycle Market 2015 edition: Industry & Market Profile (2014 statistics), Confederation of the European Bicycle Industry. www.conebi.eu

³The Automobile Industry Pocket Guide 2015-2016, European Automobile Manufacturers Association www.acea.be/statistics/tag/category/key-figures

⁴Fishman, Elliot. "Bikeshare: A Review of Recent Literature," *Transport Reviews: A Transnational Transdisciplinary Journal*, April 2015.

⁵ Environment Agency Austria based on http://www.euro.who.int/__data/assets/pdf_file/0017/311471/Cycling-and-green-jobs.pdf

⁶Action Plan for Green Mobility, short version, City of Copenhagen, [file:///C:/Users/lvu533/Downloads/Green%20Mobility%20\(engl.\).pdf](file:///C:/Users/lvu533/Downloads/Green%20Mobility%20(engl.).pdf)

⁷CROW Publicatie 291, LeidraadFietsparkeren 2011, [http://www.crow.nl/publicaties/leidraad-fietsparkeren-\(1\)](http://www.crow.nl/publicaties/leidraad-fietsparkeren-(1))

⁸ Federal Environment Agency (Germany), Electric bikes get things rolling The environmental impact of pedelecs and their potential (2014)

http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/hgp_electric_bikes_get_things_rolling.pdf

⁹P. Oja, S. Titze, A. Bauman, B. de Geus, P. Krenn, B. Reger-Nash, T. Kohlberger (2011). Health benefits of cycling: a systematic review

had a decrease in their body mass index, while individuals who transitioned from active commuting to car commuting had an increase of body mass index.¹⁰ Furthermore, cyclists take 15% fewer days off work through illness¹¹ and tend to concentrate better.

Cycling occurs locally, but concerns all policy levels. As a network based element of inter-modal mobility, cycling can only fulfil its potential with support from the international, national, regional and local authorities working together towards the same target. This implies concerted policy as well as tailor-made funding options in order to be able to implement necessary improvements. Worldwide experience consistently shows that substantial numbers of cyclists appear quickly when safe, direct and coherent cycling itineraries are provided between peoples' daily destinations, irrespective of local climate, culture or topography.

The conditions for cycling in the 56 THE PEP member states differ a lot. Some countries already have a long cycling tradition with a high share of its population cycling, whereas in other countries the importance of cycling for transport, health, environment and/or the economy is barely recognised so far. In the following sections, they will be analysed in terms of bicycle usage, safety, cycling tourism, bike sales and the existence of a national cycling policy. Joint efforts will lead to territorial cohesion in terms of cycling when regions and cities with a high share for cycling transfer their experience to those that still lack cycling know-how.

Lack of data availability reduces possibility to prove benefits of cycling. As we will see in chapters 2 and 4, cycling generates huge benefits. However, there is a lack of reliable statistical data in order to actually prove, quantify and compare these benefits. Today, different sources of statistics vary significantly from each other and thus reduce their credibility. At the same time, it makes promoting cycling difficult and monitoring/evaluating of set measures a very hard job.

Hence, in the following analysis for the status of cycling and its benefits, only available data was used. (see also recommendations 8.1 & 8.2).

¹⁰www.thelancet.com/public-health Published online October 28, 2016 [http://dx.doi.org/10.1016/S2468-2667\(16\)30006-8](http://dx.doi.org/10.1016/S2468-2667(16)30006-8)

¹¹http://archive.ctc.org.uk/resources/Campaigns/CTC_Safety_in_Numbers.pdf

2.1 BICYCLE USAGE

Many countries measure bicycle usage with the share of cycling in the modal split. Unfortunately, the methodologies applied in the national surveys vary widely with the result that the values are hard to compare.

There are several indicators that can be used for measuring the intensity of bicycle usage:

In 2014, the European commission launched a Eurobarometer survey asking people – next to many other questions – which mode of transport was the most frequently used on a typical day. The result showed clear differences between the countries of EU27.

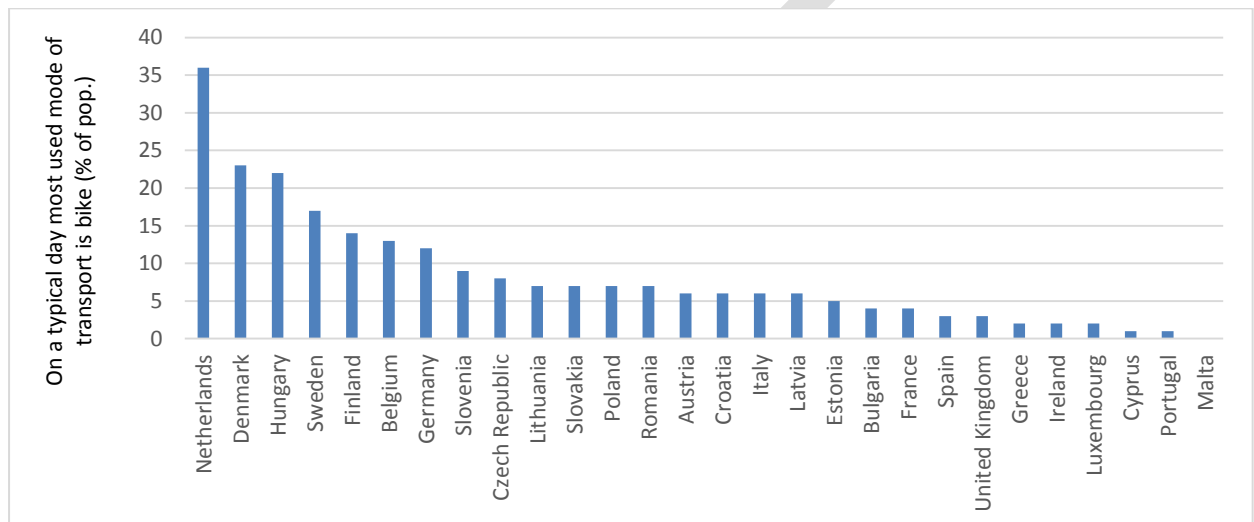


Figure 1: Cycling modal share – on a typical day most frequently used mode of transport is bicycle (% of population)¹²

¹²Eurobarometer 2014 (http://ec.europa.eu/public_opinion/archives/ebs/ebs_422a_en.pdf)

Factbox

Another option to measure bicycle usage is focussing on the kilometres cycled. A good indicator for calculating cycling benefits is “passenger kilometres cycled per capita”. Another indicator collected in some national travel surveys is “km cycled per day” on average of the national population. Unfortunately, this indicator is only available for a few countries.

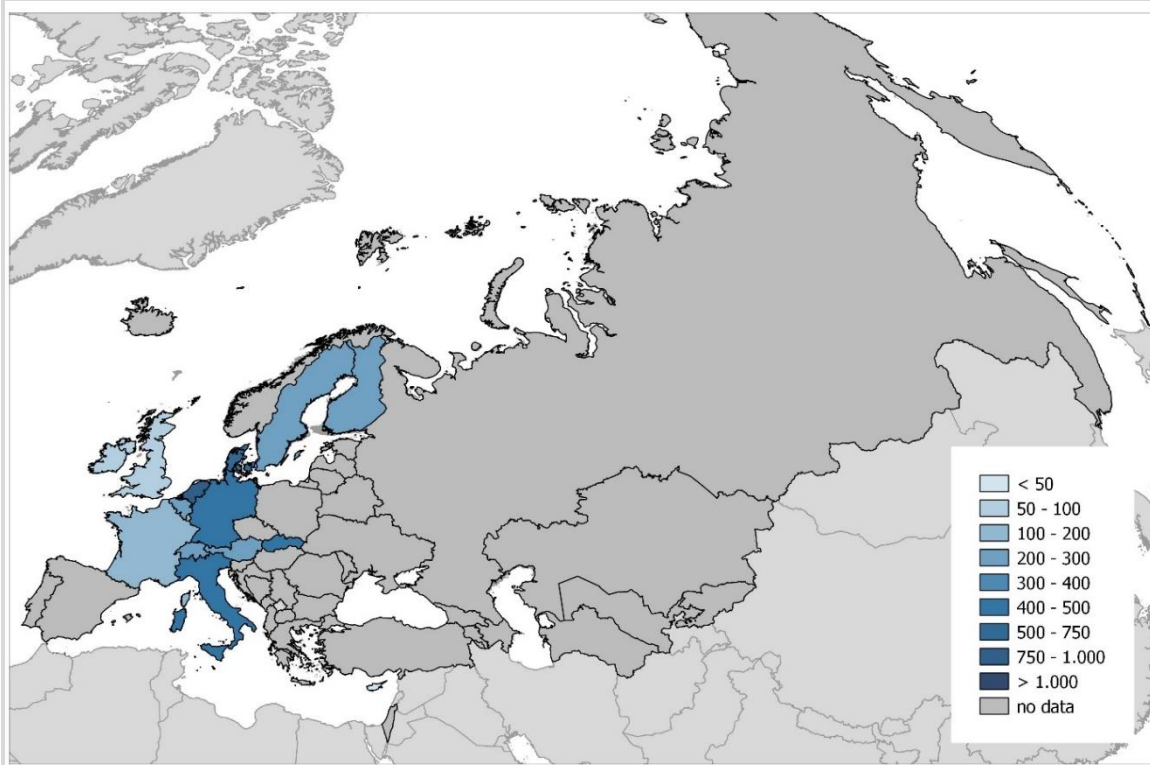


Figure 2: Passenger kilometers cycled per capita¹³

¹³ Netherlands (OnderzoekVerplaatsingen in Nederland (OVIN), 2015), Denmark (Transportvaneundersøgelsen (TU), 2014), Germany (Mobilität in Deutschland (MiD), 2008), Slovak Republic (Transport Mobility Survey, 2015), Italy (A global high shift cycling scenario; ITDP and UC Davis, 2015), Switzerland (Mikrozensus Mobilität und Verkehr (Micro census Mobility and Transport), 2010), Belgium (Belgian Daily Mobility Survey (BELDAM), 2009-2010; COWI, KU Leuven 2017), Finland (National Travel Survey (NTS), 2010-2011), Austria (National travel survey Österreich unterwegs 2013/2014), Sweden (National Travel Survey (RVU), 2014-2015), France (ENTD 2008), United Kingdom (National Travel Survey (only covers England), 2014), Ireland (National Travel Survey (NTS), 2014), Cyprus (Short Distance Passenger Mobility Survey, 2009)

2.2 SAFETY

With increased motorization rate worldwide in the past decades, cycling has become more dangerous in many countries. After World War II, road infrastructure has been designed and built with a clear focus on motorized means of transport and economic efficiency – at the cost of safety, particularly for non-motorised road users who are the most vulnerable. Statistics show that the number of cyclists killed or injured in road accidents does not increase directly proportional to the increasing number of cyclists. This implies the hypothesis that car users integrate the existence of cyclists into their road behaviour more easily if more cyclists are seen in the street.

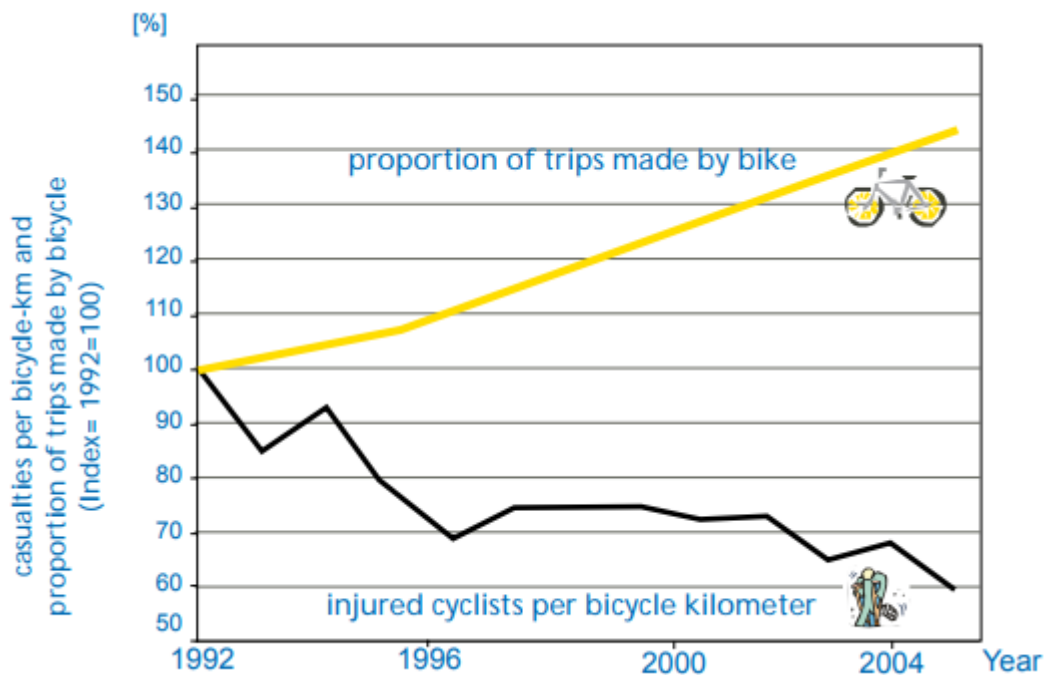


Figure 3: More bikes mean fewer incidents¹⁴

2.3 NATIONAL CYCLING POLICY

According to recent European Cyclists' Federation's (ECF) research on national cycling policies/cycling plans and based on a continuous update of this information by the actively involved member states of THE PEP Partnership 17 countries¹⁵ already have national cycling policies (NCP) in place (or at least on regional level as it is the case for Belgium and the UK). Slovenia¹⁶ is currently working on an update of the

¹⁴ Source: Herry Consult / IGF Institut Grundlagenforschung, Statistik Austria, 2004

¹⁵ 17 THE PEP Countries with available national cycling plans are Austria, Belgium (resp. Flanders/Wallonia/Brussels), Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Luxembourg, Netherlands, Norway, Slovak Republic, Slovenia, Sweden, Switzerland and United Kingdom (England/Scotland/Wales/Northern Ireland)

National Cycling Plan. The map below shows the current status of availability of a NCP in the (European) PEP countries.

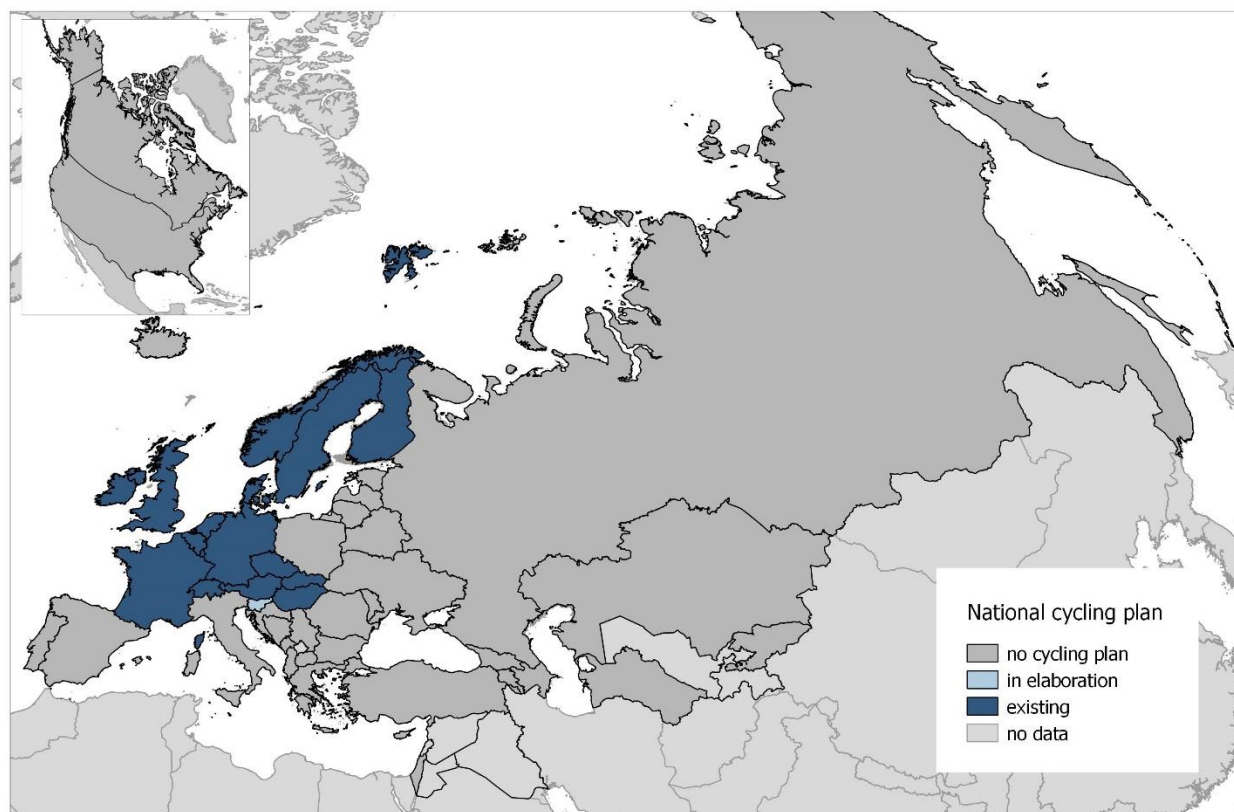


Figure 4: THE PEP member states with a national cycling plan in place

¹⁶In Slovenia, within the Ministry of Infrastructure, the Department of Sustainable Mobility has put a new cycling coordinator into place. The process of an amendment/revision of the national strategic document on cycling is ongoing. In the first half of 2018, a revision of the Masterplan on National Cycling Infrastructure is foreseen. The whole National Cycling Plan will be part of a wider consensus and cooperation of all important stakeholders (with the Ministries of Health, Economics, Environment, National Road Agencies, Institutes, NGO's) and it is planned to reach the document within 2017.

3 OBJECTIVES OF THE MASTER PLAN

The overall objective of the master plan is the promotion of cycling to improve the quality of life on pan-European level and to establish cycling as equal mode of transport.

In order to achieve the overall objective, the following specific objectives have been defined for the year 2030:

- Increase cycling in every country and double cycling across the UNECE Europe region
- Develop and implement national cycling policies in all THE PEP countries supported by National Cycling Plans
- Increase safety of cyclists in THE PEP member states by halving the number of fatalities (and serious injuries)

Proposals for indicators to monitor the achievement of the specific objectives:

- *Modal share of cycling*
- *Number of passenger kilometres cycled (per capita)*
- *Number of bicycles per 1,000 inhabitants/per household*
- *Number of bicycle sales*
- *Number of national cycling plans (status: developed, adopted or implemented)*
- *Number of fatalities (and serious injuries) per kilometre cycled*

4 BENEFITS OF CYCLING

The first human-powered two-wheel vehicle, the dandy horse, was applied for a patent by the German inventor Karl Drais 200 years ago. Already at the beginning of the 19th century, the benefits of the forerunner of the classic bicycle were recognised by a continuously growing share of the population, especially in European towns and cities. Over the centuries, these benefits gained even more importance in the light of today's challenges of the society.

Cycling offers several benefits. In urban areas it is faster than motorised transport in terms of average speed. Additionally, it demands far less space than cars, both driving and parking. Travel time savings for the cyclist help the whole transport system because less cars on the road mean a decrease in delays and congestion. Next to walking, cycling is the cheapest mode of transport and reduces parking costs for businesses and administrations. Furthermore, it reduces vehicle costs, congestion delays, fuel costs and reduced car travel decreases vehicle operating costs. Cycling leads to improved health and reduced all-cause mortality and morbidity. Cycling saves money, fossil energy, GHG and air pollutant emissions and makes no noise. More cyclists in the streets improve their safety as car drivers get used to their presence that leads to more awareness and consideration. Road design aiming at the reduction of the average driving speed contributes to the promotion of cycling and helps reducing the number of road accidents. Finally, cycling also creates jobs.

Of the vast number of benefits one gets by cycling regularly, in the following the benefits on transport (fast, space efficient and cheap), the environment (energy efficient and emission free), on health through movement, the economy and job market will be assessed in more detail.

In order to be able to calculate the benefits of cycling not only for the countries where data on the kilometres cycled are available (see Figure 2) the members of the partnership came up with expert estimations for the missing countries.

4.1 CONTRIBUTION TO SUSTAINABLE ECONOMIC DEVELOPMENT AND JOB CREATION

The economic benefits of cycling are diverse. Depending on the purpose of cycling (leisure or transport), the direct economic benefits can be measured e.g. in tax revenues, products produced, sales, jobs or income. Indirect economic benefits are e.g. saved GHG-emissions, reduced air pollution, positive health and safety effects, saved costs due to substitutional effects (e.g. using a bike instead of a car when travelling to work) or saved congestion costs.

Based on a joint report by UNEP, WHO and UNECE it is estimated that currently approximately 750,000 jobs are connected to cycling in the UNECE European region, whereby this number is consistently growing in the past years.

The types of jobs associated with cycling vary and more cycling creates new types of jobs for example in design and manufacture, retail and repair, wholesale, rental, tourism, messenger services and others.

Based on a 2017 publication¹⁷, UNEP, WHO and UNECE estimate in their new study *Cycling and green jobs*, that the estimated number of 68,000 existing cycling-related jobs in 56 major cities in the pan-European region could be increased to a potential number of 435,000 cycling-related jobs if these cities had the same modal share of cycling as the Danish capital Copenhagen.

Direct economic benefits can be quantified e.g. regarding employment using the indicator of Full-Time Equivalent (FTE) or turnover. Relevant data on FTE and turnover for different sectors is provided in a report of the European Cyclists' Federation (ECF) covering the EU-27¹⁸.

In the report *EU Cycling Economy*¹⁹ the European Cyclists' Federation (ECF) estimates direct economic benefits for the EU bike industry (Value of EU bike and parts/accessories manufacturing, Bicycle and parts sales and repairs) and EU Bicycle tourism. Comparing the current level of employment and/or turnover related to cycling with indicators for modal share of cycling illustrates the economic effects of cycling:

Doubling the cycling modal share in the EU27 would create additional 400,000 jobs and additional 3.5 Billion Euro turnover in bicycle retail.

Assessable indirect economic benefits will be outlined in the following chapters 4.2, 4.3 and 4.4.

People make over 2.2 billion cycle tourism trips and 20 million over-night cycle trips every year in Europe. That makes cycling tourism an important factor for regional economic development.

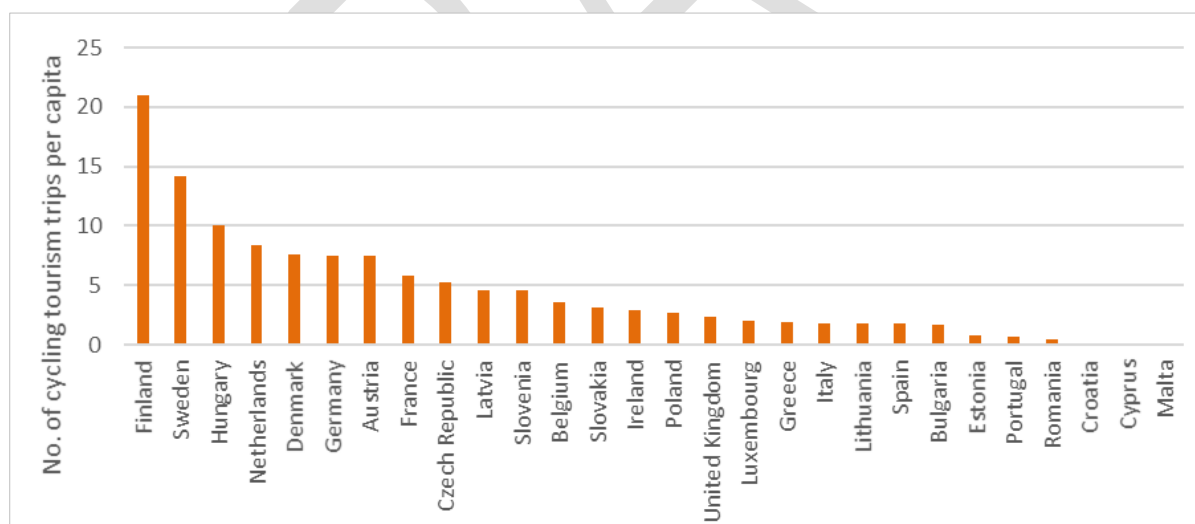


Figure 5: Cycling Tourism²⁰

¹⁷ http://www.euro.who.int/__data/assets/pdf_file/0017/311471/Cycling-and-green-jobs.pdf

¹⁸ <https://ecf.com/sites/ecf.com/files/141125-Cycling-Works-Jobs-and-Job-Creation-in-the-Cycling-Economy.pdf>

¹⁹ https://ecf.com/sites/ecf.com/files/FINAL%20THE%20EU%20CYCLING%20ECONOMY_low%20res.pdf

²⁰ <http://www.ecf.com/wp-content/uploads/studiesdownload.pdf>

Up to 80% of all cycling-related jobs are created in bicycle tourism

One of the key findings of the joint report by UNEP, WHO and UNECE on cycling and green jobs²¹ shows the great potential for cycling-related jobs in tourism: for example, 70 % and 47 % of all cycling-related jobs in Austria and France, respectively. Furthermore, touristic cycling increases the direct and indirect added value, directly creates jobs in tourism and further indirect jobs, holds great potential especially for peripheral regions and implies great development potential for new touristic regions. Additionally, cycling tourism, when combining cycling with public transport, helps to keep public transport in peripheral regions alive.

Around 12 million bicycles are manufactured in the European Union per year, around 40% only in Germany and Italy²². The bicycle manufacturing industry is characterised by high job intensity.

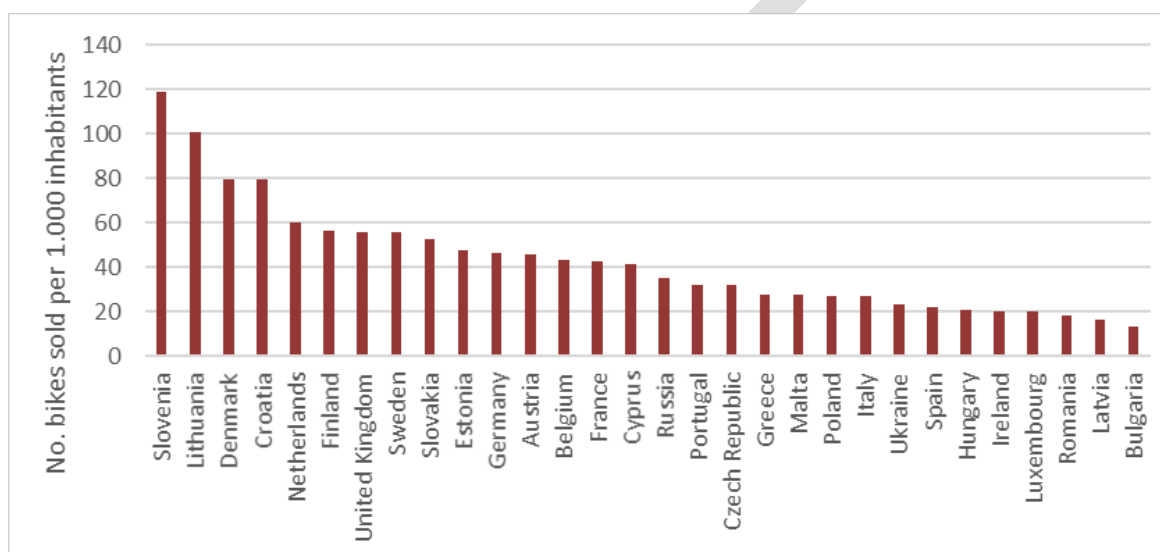


Figure 6: Bicycle sales²³

Per million of turnover, a bicycle manufacturer employs 3 times more people than a car manufacturer

Another sub-sector with a high share of job creation potential is bicycle retail: In 2014, 20 million bicycles were sold in the EU with an estimated turnover from bicycle sales of more than 4.6 billion Euros in 2013.

Other economic sectors include the construction and maintenance of cycling infrastructure, the bicycle-racing industry and cycling related research. Finally, service such as bicycle repair, bicycle hiring schemes or bicycle courier services need to be mentioned.

Cycling backs the rural and local economy

According to a study conducted in the United Kingdom, cyclists, who are physically exercising and feeling the right to reward themselves, spend on average 3 to 4 times more money in the visited place compared

²¹ http://www.euro.who.int/__data/assets/pdf_file/0017/311471/Cycling-and-green-jobs.pdf

²² <http://www.conebi.eu/?wpdmde=892>

²³ <http://www.coliped.com/docs/issuu/European%20Bicycle%20Industry%20&%20Market%20Profile%202014.pdf>;

Data on Russia and Ukraine: Conebi (direct communication) & UNECE Statistical Database for the pop. figures

to a car-borne visitor²⁴. As regards daily routine cycling, cyclists ride shorter distances than they would drive by car and hence prefer e.g. local shops to shopping malls outside of the town or city. Thus cycling promotes local supply and a carefully devised mixture of residential areas and the accompanying infrastructure as basis for a sustainable form of living.

4.2 SUPPORTED SUSTAINABLE MOBILITY

European cities are challenged with the trend of urbanisation and growing population, whilst public space is more or less limited. The evolved city structure generally allows no significant additional construction of motorised traffic areas. The space provided for car traffic is already stretched to the limit. On April 25 in 2007, the European Economic and Social Committee declared that “important as cars are in modern society, car-oriented cities are neither possible nor desirable. Instead, public transport and environmentally friendly private transport (e.g. cycling or walking) should be the mainstays of modern urban transport planning.”²⁵

More than 50% of all trips are shorter than 5 km²⁶ - the ideal distance for cycling.

In this context, a substantial part of the every day's car-trips could be substituted by cycling: More than 50% of all trips are shorter than 5 km, the ideal distance for cycling. Compared to the car, a cyclist can usually follow a more direct route through cities/to the destination. Therefore, it is within short distances (up to about five km) the fastest mode of transport, enabling a higher average speed.

Already approx. 42 billion passenger-km have been replaced by cycling in the UNECE Europe region. By doubling cycling, approx. 84 billion passenger car-km can be replaced per year.

The basis of this assumption is the current status of cycling per person per year. The average for the analysed 54 THE PEP countries is 144 km per year.

The space efficiency of cycling helps **preventing congestions** and converting areas formerly dominated by motorised traffic into leisure areas, providing high-quality living environments for people. Cycling is independent in terms of time (no timetables to be minded) and external energy.

Replacing car trips with cycling trips helps to reduce congestion in cities

Reducing congestion will add up in indirect economic benefits when doubling the current cycling status to 4.9 Bill € (Based on a UK WebTAG price for congestion found in ECF2016²⁷). Furthermore, replacing car trips with cycling trips helps to save money for municipalities by reducing road construction and maintenance costs. Based on OECD data on infrastructure investment²⁸ and infrastructure maintenance²⁹, road

²⁴ <https://ecf.com/resources/cycling-facts-and-figures/economic>

²⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2007:168:0077:0086:EN:PDF>

²⁶ Source: Hausberger, Herry 2007 and https://www.bmvit.gv.at/verkehr/gesamtverkehr/statistik/oesterreich_unterwegs/

²⁷ https://ecf.com/sites/ecf.com/files/FINAL%20THE%20EU%20CYCLING%20ECONOMY_low%20res.pdf

²⁸ <https://data.oecd.org/transport/infrastructure-investment.htm>

²⁹ <https://data.oecd.org/transport/infrastructure-maintenance.htm>

infrastructure investment costs avoided by doubling the current cycling status in the analysed 54 THE PEP countries add up to 0.7 Bill €, respectively road infrastructure maintenance costs avoided to 0.4 Bill €.

Cycling is, next to walking, the cheapest mode of transport.

Compared to walking, cycling extends the catchment area from 1-2 km to 3-6km with the same energy input³⁰.

Commercial delivery³¹

The increasing demand for delivery of goods goes along with the problem of congestion, air and noise pollution and thus decreases the quality of living in the inner cities of Europe. In an average European city half of all motorised trips related to goods transport could be shifted to bicycle or cargo bike. Doing so reduces congestion, energy use, air and noise pollution, enhances quality of life, sustainability, health and many other benefits.

USPs for the shift to bicycle or cargo bike are: cost effective, fast and reliable, flexible delivery capability, secure, professional, environmentally friendly – green, positive image – fun, smart, local.

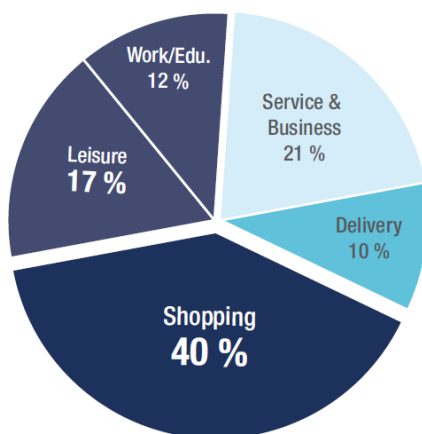


Figure 7: Share of convertible trips by trip purpose³²

Shopping by bike

The majority of shopping trips (85%) are trips to buy convenience goods which can be easily transported by bike, e.g. in baskets, panniers or trailer. As the majority of all shopping trips are short distance trips (every second trip shorter than 5 km) an average of 77% of all motorised shopping trips in EU cities could be shifted to bicycles.

By replacing car trips cycling generates benefits for environment and climate (reduced CO2 emissions, air pollution and noise pollution and fuel savings) and for health and safety (longer lives, healthier lives, re-

³⁰Knoflacher, H. (2007): Grundlagen der Verkehrs- und Siedlungsplanung: Verkehrsplanung

³¹http://cyclelogistics.eu/docs/205/D6_9_FPR_Cyclelogistics_print_single_pages_final.pdf

³²Cyclelogistics EU, final public report, Cyclelogistic - moving Europe forward, FGM-AMOR

duced absenteeism, reduced fatalities, reduced serious injuries, reduced light injuries, material damage avoided from car accidents). These benefits will be described in more detail in the following chapters.

4.3 REDUCED EMISSIONS AND ENERGY SAVINGS

The Paris Agreement, within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gases emissions (GHG) mitigation, was signed on 4 November 2016. The agreement provides a pathway forward to limit temperature rise to well below 2°C (or even 1.5°C as an ambitious goal). This means that until 2050, the GHG emissions have to be reduced by 80% to 95% to limit global warming at a maximum of 2°C³³. The transport sector is one of the main GHG emitters which underlines the necessity for increasing the modal share of cycling. In 2014, transport accounted for nearly a quarter of global CO₂ emissions according to the International Energy Agency (IEA). At the same time, transport CO₂ emissions show significant spatial variation. Across the UNECE region, CO₂ emissions from transport have been increasing (on average) during the past few decades. At the same time statistics show that only UNECE countries have managed to decrease the per capita CO₂ emissions from transport in the past decade (2001-2011). However, as these countries are responsible for roughly 50 per cent of the total inland transport emissions, much more progress is needed. Furthermore, as road transport is identified as the main contributor, the faster implementation of global harmonized technical standards established at UN level is warranted.

Doubling the share of cycling will reduce GHG emissions by 8 Mio. t summing up to 1.1 Bill €_indirect economic benefits³⁴ per year.

Replacing passenger car kilometres directly leads to a reduction of fuel consumption, a reduction of greenhouse gases emissions (GHG), air pollutants and noise. To estimate these benefits the replaced car km by cycling in THE PEP countries is multiplied with the respective emission factors. For GHG emissions UNECE data³⁵ for car and bus were used:

Bus	29	g CO ₂ e per Pkm
Car	145	g CO ₂ e per Pkm
Cycle	0	g CO ₂ e per Pkm
Walking	0	g CO ₂ e per Pkm

Cycling saves 92% of the emissions of a passenger car³⁶ and produces zero NO_x and PM emissions

Air pollutants, such as Nitrogen oxides (NO_x) and particulate matter (PM), are caused to a high extent by motorised traffic. NO_x is mainly emitted by Diesel vehicles and exceeds the health compatible limits in several European cities. As a consequence, the number of low-emission zones is increasing. As regards PM, the WHO estimates that almost 83% of the population of cities, for which PM data exist, are exposed

³³http://www.roadmap2050.eu/attachments/files/Volume1_fullreport_PressPack.pdf

³⁴ With the use of GHG damage costs of 145 € per ton CO₂(source: ECF)

³⁵ ForFITS

³⁶<https://ecf.com/sites/ecf.com/files/co2%20study.pdf>

to PM₁₀-levels exceeding the WHO air quality guidelines³⁷. Cycling does neither emit NOx nor PM and therefore strongly contributes to improving air quality, especially where it is most needed – in cities.

The indirect economic benefits of reducing air pollution by doubling the share of cycling will add up to 0.4 Bill € per year.

Assuming that there are 41% diesel cars and 54% petrol cars in the fleet³⁸ and the share of the car fleet according to the emission standards³⁹ is given, the costs of air pollution can be estimated with the 2014 handbook on external costs in transport⁴⁰.

Cycling causes zero Noise emissions

Another environmental issue is noise pollution. The European Environment Agency (EEA) states that “traffic is the most dominant source of environmental noise⁴¹ with an estimated 125 million people in the EU affected by noise levels greater than 55 decibels (dB) Lden (day evening night level).”

Cycling mainly affects shorter trips and the shift will take place mainly in urban areas. As cycling is noiseless a higher modal share of cycling especially in cities where the population density is high and the distances between homes and transport routes are low will contribute essentially to reducing the noise pollution and increase the quality of life. The improvement will take place where it is needed the most – in these areas where the impairment is high and technical measures are limited (noise barriers) or less effective due to speed limits (low noise road surfaces).

A general statement to what extent an improvement occurs is difficult. Although the extent is directly related to a reduction in car trips, a significant reduction requires serious change. A decrease in car trips by 20% leads to a reduction of 1 decibel (dB) - a decline that is acoustically barely perceptible. However, according to statistics in heavily stressed areas even a small reduction of noise levels leads to a relevant decrease in the numbers of noise-impaired persons.

Summing up, cycling and walking are the most environmentally friendly modes of transport, especially in densely inhabited and build-up urban areas where air and noise pollution is the biggest problem!

The indirect economic benefits of reduced noise pollution of doubling the current cycling status will add up to 0.4 Bill € per year.

Using cost values per vehicle kilometre from the 2014 handbook on external costs in transport⁴², replacement ratios with cycling as before (42% of public transport trips, 32% of car trips and 26% of walking

³⁷http://www.euro.who.int/_data/assets/pdf_file/0006/189051/Health-effects-of-particulate-matter-final-Eng.pdf

³⁸ <http://www.acea.be/statistics/tag/category/passenger-car-fleet-by-fuel-type>

³⁹ <http://www.eea.europa.eu/data-and-maps/figures/allocation-of-passenger-cars-and-1/estimated-share-of-pre-euro/download>

⁴⁰ <http://ec.europa.eu/transport/sites/transport/files/themes/sustainable/studies/doc/2014-handbook-external-costs-transport.pdf>

⁴¹ European Environment Agency, Noise in Europe 2014, 62 pp. doi:10.2800/763331. Luxembourg: Publications Office of the European Union 2014.

trips) and assumptions from ECF 2016 about day and night cycling and where cycling takes place (see ECF 2016, The EU Cycling Economy) the benefits of reduced noise pollution through cycling can be estimated.

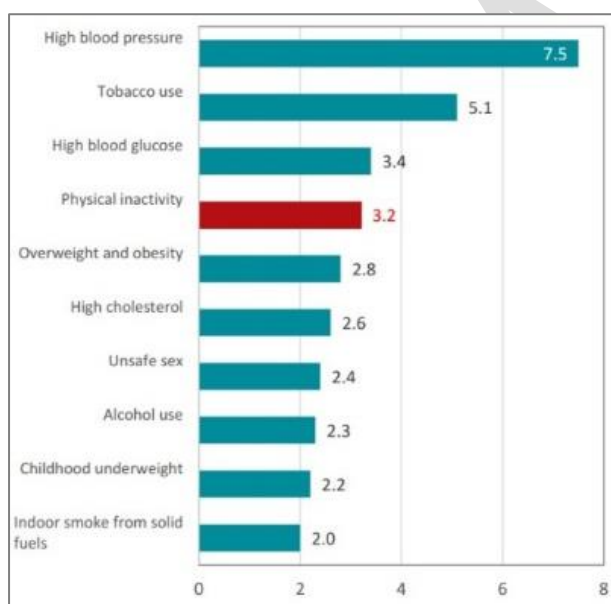
Day	90%
Night	10%
urban	50%
suburban	30%
rural	20%

Table 1: Assumptions from ECF 2016 to cycling times and places⁴³

A bicycle needs no fossil fuels – the indirect economic benefits of saved fuel by doubling the current cycling status sum up to 2.6 Bill € per year.

Replacing passenger car kilometres directly leads to a reduction of fuel consumption. For the calculation of the indirect economic benefits a fuel price of 0.08 €/km based on a fuel price per litre of 1.32 € (average of diesel and petrol, 2014, Eurostat) and an average consumption of 6,1 l/100km (UNECE) has been used.

4.4 HEALTHIER AND SAFER TRANSPORT



Physical activity is one of the most basic human functions and serves as a major foundation of good health during a lifetime. Physical activity contributes to address the heavy burden of non-communicable diseases, like cardiovascular diseases, hypertension, diabetes and certain forms of cancer. The share of non-communicable diseases in overall mortality and morbidity is extremely high and account for about 86% of the deaths and 77% of the disease burden in the European Region⁴⁴. In addition, physical activity has positive effects on mental health by reducing stress reactions, anxiety and depression and by possibly delaying the effects of Alzheimer’s disease and other forms of dementia.

Figure 8: Top ten leading risk factors for global mortality (millions of deaths), 2004

Furthermore, physical activity is a key determinant of energy expenditure and is therefore fundamental for preventing obesity, which is designated by the WHO as “one of the greatest public health challenges

⁴²<http://ec.europa.eu/transport/sites/transport/files/themes/sustainable/studies/doc/2014-handbook-external-costs-transport.pdf>

⁴³https://ecf.com/sites/ecf.com/files/FINAL%20THE%20EU%20CYCLING%20ECONOMY_low%20res.pdf

⁴⁴ <http://www.euro.who.int/en/health-topics/noncommunicable-diseases/noncommunicable-diseases>

of the 21st century". According to the WHO obesity prevalence has tripled since the 1980s, and the trend is alarming, particularly among children.

The physical activity strategy for the WHO European Region 2016–2025⁴⁵ sets out to contribute to achieve the global voluntary target to reduce insufficient physical activity by 10% by 2025.

The WHO recommends adults to undertake either 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week, or an equivalent combination of moderate and vigorous activity.⁴⁶

Cycling delivers a number of important benefits to health and contributes to address the heavy burden of non-communicable diseases, which are the leading cause of death for Europeans.

Research by the University of Glasgow has found that cycling to work is associated with a 45% lower risk of developing cancer and a 46% lower risk of heart disease, compared to a non-active commute. Overall the study found that commuters who cycled were associated with a 41% lower risk of premature death⁴⁷.

Because cycling is highly beneficial for health, these benefits significantly outweigh the possible risks caused by exposure to polluted air in all but the most extreme air pollution concentrations, as well as the risk of injuries. For example, a review of studies carried out in different context indicates that estimated health benefits of a mode shift to active transport outweigh associated risks or costs, irrespective of geographical context or baseline setting, with a median of 9:1.⁴⁸

Reduced absenteeism at work resulting from doubling the current cycling status will add up to 7 Bill €. of indirect economic benefits per year⁴⁹

A high share of cycling within daily trips has strong impact on the cyclist's mental and physical health, reducing the number of days off work through illness. In consequence, the healthcare costs for public and private health insurances and the companies' loss of workforce can be reduced.

Doubling the current status of cycling would prevent 30,000 deaths and a related annual benefit of 78 Billion Euros resulting from indirect economic benefits.

In the framework of the Transport, Health and Environment Pan-European Programme (THE PEP), WHO developed the Health Economic Assessment Tool (HEAT), a free online tool. HEAT is designed to help

⁴⁵ Physical Activity strategy for the WHO European Region 2016-2025
http://www.euro.who.int/__data/assets/pdf_file/0010/282961/65wd09e_PhysicalActivityStrategy_150474.pdf?ua=1

⁴⁶ Global recommendations on physical activity for health. WHO, 2010
http://apps.who.int/iris/bitstream/10665/44399/1/9789241599979_eng.pdf

⁴⁷ https://www.gla.ac.uk/research/news/headline_523440_en.html

⁴⁸ Mueller, N. et al Health impact assessment of active transportation: A systematic review Preventive Medicine 76 (2015) 103–114 <http://dx.doi.org/10.1016/j.ypmed.2015.04.010>

⁴⁹ Estimations for reduced absenteeism: Average hourly labour cost in the 54 THE PEP analysed countries 2015: 20 € per hour (Eurostat); Average cost per day (8 hours): 200 € per day; Employees cycling to work are on average 1.3 days less absent due to sickness than those who do not cycle to work. The gain per employee is thus 208 € per year (<http://www.ncbi.nlm.nih.gov/pubmed/20580736>); Active population: 611.477.006 (OECD); Employed population: 428.033.904 (Eurostat); Cycling to work (assumption: 8%, based on Eurobarometer "Quality of transport", 2014): 34.242.712

conducting an economic assessment of the health benefits of walking or cycling by estimating the value of reduced mortality that results from specified amounts of walking or cycling⁵⁰.

Based on a HEAT calculation for the analysed 54 THE PEP countries, doubling the current status of cycling would lead to approximately 30,000 deaths per year prevented. The indirect economic benefits of reduced mortality of doubling the current status of cycling will add up to 135 Bill € per year. According to a 2014 study from Pro Velo and Transport & Mobility Leuven⁵¹ benefits from reduced morbidity (40% of mortality benefits), living healthier lives through cycling, leads to additional indirect economic benefits of 54 Bill € per year for the UNECE European region.

However, in order to ensure that cycling delivers its full benefits for health, it remains imperative to address safety aspects. Dedicated infrastructure for cyclists and road design aiming at the reduction of the average driving speed contributes to the promotion of cycling and helps reducing the number of road accidents.

With OECD data on car crash fatalities⁵², injury estimations from Europe⁵³ and casualty related costs from HEAT indirect economic benefits of avoided car accidents (reduced fatalities, reduced serious and light injuries) of doubling the current cycling status will add up to 3.0 Bill € per year. Based on a cost-benefit of cycling study commissioned by the German BMVBS⁵⁴ the indirect economic benefits of avoided material damage in car accidents when doubling the current cycling status will add up to 4.9 Bill € per year.

⁵⁰ <http://www.heatwalkingcycling.org/index.php>

⁵¹ <http://www.gracq.org/sites/default/files/2014rbceconomievelo.pdf>

⁵² <https://data.oecd.org/transport/road-accidents.htm>

⁵³ https://ec.europa.eu/transport/road_safety/specialist/statistics_en

⁵⁴ <https://nationaler-radverkehrsplan.de/de/aktuell/nachrichten/veroeffentlichung-der-forschungsergebnisse-des>

4.5 OVERVIEW OF THE INDIRECT ECONOMIC BENEFITS OF CYCLING

				THE PEP CURRENT		THE PEP DOUBLING	
Indirect economic benefits of cycling				Calculation based on...			
			Benefits are for the ...	concrete evidence	best available data	concrete evidence	best available data
				in billion €		in billion €	
Mobility	Mobility / transport	Congestion-easing	National Economy	4.9		9.9	
	Road infrastructure	Construction	National Economy	0.7		1.3	
		Maintenance	National Economy	0.4		0.8	
Environment and Climate	Climate	CO2 emissions	National Economy	1.1		2.2	
	Environment	Air pollution	National Economy	0.4		0.7	
		Noise pollution	National Economy	0.4		0.8	
	Energy	Fuel savings	Citizen	2.6		5.2	
Health and Safety	Health economic benefits	Absenteeism	Businesses/Industry		7.1		14.2
	Direct health benefits	Longer lives	National Economy	78.0		156.0	
		Healthier lives	National Economy		31.2		62.4
	Reduced accidents	Reduced fatalities	National Economy	0.7		1.5	
		Reduced serious injuries	National Economy	0.6		1.3	
		Reduced light injuries	National Economy	0.1		0.2	
	<i>Total accidents</i>		1.5		3.0		
Road safety	Reduced material damage	National Economy		2.5		4.9	
Total				90	41	180	82

4.6 NATIONAL CYCLING POLICIES FOR CYCLING PROMOTION

When looking at the data on modal split for cycling it becomes obvious that countries with national cycling strategies tend to result in significantly higher cycling rates than countries without national cycling strategies. Analysing the data of the Eurobarometer 2014 for countries with a national cycling strategy a modal split up to 36% can be found (and several countries thereof with an at least two-digit modal split for cycling). Countries with no national cycling strategy only show a modal split of up to 7% (modal split data given in Figure 1 are based on the Eurobarometer data).

Countries that have a national cycling policy in place show a modal share of cycling of up to 36% whilst countries without such an instrument only range up to 7%.

Exemplary approaches in cycling-oriented countries show that cycling needs should be promoted as equal component of an integrated transport and mobility policy. This requires a powerful political support at all levels in order to develop a so-called “cycling culture” in a country.

It is commonly acknowledged that a National Cycling Policy has to be embedded in a strategic and integrated framework, also comprising the definition of concrete and quantifiable objectives. The continuous availability of financial budgets is very crucial for the successful promotion and implementation of effective cycling measures. National cycling policies can help to establish efficient networking structures, including the various stakeholders at different levels and appointing clear responsibilities.

Possible benefits of National Cycling Plans (NCP)⁵⁵

- clear framework for the development of cycling in the country
- overall vision and common strategy for policy actions to jointly promote cycling
- clear communication of importance of cycling by national governments
- decisions on new legislative and fiscal frameworks to be adopted on national level
- efficient coordination of cycling policies (across vertical and horizontal government authorities)
- capable aggregation and co-ordination of power of various stakeholders (e.g. transport, health, environment, economy) on different levels (e.g. public/private, local/regional/national) to jointly evolve cycling
- skill-enhancement for actors on different levels (e.g. local and regional authorities)
- provision of better networking-conditions for enabling cooperation between various stakeholders with differing interests
- funding of pilot projects, research and awareness-raising campaigns
- co-funding for investments in cycling infrastructure
- broader exchange of knowledge, e.g. on good practices
- assignment of continuous, significant financial budget for cycling measures.

⁵⁵ <https://ecf.com/what-we-do/cycling-all-policies/national-cycling-policies>

5 RECOMMENDATIONS

The following recommendations address the national ministries as main target group. Furthermore, the masterplan also meets the level of transnational policy as some recommendations within this document address transnational target groups, such as the European Commission, WHO, UNECE as well as International Financing Institutions.

All recommendations work together in order to most efficiently promote cycling in your country. Recommendations that are directly linked to others are indicated separately in the course of the chapter.

DRAFT

1	Have a National Cycling Policy
1.1	Develop (and/or up-date) and implement a National Cycling Plan
1.2	Create strong “cycling working groups” and appoint a National Cycling Officer
1.3	Set up a National Knowledge Centre / “Bike Academy” for training of professionals and skill-enhancement
2	Improve regulatory framework for cycling
2.1	Integrate regulations to promote cycling and to increase cycling safety into national highway codes
2.2	Provide cycling friendly traffic conditions by lowering speed limits
2.3	Improve and harmonise vehicle (equipment) specifications
3	Provide appropriate cycling infrastructure
3.1	Define and produce a methodology and monitor the implementation of a trans-European cycling network
3.2	Create and maintain trans-European, national, regional and local cycling route networks
3.3	Set national standards for cycling infrastructure
4	Provide appropriate funding
4.1	Set up sustainable national funding schemes to promote cycling
4.2	Establish close cooperation with International Financial Institutions (IFIs) to ensure funding of cycling infrastructure...
4.3	Consider impact of cycling in investment decisions
5	Include cycling in the planning process and facilitate multimodality
5.1	Incorporate cycling in all infrastructure planning
5.2	Consider cycling in spatial planning and building regulations
5.3	Facilitate multimodality between cycling, public transport and walking
6	Promote cycling through fiscal incentives and behaviour change campaigns
6.1	Promote the use of cycling through Mobility Management
6.2	Introduce fiscal incentives to promote cycling
6.3	Financial support for bikes (e.g. electric/cargo) for communities, companies and consumers
7	Improve health and safety
7.1	Integrate cycling as a tool to promote physical activity in the public health systems
7.2	Integrate health and cycling related aspects in formal and informal education as well as in awareness raising
7.3	Integrate cycling in road safety policy
8	Enable and foster monitoring and benchmarking
8.1	Provide adequate and reliable statistical data to monitor the level of cycling
8.2	Support countries in collecting coherent and comparable data on international level
8.3	Highlight the benefits of cycling by developing and applying common tools like HEAT
9	Promote cycling tourism
9.1	Establish national cycling tourism coordination centres
9.2	Introduce a national cycle friendly service scheme
9.3	Adopt and implement a national standard for signalisation of cycle route networks
10	Technology and innovation
10.1	Introduce open standards for data exchange
10.2	Use smart data to improve cycling conditions
10.3	Support innovative bike-vehicles for the last mile logistics

Table 2: List of recommendations

5.1 DEVELOP AND IMPLEMENT NATIONAL CYCLING POLICIES SUPPORTED BY A NATIONAL CYCLING PLAN

In many THE PEP countries, cycling does not have a long tradition (or not any more). Thus, there is little awareness about the needs of cyclists and the benefits of cycling. In national plans, cycling is often treated as a side topic, not as equal mode of transport next to other means of transport. The same is true for most official professional education where future town planners and other related curricula do not get sufficient training on cycling. The aim is to have a consistent strategy in place for all actors to streamline their efforts towards a joint goal with clear guidance on necessary steps and budget to achieve the set goals.

A National Cycling Plan (NCP) can be considered a strategically important policy document of national governments. It sets out the guiding policy principles for the promotion of cycling in the future, focusing on transport policy challenges such as the promotion of cycling as an equivalent means of transport with others (cycling as one component of an integrated transport and mobility policy), reduction of capacity problems in towns and better living conditions in cities.

The objectives of a NCP are to make cycling more attractive and safer. A NCP should have a clear time horizon and outline the different action areas. It is important to identify the major actions required to evolve cycling and to describe and recommend the specific steps that have to be taken by the different stakeholders (e.g. executive levels of local authorities, regional authorities, government, NGO's, health agencies, each within their own sphere of responsibility).

It is recommended to follow the good example of several countries to set up a National Cycling Plan. As described in chapter 2, 17 out of 56 analysed THE PEP countries currently have a NCP available. However, the pure existence of a NCP does not yet tell us anything about its quality. A NCP ideally provides a clear framework for the development of cycling on different levels and also supports and encourages regional and local authorities in their activities to promote cycling. It should have a clear intersectoral focus including links to other related policies (e.g. health, environment, general transport).

Additionally, a NCP has to be accompanied by skill-enhancement and training (capacity building) of the main actors, the establishment of a strong organisational networking among the relevant stakeholders and the installation of a National Cycling Officer to steer the cycling promotion process.

Supported by these measures a NCP is a powerful tool in order to focus efforts and resources as well as to monitor the implementation process and evaluate achievements. This will lead to consistent and integrated planning and implementation of activities towards better conditions for cyclists. At the same time, awareness for cycling and cyclists' needs rises.

Overview of recommendations

- | | |
|----------|---|
| 1 | Have a National Cycling Policy |
| 1.1 | Develop (and/or up-date) <u>and</u> implement a national cycling plan |
| 1.2 | Create strong "cycling working groups" and appoint a National Cycling Officer |
| 1.3 | Set up a National Knowledge Centre / "Bike Academy" for training of professionals and skill-enhancement |

DRAFT

Recommendation 1.1: Develop (and/or up-date) and implement a national cycling plan

<p>Description</p>	<p>A National cycling plan (NCP) should provide a clear framework for the promotion of cycling on national level. Therefore, it is important that a NCP also comprises the national cycling policies and strategies. Objectives, measures, recommendations and responsibilities etc. should reflect the current situation in the country including the relationship to the subnational level. The involvement of all relevant stakeholders coordinated by an appointed National cycling officer (see recommendation 1.2) increases the acceptance of this strategic document and supports the successful implementation.</p> <p>Continuous monitoring and regular updates make sure that the NCP is taking into account recent developments, trends, etc. (see recommendation 8.2). Important elements of the national cycling plan are the fields of action listed in the following topics 1.2-10.</p>
<p>Beneficiaries</p>	<p>Responsible national authorities (having a clear mandate to promote cycling based on the NCP), all other stakeholders dealing with cycling.</p>
<p>Responsible institution</p>	<p>National authorities responsible for cycling (Ministries responsible for transport, environment, health, spatial planning, economy, tourism, education, finance, etc.)</p>
<p>Steps</p>	<p>A National Cycling Plan follows different phases, including several steps in each phase:</p> <p>PHASE 1: PREPARATION</p> <p>Step 1: Analysis of the current cycling and the overall mobility and environmental situation</p> <p>Step 2: Determination and description of the need and the benefits resulting from a National Cycling Plan, embedded into a broader transport, environmental and/or health context</p> <p>Step 3: Identify relevant stakeholders of different public authorities (on horizontal and vertical levels), NGO's etc. To be included in the process of developing a joint National Cycling Plan</p> <p>Step 4: Develop a common vision (long-term) and define main objectives (short-/medium-term) and measurable targets</p> <p>PHASE 2: DEVELOPMENT</p> <p>Step 5: Develop concrete recommendations and measures for reaching the defined objectives</p> <p>Step 6: Agree on clear responsibilities among the relevant actors on all levels</p> <p>Step 7: Develop a monitoring and assessment concept and clarify the use of suitable systems/tools; the criteria included should be widely acknowledged in the implementation and operational phase</p> <p>PHASE 3: ELABORATION AND ADOPTION</p> <p>Step 8: Establish a concrete implementation plan for the National Cycling Policy built upon a broad consensual basis</p> <p>Step 9: Adopt the NCP on national level and go into a continuous and cooperative dialog with all stakeholders before (preferably) adopting the plan as a binding national agreement document on a ministerial level</p>

	<p>PHASE 4: IMPLEMENTATION</p> <p>Step 10: Allocate sufficient financial and human resources to implement the plan</p> <p>Step 11: Set up a good system of management and communication to implement the NCP</p> <p>Step 12: Include activities for promotion and enhancement</p> <p>PHASE 5: MONITORING AND EVALUATION</p> <p>Step 13: Foresee a continuous monitoring and evaluation of the plan</p>
Horizon for implementation	At least one year from preparation to adoption
Budget	It is different if own staff is available or if external experts and/or consultants have to be included. Also, more budget is needed if the work shall be supported by additional surveys, interviews and/or focus groups.
Good practice example	<p>Existing National Cycling Plans differ from one country to the other. In many cases they reflect the current political priorities in the country.</p> <p>Austria: first national cycling plan was established 2006 combine with a national cycling objective to double the share of cycling on the national level in the agreement of the national government. To facilitate the implementation of the cycling plan a special financial supports scheme to promote cycling and extend cycling infrastructure within the Austrian nation support programme klima:aktiv mobil was established. As a result, the modal share of cycling increased to 7% on the national level. The second national cycling plan was developed for the period 2015-2025 including the overall objective to double cycling to 13%.</p> <p>Germany:</p> <p>Germany's first National Cycling Plan (NCP) was valid from 2002-2012. The second National Cycling Plan was developed in a broad dialog and consensual process with various stakeholders (on different public and private level). The NCP 2020 was adopted as an official document (the Federal Ministry of Transport and Digital Infrastructure has the key role for the NCP) and has been entered into force in January 2013. (https://nationaler-radverkehrsplan.de/en/federal-initiatives/national-cycling-plan-nvp-2020)</p> <p>Hungary:</p> <p>Hungarian Transport Administration launched the "National Cycling Programme Hungary 2014-2020" which is very much focusing on investment in cycling infrastructure (incl. the development of regional cycling routes), inter-modality and cycling, traffic campaigns and awareness raising as well as evaluation and monitoring. https://www.bicyclenetwork.com.au/media/vanilla_content/files/Hungary%20-%20Bike%20Plan.pdf</p>

The Netherlands: The Dutch Ministry of Transport issued the first national cycling plan ("Master plan Fiets") which was set out for the period of 1990-1997. The plan had several goals, principally improving the quality of the environment, improving public health, increasing accessibility, and making streets safer for citizens, particularly for children. It received significant national funding. A general policy of decentralization at the end of the 1990s led to more local strategies and municipal policies on cycling. The national Ministry was only involved in the background. In 2015 the initiative of the TOUR de FORCE was launched. A comprehensive coalition of governments, companies, civil society organisations, research institutes, and associations responsible and involved in the bicycle policy of the Netherlands are united in the Tour de Force. www.tourdeforce2020.nl

Some examples for national plans (cover pages of the NCP documents) in different PEP countries



Recommendation 1.2: Create strong “cycling working groups” and appoint a National Cycling Officer

Description	<p>Cycling expertise is scattered at different levels and institutions. Therefore, it is necessary to bring together all relevant experts and stakeholders from the different levels and policy areas and jointly work on the promotion of cycling.</p> <p>Regular meetings/workshops support the exchange of ideas, discussion of challenges, etc. Effective expert working groups (various stakeholders of the transport, health, environmental, economic et al. sectors) create a better understanding of the different needs and requirements and join forces.</p> <p>A National Cycling Officer (NCO) for countries setting first steps in cycling promotion or a National Cycling Competence Centre (NCCC) for countries which already have a long cycling tradition should be installed to coordinate these cycling working groups. The NCO / NCCC is the main advocate for cycling on national level and helps to initiate the inter-ministerial coordination process and to set up and coordinate the cycling working group(s). Even though cycling is often a local or regional responsibility, the support of a central/national government can accelerate the implementation of activities to promote cycling,</p> <p>The NCO should ideally be supported by all relevant ministries, have a specific mandate, a clear job profile/description, spend his/her working time 100% on cycling issues, have a strong technical competence, is empowered to reach out to different actors, is playing a coordinating and enabling role, is committed to and enthusiastic about cycling and cycles herself/himself</p>
Beneficiaries	<ul style="list-style-type: none"> • public organisations (transport, health, environment etc.) on European, national and urban/regional level • private stakeholders and institutions (e.g. health insurance companies, cycling associations, employers) • general public
Responsible institution	<p>Coordination, facilitation and moderation roles/activities have to be taken over on national level (e.g. Ministry of Transport or Ministry of Environment). All other authorities on local/regional level should join the process.</p> <p>Financial support on a national/European level is needed.</p> <p>NCOs in THE PEP countries are associated to different national authorities. E.g. Austria (Ministry of Environment), DE/SK (Ministry of Transport), CZ (National Research institution)</p>
Steps	<ol style="list-style-type: none"> 1. Determine responsible organisation (e.g. national Ministry of Transport or national Ministry of Environment) which takes over the lead management and coordination for the cycling network. 2. Identify relevant stakeholders on different levels and their willingness and commitment to participate in an overall “cycling network” (working group). 3. Appointment/good staffing for the position of the NCO
Horizon for implementation	<p>“Cycling networks” resp. cycling working groups should be established on a permanent and long-term basis (e.g. working groups to set up, to accompany and to monitor National Cycling Plans).</p>

Budget	Provide additional budgets for data acquisitions, studies, surveys, interviews, special expertise, if necessary appoint complementary staff etc.
Good practice example	<p>Germany: In order to coordinate cycling activities, a working group including representatives of the Ministry of Transport, members of ministries of the 16 Länder and members of other institutions and further stakeholders (e.g. cycling associations, municipal associations, federal agencies and research institutions, cycling industry, safety organisations, railways...) has been established in 1999. The group organised meetings twice a year and was responsible to elaborate the first (NRVP 2002-2012) and second German National Cycling Plan (NRVP 2020). For the implementation of the National Cycling Plan an advisory board (18 experts) was appointed by the Federal Transport Minister in 2014. This board meets twice a year. Representatives cover health, sports, tourism, business, environment and transport planning issues and are from the public, private and NGO sector (e.g. federal states, municipalities, universities, bicycle industry, cycling associations). A yearly budget of more than 3 Mio € is available for studies, research concepts and pilot projects for cycling promotion.</p> <p>CZECH REPUBLIC</p> <p>The Czech Republic has been involved in the CentralMeetBike project in which also expert working groups have been established.</p> <p>The Ministry of Transport (the bicycle transport department) is the main promoter of the implementation of the cycling strategy and the Ministry for Regional Development is the sub-promoter (cyclo-tourism department). Other ministries (e.g. the Ministry of Environment and Ministry of Health) support the implementation in a symbolic way. The key success in working together towards the cycling strategy is the cooperation with local authorities, since the municipalities are responsible for the cycling infrastructure.</p> <p>AUSTRIA</p> <p>Austria installed a national working group for bicycle transport with cycling officers, representatives of all federal states and federal state capitals supporting the implementation of the national cycling plan.</p> <p>The working group meets twice a year in different locations. It is chaired by the national cycling officer who is employed by the Ministry of Agriculture, Forestry, Environment and Water Management and is mentioned as measure in the national cycling plan⁵⁶. The working group accelerated the communication and increased know-how exchange between national, regional and local level. The NCO is also responsible for the national funding scheme promoting sustainable mobility, a powerful instrument to promote cycling.</p> <p>Luxembourg: NCO directly nominated by the minister of transport. Close cooperation with decision makers. Checks each and every infrastructure investment project (which is in the responsibility of the national level) if the requirements of cyclists and</p>

⁵⁶ Federal Ministry of Environment, Masterplan Cycling, 2006

pedestrians have been taken into account. Reaches out to other institutions such as other ministries, municipalities and administrations to understand needs and to develop national best practice guidelines that are typically based on an international best practices analysis. The NCO presides or advises several working groups with these institutions as well as with NGOs that are relevant to active mobility.

Norway: Network for Cycling Cities is a network for municipalities and counties organised from The Norwegian Public Roads Administration. The membership is free, and the network offers courses and meetings on different subjects. The main purpose is to spread knowledge and competence, and share good examples and experience. Together with municipalities and counties, the state selects cities who has a target to get more people cycling. The agreements are signed for a period of 4 years and the measures varies within the agreements.

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Recommendation 1.3: Establish National Knowledge Centre / “Bike Academy” for training of professionals and skill-enhancement

Description	<p>Since cycling is often not included in official professional education, significant knowledge and information gaps can be found among the different stakeholders. Education, training and awareness rising are the most efficient methods for the transfer of knowledge and dissemination of cyclist friendly approaches and state-of-the-art planning solutions.</p> <p>Therefore, professional training and skill-enhancement is needed and can be offered by so-called “Bike Academies”. Additionally, a good and comprehensive cycling literature database is an important tool for skill-enhancement and knowledge provision.</p> <p>A National Knowledge Centre / “Bike Academy” provides a valuable platform for know-how exchange and builds an international network for collaboration. Ideally, the Centre is linked to a “THE PEP Academy”. This measure is acknowledged to be one important component in the overall implementation of the national cycling strategy.</p> <p>(https://www.unece.org/fileadmin/DAM/thepep/documents/2016/14SC_meeting/Informal_document_6_-_Workplan_of_THE_PEP_Academy.pdf).</p>
Beneficiaries	<p>Stakeholders on different political levels, public administrations and ministries, NGO’s, urban and regional planners, public transport authorities, transport planners and local authorities, users of cycle infrastructure</p>
Responsible institution	<p>This task can be allocated at federal state/national level and at European level. Bike Academies can be linked to e.g. existing research and information institutes(with relation to cycling issues),advocacy groups, NGOs, cycling embassies, international and local expert groups.</p>
Steps	<p>Start with selected offers (e.g. seminars) on the most relevant cycling issues:</p> <ol style="list-style-type: none"> 1. Identify target groups and relevant stakeholders 2. Prepare promotion packages, training and education programmes. 3. Build public support 4. Organise meetings/conferences, trainings and awareness campaigns
Horizon for implementation	<p>The Centre should be installed with regard to a long-term perspective. Preparation time should be scheduled carefully. Content, formats and involved experts and stakeholders as well as sound analysis of relevant target groups is an important success factor.</p> <p>Some examples for a cycling friendly, integrated approach of infrastructure:</p> <ul style="list-style-type: none"> • Study trips: 3-6 days. • Training for planners, authorities: 30-60 hours/course. • Awareness rising campaigns: 1-4 weeks.
Budget	<p>Education and training programmes are cost efficient and effective measures. A yearly budget is needed to finance this educational offer on a long-term basis. Total amount of budget depends on the extent/variety of offers.</p>
Good practice example	<p>The starting phase has to be subsidised by the government. Once the system is established, more specific courses could be implemented in cooperation with business companies.</p> <p>Subsidised concepts: the “Fahrradakademie” (DE) and the bike academy in the Czech</p>

Republic (CentralMeetsBike).

Since 2007 the German “Bike Academy” has been financed by the German Federal Ministry of Transport. In the last ten years more than 13,000 people participated in the different offers of the German Bike Academy (conferences, excursions, workshops, seminars, E-Learning/ Webinars, etc.) (<https://nationaler-radverkehrsplan.de/de/fahrradademie>).

The German National Cycling Plan also includes an extensive “Cycling Literature Data Base” with more than 5,000 sources as well as an RSS-/Newsfeed (<https://nationaler-radverkehrsplan.de/de/search/site/literaturdatenbank>).

Business concepts (=consultancy, not for free). Probably a phasing out of subsidies might be possible once the system runs successfully. In the Netherlands (the “Fietsberaad”) offers trainings and courses.

In Denmark (the “Cycling Embassy”) is rather exporting consultancy than capacity building/skill-enhancement. The Cycling Embassy of Denmark (CED) in itself is a forum for knowledge sharing among cycling professionals in Denmark and through that offers capacity building and skill-enhancement to municipalities in Denmark.

In addition, the Danish Cyclists’ Federation also consults and cooperates with municipalities on its many campaigns and projects. It also offers online access to scientific papers, debates, activities and various knowledge of planning and construction.

A number of municipalities (“DetKommunaleCykelfagråd”) cooperate/network to promote cycling. The Danish Road Directorate holds specific knowledge about i.e. tourist cycling, working together with the Danish Cycling Tourism. Additionally, there are several private actors who offer consultancy about cycling.

5.2 IMPROVE REGULATORY FRAMEWORK FOR CYCLING

In the last years, cycling has gone through a transformation process. Whilst some countries already build upon a long cycling tradition with adequate standards and regulations, other countries lag behind. A multitude of new vehicles (cargo bikes, handbikes, e-bikes, etc.) mingle with traditional modes of transport. These new vehicles open up a wide range of new possibilities and reach new groups of users. At the same time, they compete for the existing infrastructure and are often not subjected to any regulations.

Cycling should be valued as an equal mode of transport, next to individual motorised transport. This is a call for the improvement of the regulatory framework.

The aim is to use new technological innovations as effectively as possible and tap their potential in order to raise the share of cycling, walking and public transport in modal split. This must not compromise safety and convenience of other vulnerable users in the transport system.

Even though each region and country builds upon a different context and framework, not everything has to be invented from scratch. There are already many examples in various countries that have proven effective. Good examples to ensure safety for drivers and passengers (traffic regulation, touristic signalisation, lights, belts etc.) should be compiled on a systematic basis and evaluated for adoption in other countries. At the same time, common standards for heavy good vehicle (HGV) allowing to solve the blind spot issue could improve the pedestrian or cyclist safety. Apart from that, common standards for e.g. battery chargers will make the use of these vehicles more convenient, efficient and reliable.

Improvement of the regulatory framework will ensure the peaceful coexistence of all modes of transport. It will raise safety, give clear guidance to all participants and enable that cycling is recognized as an attractive mode of transport.

Overview of recommendations

- | | |
|----------|---|
| 2 | Improve regulatory framework for cycling |
| 2.1 | Integrate regulations to promote cycling and to increase cycling safety into national highway codes |
| 2.2 | Provide cycling friendly traffic conditions by lowering speed limits |
| 2.3 | Improve and harmonise vehicle (equipment) specifications |

Recommendation 2.1: Integrate regulations to promote cycling and to increase cycling safety into national highway codes	
Description	<p>Many national highway codes still lack regulations to promote cycling and to increase safety of cyclists. Some rules or principles proved to be efficient and therefore should be evaluated for a possible adoption in THE PEP member states. Examples are:</p> <ul style="list-style-type: none"> • Define cyclists as road users in the highway codes, without making the use of cycling tracks mandatory in general. • Cycling against the traffic on one-way lanes (contraflow) enables cyclists to avoid busier, less safe roads. • Introduce the bicycle street concept (“Fahrradstraße”, “vélorue”, “Fietsstraat”). • Pedelecs (Electrically Assisted Bicycles) with less than 250 watts and with cut off speeds of 25 km/h should be treated the same as bicycles in road regulations. Pay attention to the speed pedelecs, which are already characterised mopeds, not bicycles. They should not have access to cycling infrastructures. This also applies to busy urban cycle routes, or those routes used by children and families. However, after a case-by-case examination they could be admitted on some non-urban or low traffic cycle roads. Road signage may need to be adapted on those roads/streets that have s-pedelec or moped usage (e.g. France signage instruction).
Beneficiaries	Transportation and urban planners in city administrations (because of cheaper street planning), cyclists who intend to improve their comfort and safety (and their perception of safety).
Responsible institution	Ministries in charge of transport and/or police, or regional department in charge of the traffic rules. They are asked to share their knowledge on newly evaluated rules with other countries.
Steps	<ol style="list-style-type: none"> 1. Inventory of rules which can be adapted to each country’s legislation. 2. Adopt those good practices that fit best to the national priorities and context. 3. Test possible new rules and evaluate the effects on safety, traffic and comfort. 4. Transform the results into positive new national rules. 5. Suggest new rules and signs on international level. 6. Prepare generalisation at country level and integrate in highway code. 7. Think of cross-ministerial consultation and national approbation by law or regulation, validation and adoption. 8. Include clear communication about the new rules.
Horizon for implementation	First results will be available up to three years after the adoption of the pan-European Master Plan and will be improved every third year until new European rules are implemented. It is recommended to plan sufficient time for the implementation of new regulation.
Budget	Most rules should be introduced step by step using the scope and will of local bodies. Most costs will arise for the change of road signs and should thus be affordable. Some costs have to be provided before in order to inform and to select a company for impact













assessment in step 2.

Regarding step 3, the costs are difficult to estimate. They depend on the number of new rules. Some could be quasi null; some could be expensive if there are a lot of road signs to change.

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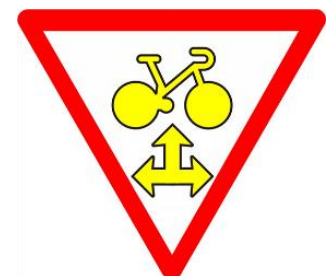
Good practice example

- 1) Several studies have shown that contraflow cycling improves traffic safety⁵⁷. In any case the possibility of contraflow cycling improves journey times significantly by avoiding detours. Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, and the UK are examples of countries that have implemented contraflow cycling⁵⁸.
- 2) Luxembourg introduced **cycle streets** into the highway code in 2017. Before they introduced the new signs they carried out a comprehensive evaluation of similar regulations in other countries:

	Limitation de l'obligation	Signalisation	Observations/Effets
	Pas obligatoire sauf indication contraire		
	Optionnel si pas de panneau ou si piste plus loin que 5m de la route	-	Possibilité d'autoriser les vélos sur la chaussée
	Uniquement pour changement de direction	-	-
	Uniquement si piste plus loin que 5m de la route	-	-
	Possibilité de signaler des infrastructures pas obligatoires	  	
	Certaines infrastructures ne sont pas obligatoires	-	Correspondant +/- aux voies suggestives
	L'utilisation des infrastructures cyclables n'est pas obligatoire	-	-
	Pas de dispositions prévoyant une infrastructure non-obligatoire	-	-



- 3) The preparation of the French masterplan with a **“Code de la Rue”** (Street code) approach by Cerema and French Cycling Coordination: After collecting demands from different stakeholders, two days debates about present and prospective rules took place, incorporating good practices from other countries. As a result of the involvement process a list of rules supported by all stakeholders was presented.
- 4) Experimentation and implementation of **yield and pass the red light** (France): The new sign was tested in Nantes for 6 months from spring to autumn 2011. After the evidence had been carried that it had no negative impact on safety and the efficiency for cyclists was proved, the introduction in the highway code occurred in February 2012. This was improved again in 2016 with the all direction signs introduced in the French regulation in Septem-



⁵⁷ http://www.mobielbrussel.irisnet.be/static/attachments/partners/na/248/vm-1-sul_ENG_.pdf

⁵⁸ http://webshop.ibsr.be/frontend/files/products/pdf/44180dc835ad150c9c63fbf2ed011304/2013_sul-draft_lowres_e.pdf

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Recommendation 2.2: Provide cycling friendly traffic conditions by lowering speed limits	
Description	<p>Separated infrastructure can induce feelings of safety amongst those cycling and can also attract more people to cycle. Roads with high speeds and high density motorised traffic should separate cyclists as it significantly reduces the risk of severe injuries and fatalities under the condition of a careful design of crossing sections. However, using those separate lanes should not be mandatory in general.</p> <p>If separation is not physically or financially feasible for specific road segments, the relevant traffic calming measures should be introduced for mixed roads to ensure safety of cyclists and pedestrians.⁵⁹</p> <p>Speed is a fundamental risk factor and needs to be addressed by the responsible agencies considering existing urban infrastructure, cultural and habitual aspects of the local population, particular settlements and other indicators in a case by case assessment.</p> <p>Therefore, when cyclists and cars share the road in built-up areas, speed limits up to 30km/h for motorised cars are strongly recommended to be imposed as there is a clear correlation between the speed and degree of injury of unprotected road users in case of an accident. Most unprotected road users survive if they are hit by a car travelling at 30 km/h, while the majority is killed if car speed is 50 km/h and higher.</p>
Beneficiaries	Pedestrians, cyclists and motorcyclists.
Responsible institution	Relevant agencies and local authorities.
Steps	<ol style="list-style-type: none"> 1. Study the road infrastructure and identify segments where either separate cycling infrastructure or speed limits and traffic calming measures could improve safety of cyclists. 2. Study the locations where unprotected road users experience a higher-than-average crash risk and define the most appropriate policy measures for risk reduction. 3. Design and conduct capacity development measures for the involved target groups (like for policemen in speed limit enforcement) and awareness raising campaigns for all road users.
Horizon for implementation	10 years
Budget	
Good practice example	All over the UK local authorities are implementing a default 20mph limit policy for most residential streets and city centres. In many places public health expertise and funding is being used to engage with the public to gain behaviour change. These range from large urban megacities such as London, provincial cities such as Bristol and also rural and mixed areas such as Lancashire and Calderdale. Already a quarter of the UK population lives in such 20mph places.

59 OECD/International Transport Forum (2013), *Cycling, Health and Safety*, OECD Publishing/ITF. <http://dx.doi.org/10.1787/9789282105955-en>

	France: Grenoble metropolis has introduced a 30km/h speed limit in 2016 for 90% of the streets of the 43 cities belonging to the metropolitan area.
Recommendation 2.3: Improve and harmonise vehicle (equipment) specifications	
Description	Innovation in cycling resulted in the use of new vehicles such as cargo bikes, delivery tricycles, handbikes, e-bikes. Authorisation and legislation is either unclear or regulated in different ways in each country. Rules should specify harmonised authorisation and classification to ensure safety and behaviour rules. This should also include harmonised rules for e.g. battery charging. In order to reduce the number of cyclists dying in heavy good vehicle (HGV) accidents, the local, national and international specifications for HGV conception have to be improved to solve the blind spot problem.
Beneficiaries	Consumers, cyclists; HGV: Cyclists, pedestrians, lorry drivers.
Responsible institution	Ministries in charge of industry/ international standardisation commission and administrative level responsible for highway code regulation. HGV: UNECE, EU, member states.
Steps	<ol style="list-style-type: none"> 1. Establish cooperation with the cycle industry and customers. 2. Get an overview and find good practices. 3. Determine the standardisation needs and the need of changing highway code regulations. 4. Set up transnational standardisation commission to develop a new European norm. <p>Regarding HGV:</p> <ol style="list-style-type: none"> 1. Further research on measurable indicators for direct vision standards. 2. Come to terms on an amendment of the ECE Regulation No. 71 “Drivers field of vision (agricultural tractors, heavy good vehicles, buses)” and within the EU General Safety Regulations for Type Approval and losing the exemptions for side underrun protection within the General Safety Regulations. 3. Review of European Professional Drivers Qualification to include cycling and urban driving. 4. Guidelines on HGV/lorry access restrictions and public procurement of HGVs in urban areas.
Horizon for implementation	2 or 3 years
Budget	For bike specifications or battery chargers, the costs are those of the standardisation commission. These are paid by the bike manufacturers. For HGV the costs for freighters could be high if they have to change their vehicles.
Good practice example	E-bikes are very useful to carry goods (or persons), but the actual 250W limit for power is judged too low for hilly areas, old or disabled persons or heavy goods transport. While waiting for new European regulation allowing to increase the power while decreasing the speed limit (by example: 400W with 15km/h speed limit), the rules for the L1eA vehicles use could be harmonised:

Example: definition of a “cycle helmet” authorised for driving those vehicles or definition on where and how they are authorised to be ridden (taking in account the kind of use, weight and width of the vehicle).

For the **standardisation of batteries chargers**, it would be interesting to have the same approach as the one of the phone battery (another example: USB).

Good practices for increased bicycle safety interactions with heavy good vehicles:

- Improving vehicle cab design of large vehicles including lower cabs, the development and implementation of direct vision standard, the design of window apertures within EU Type Approval⁶⁰ and ECE Regulation No. 71 “Drivers field of vision (agricultural tractors)” for new HGV and buses.
- Providing training programmes within the EU Professional Drivers Qualification Directive⁶¹ to have an urban dimension and to make drivers of large vehicles aware of cyclists safety and local testing authorities to run them effectively (e.g. French educational tools (CIDUV Cerema 2015).
- Incorporating safer vehicles within public procurement contracts by cities and public authorities (e.g. safer construction vehicles with good vision to be used in building and construction).
- Making stricter requirements for exempting construction lorries to not have side underrun protection in urban areas.
- Restricting access of HGVs to parts of the road network heavily frequented by pedestrians and cyclists or during certain times of the day.

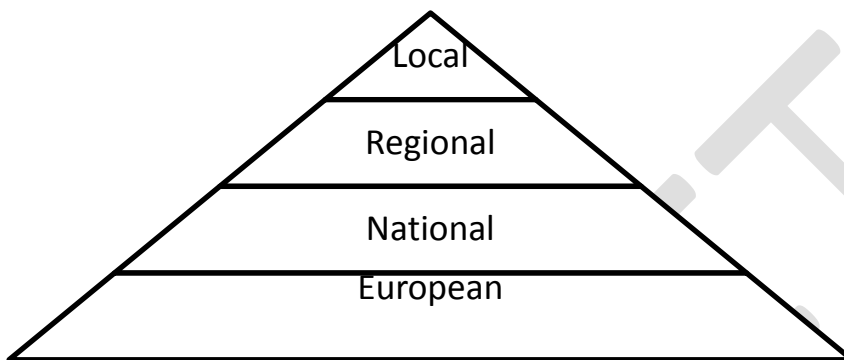
There are low entry cabin HGV with a high direct vision standard already available at the European vehicle market (e.g. the Econic Concept). London will be banning construction trucks that do not have good direct vision. There are currently some CPC professional driving courses that incorporate cycling safety.

⁶⁰https://ec.europa.eu/growth/sectors/automotive/technical-harmonisation/eu_en

⁶¹https://ec.europa.eu/transport/road_safety/users/professional-drivers_en

5.3 PROVIDE APPROPRIATE CYCLING INFRASTRUCTURE

Cycling infrastructure is constructed, managed, promoted and maintained at different administrative levels following a kind of pyramid (see diagram below). There is a limited number of European cycling routes (e.g. EuroVelo) which form a backbone to European cycle infrastructure and can act as a 'flagship' development in countries with limited cycle infrastructure. Denser networks can be found at national, regional and local levels but there are often missing links because of a lack of coordination between the different levels. Consequently, strategic planning is needed in order to inter-connect the different levels of networks.



Additionally, in many countries there is no clear definition of standards for cycling infrastructure, which can result in cycling infrastructure being allocated to "leftover space". This will not reflect cyclists' needs and does not guarantee a consistent, coherent or attractive network.

The aim therefore is to provide a network that follows consistent structure that interlink with each other. Each level of the pyramid serves a different purpose and thus has to follow a different logic and supply a different need. Transnational cycling routes should be planned with wider connections in mind (see chapter 5.9). National routes should form the backbone of the network, while regional and local routes should ideally form arteries for local communities going about their daily lives. Obviously, these purposes overlap and certain sections of the route serve multiple needs.

The development of a common methodology for a consistent cycle route network can help to define necessities and serve as a guideline for national, regional and local authorities. Each level of cycling infrastructure needs to be further managed, promoted, monitored and maintained.

The result will be greater safety, convenience and orientation for cyclists and thus lead to higher satisfaction for existing cyclists as well as acting as an encouragement for new groups of people to use the bike.

Overview of recommendations

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| 3 | Provide appropriate cycling infrastructure |
| 3.1 | Define and produce a methodology and monitor the implementation of a trans-European cycling network |
| 3.2 | Create and maintain trans-European, national, regional and local cycling route networks |
| 3.3 | Set national standards for cycling infrastructure |

Recommendation 3.1: Define and produce a methodology and monitor the implementation of a trans-European cycling network

Description	<p>In a coordinated approach involving the THE PEP member states, UNECE will support the identification of a trans-European cycling network. This core network will incorporate UNECE member states' national cycling networks and cycling networks in urban agglomerations. It should take into consideration existing networks and initiatives on an international level, such as EuroVelo, as well as the inputs from each member state. For this purpose a framework methodology based on those used by UNECE for other infrastructure master plans, such as TEM (motorways) and TER (railways), will be adapted to cycling needs and adopted by the THE PEP bureau and the Working Party on Transport Trends and Economics. The findings will be summarised in an infrastructure module of the pan-European Master Plan for Cycling Promotion.</p> <p>Defining the trans-European cycling network will help national and regional governments to identify, design and prioritise cycling corridors and their backbone networks (see recommendation 3.2). Furthermore, with such a trans-European cycling network national, regional and local governments could approach International Financial Institutions (IFIs) and other international donors with more structured and ready-to-be-financed project proposals (see recommendation 5.2).</p> <p>In order to encourage countries and regions to establish cycle route networks, mechanisms that monitor the implementation of the trans-European cycling network should be established and its revision – possibly every five years – should be agreed. Such an approach will ensure not only its implementation but also the expansion of cycle route networks to as many countries as possible.</p>
Beneficiaries	<p>National and regional governments; international, national and regional financial institutions; the tourism industry (including many SMEs); local communities etc.</p>
Responsible institution	<p>THE PEP Steering Committee / THE PEP partnership on cycling, THE PEP bureau and the ECE Working Party on Transport Trends and Economics (WP.5).</p>
steps	<p>The process of defining the trans-European cycle network includes the following steps:</p> <ol style="list-style-type: none"> 1. Review of existing studies in the field 2. Main assumptions for the work 3. Cycling network status and needs in the UNECE member countries 4. Elaboration of environmental and health benefits analysis by using existing tools (HEAT - ForFITS) from cycling development 5. Elaboration of the infrastructure module of the THE PEP Master Plan on Cycling 6. Addressing funding questions 7. Conclusions/recommendations – public awareness actions and dissemination of results and follow-up actions. <p>The first report of the infrastructure module of the THE PEP Master Plan for Cycling</p>

	<p>Promotion should be finalised and approved by the relevant governments. Based on the results the reporting and monitoring mechanisms should be discussed, approved and implemented in the framework of the THE PEP Steering Committee. The following steps will be suggested:</p> <ul style="list-style-type: none"> (a). annual reporting of countries to the THE PEP Steering Committee, (b). update – especially if the trans-European cycling network has been developed in a GIS environment – of the online information directly by governments focal points; (c). Organisation of capacity building workshops bringing together International Financial Institutions and governments' representatives in order to present their projects (see Recommendation 4.2)
Horizon for implementation	<p>The infrastructure module should be completed by the end of 2018. The reporting and monitoring mechanisms should exist as long as governments support cycle route network development or have developed and finalised their networks.</p>
Budget	<p>\$60,000 for the consultant to develop the infrastructure module.</p> <p>Probably some funds might be needed in order to prepare those monitoring mechanisms especially if they are based on electronic solutions such as GIS systems.</p>
Good practice example	<p>Trans-European Railway (TER) Project</p> <p>UNECE TER Project is a sub-regional cooperation among Central, Eastern and South-Eastern European countries. It was established in 1990 with initial financial support provided by the United Nations Development Programme (UNDP). Its main objective is to develop a coherent and efficient international railway and combined transport system in accordance with the UNECE Pan-European infrastructure agreements. It is proposed that the earlier development of the TER masterplan by UNECE could form a model for a Trans-European Cycling (TEC) Project.</p> <p>The annual and longer term action plans are set by the Steering Committee and the work is undertaken by the project's personnel, working groups, ad hoc expert groups, and, when required, by external consultants in close co-operation with member countries. Website: https://www.unece.org/trans/main/ter/ter.html</p> <p>EuroVelo</p> <p>The European Cyclists' Federation (ECF) coordinates the development of EuroVelo, the European cycle route network, a network of high-quality cycling routes that connect the whole continent. The routes can be used by cycle tourists, as well as by local people making daily journeys. EuroVelo currently comprises of 15 routes and it is envisaged that the network will be substantially complete by 2020.</p> <p>EuroVelo implementation and quality assurance is coordinated by the ECF in collaboration with national EuroVelo Coordination Centres and coordinators. The network can be supplemented by the addition of new routes, provided these fulfil EuroVelo criteria, meet EuroVelo quality standards, complement the existing EuroVelo routes in spatial terms and increase the implemented percentage of the current network.</p>

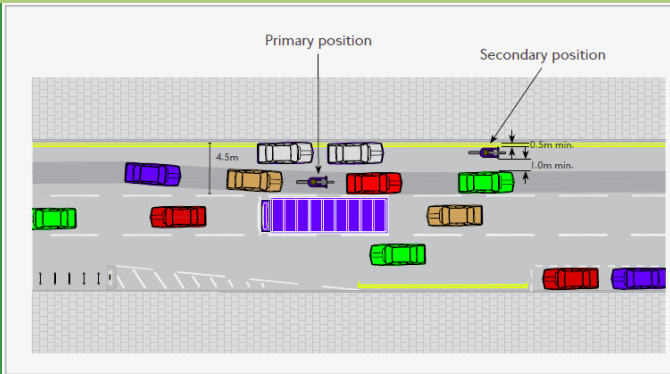
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Recommendation 3.2: Create and maintain trans-European, national, regional and local cycling route networks

<p>Description</p>	<p>Each member state should coordinate the development of national, regional and local cycle networks. These may include routes that are significant on a trans-European level (e.g. EuroVelo routes) and/or connect with neighbouring countries' networks. Such networks should be created – in partnership with the relevant national, regional and local authorities and stakeholders – in order to ensure that the appropriate infrastructure is in place for everyone to make the use of the bicycle for mobility, recreation and tourism.</p> <p>The methodology that has been developed in order to prepare the infrastructure module of the THE PEP Master Plan for Cycling Promotion (see recommendation 3.1.) can be used for trans-European and nationally significant routes and adapted and amended in order to identify, prioritise and estimate construction costs of regional and local level cycling networks, too.</p> <p>Consideration should also be given to the ongoing maintenance of the routes.</p>
<p>Beneficiaries</p>	<p>National, regional and local authorities; international, national and regional financial institutions; cyclists; the tourism industry (including many SMEs); local communities etc.</p>
<p>Responsible institution</p>	<p>National cycle tourism coordination centre (see Recommendation 9.1) or National Cycling Officer (NCO) / National Cycling Competence Centre (NCCC) (see Recommendation 1.2) would take overall responsibility for coordinating the networks. In some countries the initial steps will need to be taken by one organisation (e.g. national transport ministry / agency) with the support of National Cycling Officers and other relevant stakeholders. For the realisation of the cycle route networks, local and regional authorities will also need to be involved.</p>
<p>steps</p>	<ol style="list-style-type: none"> 1. Research existing international (e.g. EuroVelo), national, regional and local networks (input for Recommendation 3.1) 2. Prepare a proposal for cycle route networks 3. Consult relevant partners on proposal 4. Finalise national, regional and local cycle route network 5. Get official approval of the networks (integrate into to the national spatial/transport plan (e.g. Hungary)) 6. Launch networks for the public 7. Manage and maintain the networks (e.g. if required change the itineraries on a temporary or permanent basis as the network develops) <p>N.B. Parallel to the steps listed above, or ideally before, should be the establishment of a national cycle tourism coordination centre (See Recommendation 9.1) or National Cycling Officer (NCO) / National Cycling Competence Centre (NCCC) (see Recommendation 1.2)</p>

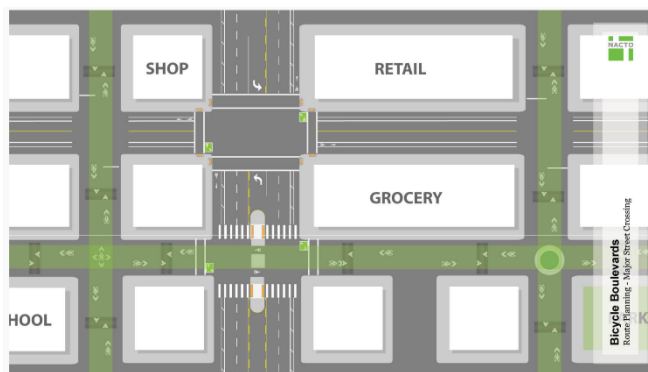
Horizon for implementation	<p>The implementation of the cycling route networks will depend on the size and status of the existing networks but it should be possible to research and identify the basic cycle route networks within a year. Initially at least, this may have to include ‘planned’ sections if the existing infrastructure is limited and this should be clearly communicated to the users.</p>
Budget	<p>The necessary budget will depend on the size of the network and the current status of the infrastructure. In case the existing infrastructure is good enough (bike paths, low traffic public roads etc.) and new constructions may not be needed (only signing) only the cost for analysis will have to be calculated. But in case the construction of new bicycle infrastructure is needed this will require approximately €100,000- €200,000 per km (depending on the type of infrastructure needed the figures can be higher). In any case, the national level route coordination should be part of the work of a national cycle tourism coordination centre.</p> <p>Maintenance will depend on the type of infrastructure (e.g. approximately €10–20 per sign per year).</p>
Good practice example	<p>Fietsplatform (The Netherlands):</p> <p>Fietsplatform (the Dutch cycling platform) was founded in 1987 as a public-private partnership financially supported by its member organisations (Dutch tourist’ union ‘ANWB’, the Dutch cyclist’ union ‘Fietzersbond’, the Union for cycle-touring clubs ‘NTFU’ and the national organisation for the cycling industry in the Netherlands ‘RAI’.) and the 12 Dutch provinces/regions. It is responsible for the development (signing), maintenance, improvement and promotion of the Dutch network of long distance cycle-routes (4.500 km). It also coordinates the development and promotion of the complementary regional route networks.</p> <p>Website: http://www.fietsplatform.nl/informatie/english</p>

Recommendation 3.3: Set national standards for cycling infrastructure	
Description	<p>National standards should be introduced in each member state (where they do not exist currently) to ensure that cycling infrastructure meets a minimum level of quality, with regards to safety, comfort, directness, attractiveness, sustainability (economically, environmentally) and value for money.</p> <p>The national standards should be in line with highway codes and other relevant legislation. Additionally, they have to be promoted (e.g. through training events) and enforced. Care should be taken not to restrict innovation.</p>
Beneficiaries	Public authorities of all levels, engineers, users
Responsible institution	National highways/transport authority
steps	<ol style="list-style-type: none"> 1. Establish working groups and undertake research on other standards and collect best practices 2. Draft national standards and consider implications for other standards 3. Get adoption process started (depending on status) 4. Include activities for promotion and training 5. Revise other relevant standards
Horizon for implementation	<ul style="list-style-type: none"> • Preparation, research and drafting can be undertaken within one year. • Adoption should be on as high a level as possible but at least put as a condition on all state or EU financed projects. The timing for the legislative process would therefore depend on what status it would have. • Take up (including training) would take another 2-3 years. • In addition, most likely this will include the requirement of changes in all other relevant standards (e.g. bridge design), which could also take up to 5 years.
Budget	€100,000 for the creation of the standards and promotion.
Good practice example	<p>CROW, The Netherlands: CROW is a Dutch technology platform for transport, infrastructure and public space. It is a not-for-profit organisation in which government and businesses work together in pursuit of common interests through the design, construction and management of roads and other traffic and transport facilities. Active in research and in issuing regulations, CROW focuses on distributing knowledge products to all target groups. Its core tasks involve:</p> <ul style="list-style-type: none"> • Research in the area of traffic, transport and infrastructure • Standardisation in this sector • Transfer of knowledge and knowledge management <p>CROW's <i>Design manual for bicycle traffic</i> describes the steps required to achieve 'Dutch-style' bicycle-friendly infrastructure and is widely used across the continent. Website: http://www.crow.nl/publicaties/design-manual-for-bicycle-traffic</p> <p>UK Transport for London Streets Toolkit https://tfl.gov.uk/corporate/publications-and-reports/streets-toolkit</p>



Primary and secondary riding positions (London Cycling Design Standards)

UK Sustrans Handbook for cycle friendly design (http://www.sustrans.org.uk/sites/default/files/file_content_type/sustrans_handbook_for_cycle-friendly_design_11_04_14.pdf)



U.S.A. NACTO Urban Bikeway Design Guide (<http://nacto.org/publication/urban-bikeway-design-guide/>)
Route planning in multi-lane high traffic urban areas (NACTO Urban Bikeway Design Guide)

GERMANY building codes on bicycle parking (<https://nationaler-radverkehrsplan.de/de/aktuell/nachrichten/neuregelung-kraft-getreten>)

Cerema

Cycling networks with a High Level of Service
Objectives and design principles

Several countries and some European Union have embarked on the creation of efficient cycling infrastructures. These latter aim to encourage motorists to use bicycles for their daily trips, particularly those between home and work, over distances of up to 10 to 20 km, in order to:

- reduce car use (because of congestion, pollution and air quality issues)

Over and above the speed that this infrastructure allows, cyclists expect a certain level of service: comfort, safety and services. This is why the term "high level of service" (HLS) was chosen for this type of infrastructure in France. It builds on the concept of basic with a high level of service (BHL) that was implemented over ten years ago in the country.

to identify the main developments recommended for the creation of

Structure:
Design:

to lift this obstacle, in addition for vehicle traffic, it is to build continuous and effective infra- to give users reliable travel of the time of the year.

November, 2016; 2017
Source: Adaptation of the document

HÅNDBOG I CYKELTRAFIK
EN SAMLING AF DE DANSKE VEJREGLER PÅ CYKELSTRÅDET
MAY 2014

Cyclo

FRANCE Documentation and comprehensive Guidelines on the website of the Cerema (<http://www.certu-catalogue.fr/>) for instance (<http://www.certu-catalogue.fr/catalog/product/view/id/1780/s/cycling-sheets-n-5-9-35/>)

Danish Road Standards are guidelines for planning and design, construction and maintenance of roads (known as *Vejregler*). They are developed by standing commit-

tees with representatives from the whole sector and different stakeholders, as e.g. The Danish Cycling Federation, municipalities etc. Bicycle traffic is integrated in the Road Standards when relevant. With funding from the Danish Cycling Fund 2009-2014 all paragraphs from the Road Standards concerning bicycle traffic have been gathered in a Bicycle Traffic manual (called *Håndbog i Cykeltrafik* in Danish, 400 pp). The Manual is a useful tool and a shortcut for road authorities and consultants when planning and designing infrastructure for cyclists.

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5.4 PROVIDE APPROPRIATE FUNDING

In order to achieve a substantial modal shift towards cycling, investments are needed – both in “hard measures” like building new infrastructure and in “soft measures” like behaviour change campaigns or fiscal incentives (see 5.6). Often there is not enough money allocated to cycling at the relevant administrative levels to implement necessary measures. Cycling is not valued as equal mode of transport in national investment plans. This results in no set share of budget dedicated to cycling. International funding schemes could be used as front-end financing but are not used to the full potential.

The aim is to provide necessary financing at all administrative levels in order to foster the implementation of long awaited cycling measures as well as to guarantee maintenance of cycling infrastructure. This applies to national as well as international financing schemes.

A concrete implementation plan with sufficient financial and personal resources allocated is an integral part of a National Cycling Plan. The exact level of investments needed will always depend on local conditions, but previous experiences show that there is a minimum level of investment that has to be sustained to attain significant improvements in cycling conditions. Since competencies for cycling are attributed very differently from country to country, a set share of the country’s overall transport budget should be allocated to cycling only and distributed to all responsible authorities at all administrative levels. In order to justify the allocated budget, new indicators should be used in standard cost-benefit analysis that include positive effects of cycling in e.g. noise, ecology and health.

These measures will lead to a higher rate of implementation of measures that rise the quality of cycling at all administrative levels. The newly incorporated indicators in cost-benefit analysis will raise awareness for the benefits of cycling and change the perception of cycling in public authorities and financing institutes.

Overview of recommendations

- | | |
|----------|--|
| 4 | Provide appropriate funding |
| 4.1 | Set up sustainable national funding schemes to promote cycling |
| 4.2 | Establish close cooperation with International Financial Institutions (IFIs) to ensure funding of cycling infrastructure for the cycling infrastructure investment plans |
| 4.3 | Consider impact of cycling in investment decisions |

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

Description	<p>Funding of investments into cycling planning, infrastructure and promotion measures is essential.</p> <p>An option would be to set up national funding schemes to support the local and regional authorities to promote cycling as well as to improve and extend cycling infrastructure with the following focus:</p> <ol style="list-style-type: none"> 1. Invest in cycling infrastructure projects 2. Support cycling promotion measures. <p>Promotion should be considered a powerful tool to increase cycling next to adequate infrastructure etc. and should be included in these funding schemes. Infrastructure investments should be carried out according to national planning guidelines (see recommendation 5.2)</p> <p>Another option would be to earmark an appropriate share of overall transport investments to cycling. Aggregated over all levels of governance, this could e.g. correspond to the objectives of the share of cycling which is planned to be achieved e.g. 10% desired cycling share would correspond to 10% of transport investments</p>
Beneficiaries	<p>All road traffic participants will benefit:</p> <ul style="list-style-type: none"> • Cyclists: cycling is safer and more comfortable • Pedestrians are safer • Public transport users and operators: less crowded PT in peak hours • Car drivers: less congestion on streets
Responsible institution	<p>Primarily the public sector at all levels of governance:</p> <ul style="list-style-type: none"> • National governments • Regional governments/authorities • Local authorities <p>Possibilities for private sector financing (e.g. for public bike systems) should be explored, also taking into account experiences from other continents (e.g. financing of cycling infrastructure by private banks in Brazil) as also through mileage allowance and plans for commuting to work.</p>
steps	<ol style="list-style-type: none"> 1. Include concrete recommendations on investment levels in National Cycling Plan considering the transnational cycling route networks developed by UNECE (see recommendation 3.1) 2. Draft investment plans in a participatory process involving all relevant stakeholders, making sure they reply to the demand of cyclists. 3. Include cost-benefit-analysis in investment plans to make the case for cycling investments, including environmental and health benefits, but also benefits in other transport sectors (e.g. congestion easing or lower public transport subsidies) – see recommendation 8.3. 4. Try to achieve a broad political majority for investment plans, so that they can be committed over the long term, and not affected by changes in government 5. Coordinate investments between different levels of government.
Horizon for	<p>Previous experience shows that at the local level, coordinated, well-planned and sub-</p>

implementation	<p>stantial investment in infrastructure and cycling promotion can lead to a significant increase in cycling levels within a period of ca. 4-5 years. However, it should be ensured that adequate investment levels are sustained in the long term in order to make changes in modal shift perennial.</p>
Budget	<p>Investments will most often come from the general budget. However, other specific financing sources that have a regulating effect on motorised transport at the same time should be explored, e.g. congestion charges, parking fees, gasoline tax. Financing from prevention funds of health insurances could be an option especially for promotion measures (e.g. Bike2work, cycling education) due to the substantial health benefits of cycling. UNEP asks for 20% of the transport budget for walking and cycling.</p>
Good practice example	<p>Examples from all around Europe show that depending on the level of cycling in the respective country the aggregated investment level per capita and year vary from 5-10€, 10-25€ for more ambitious countries and 25-30€ for countries which already have a very high level of cycling.</p> <p>For several countries, estimations have been made on how much resources should be invested in cycling in order to achieve substantial progress in terms of modal shift. In order to achieve the national goal of increasing modal share funding needs and costs have been analysed. According to the results of a study investments for towns and cities will be around 8-19 € per inhabitant and year whereas funding needs for districts will be around 1-6 € per inhabitant and year⁶².</p> <p>The United Kingdom (outside London) recommends 17 £/capita/year (ca. 22.5 €) to double number of cycling stages.</p> <p>The Danish Cycling Fund 2009-2014 was established when most of the political parties agreed on allocating DKK 1 billion (approx. € 133 Mio.) for a Cycling Fund for the period 2009-2014. During these years subsidies were awarded to a total of 338 projects out of 1,013 applications. The financial support is typically 40 per cent, but for particularly innovative projects, subsidies of 100 per cent have been awarded. The recipients of subsidies thus often provide 60 per cent of the funding themselves. The Cycling Fund has awarded DKK 717 million in subsidies, meaning that the Fund has stimulated investment of more than DKK 2 billion (approx. € 166 Mio.) in activities aimed at promoting cycling. The main recipients of subsidies are municipalities, but organisations and businesses have also received subsidies from the Cycling Fund.⁶³</p> <p>City level: Setting first steps (Sevilla): 10.5 €/capita/year during 4 years to create city-wide cycling infrastructure network of almost 200 km → rise in modal share from 0.5% to 7%</p> <p>Advances cities (Helsinki): currently 11.12 €/capita/year, proposed 31.77 €/capita/year (modal share: 11%)</p> <p>Long cycling tradition (Copenhagen): 21.16 €/capita/year (modal share: 45%) → this is for the period 2005-2014; the number would be higher for years between 2010</p>

⁶² PGV Hannover: Financing of cycling, Hannover 2012 as quoted in the German NCP

⁶³ <http://www.cycling-embassy.dk/wp-content/uploads/2015/12/Engelsk-Cykelpuljen-status-2014.pdf>

and 2014 (30.71 €); Amsterdam spends up to 80 €/capita

Recommendation 4.2: Establish close cooperation with International Financial Institutions (IFIs) to ensure funding of cycling infrastructure for the cycling infrastructure investment plans

Description	<p>IFIs and other donors have established special conditions and rules in order to finance infrastructure projects. These conditions and rules exist in order to facilitate the funding procedure by standardising the key performance indicators and data that should be analysed and illustrated. The following tools/procedures are applied by IFIs:</p> <ul style="list-style-type: none"> - Pre-feasibility and feasibility studies based on IFIs requirements analyse the economic viability by taking into consideration the social aspects of those investments such as road safety and environmental costs. Aspects like demand analysis, environment and climate change considerations, technical design, cost estimates and implementation schedule, operating costs and revenues, financial profitability and sustainability are still missing (see Recommendation 4.3) - Master plans on transport infrastructure provide information on current and future projects plans including a categorisation and prioritisation of the different projects based on national importance, traffic demand and funding availability - Funding schemes / packages are referring to specific topics that donors would like to finance describing in detail the conditions, the parameters as well as the criteria for having a project funded.
Beneficiaries	<p>National, regional and cities' authorities that would like to finance their cycling infrastructure investment plans</p>
Responsible institution	<p>IFIs and other donors</p>
steps	<ol style="list-style-type: none"> 1. Finalisation of the infrastructure module of the master plan (see recommendation 3.1) in order to collect in a structured and IFIs requirements' friendly way all relevant data and information regarding new cycling infrastructure projects; 2. Contact IFIs and other donors in order to make them aware of the master plan and organise capacity building workshops with the main objective of presenting those projects to the IFIs; 3. Organisation of bilateral meetings between countries'/cities' representatives and IFIs for specific projects; 4. Organisation of capacity building workshops for countries/cities that participated in the preparation of the cycling infrastructure master plan in order to be informed on good practices for financing transport infrastructure with innovative ways (Public Private Partnerships (PPPs), electronic tolls, land value tax and others);
Horizon for implementation	<ul style="list-style-type: none"> • 1, Short-term (within 1-2 years): • 2-4, Medium-term (within 2-5 years):
Budget	<p>Depends on the results of the infrastructure module of the master plan and different IFIs / donors budget requirements</p>
Good prac-	<p>Example for funding schemes / packages: The European Investment Bank (EIB) has announced funding of urban mobility projects. EIB criteria for providing loans to transport</p>

tice example

infrastructure projects include 'climate-friendly', 'sustainable and safe' and 'innovative'. The EIB also mentions 'cycling' in the description of urban mobility project types: "Construction and extension/rehabilitation of public transport networks such as metro and tramway lines, and rapid transit bus systems; acquisition of rolling stock and buses; promotion of cycling and pedestrian networks; development of intelligent traffic management and information systems to improve public transport...".


Examples for **workshops with IFIs:**

- Joint, Euro-Asian Transport Links project – Trans-European Motorways (TEM) and Trans-European Railway (TER) projects – and Working Party on Transport Trends and Economics, workshop on "Financing Transport Infrastructure, http://www.unece.org/trans/main/wp5/wp5_workshop6.html
- Second workshop on "Good practices and new tools for Financing Transport Infrastructure" jointly organized by Euro-Asian Transport Links project Tran-European Motorways (TEM) and Trans-European Railway (TER) projects and the Working Party on Transport Trends and Economics, http://www.unece.org/trans/main/wp5/wp5_workshop7.html
- Workshop on road and rail transport corridors along Europe and Asia, http://www.unece.org/trans/main/wp5/workshop_rail_road_corridors_europe_asia.html

Recommendation 4.3: Consider impact of cycling in investment decisions

Description	<p>To bring the assessment of cycling benefits to greater use, it is recommended for the member states to integrate the impact of cycling in cost-benefit analysis (CBA)⁶⁴ of transport projects as standard procedure. CBA does not generally include economic impact analysis, which is the study of all the indirect economic impacts of a project on the economy, including jobs and other impacts of construction.</p> <p>A comprehensive analysis should also include:</p> <ul style="list-style-type: none"> - Health and environmental effects such as possible increases or decreases to exposures to air pollutants or noise and increase of physical activity - possible increases or decreases in the level of cycling and walking, - changes in safety, particularly for vulnerable road users, such as cyclists and pedestrians, - reduction of emissions of carbon dioxide resulting from projected changes in modal shares (e.g. in case active mobility replaces some motorised trips) - parking costs savings from projects that reduce vehicle ownership and use <p>Health effects, including mortality and morbidity can be assessed by using health impact assessment tools, such as the WHO Health Economic Assessment Tool (HEAT). It is also recommended to conduct comprehensive health impact assessments (HIA) by qualified professionals with health expertise, which may require capacity building as needed. Additionally, even parking costs savings from projects that reduce vehicle ownership and use and noise effects can be included.</p>
Beneficiaries	<p>Beneficiaries in the UNECE/WHO Europe member states are relevant ministries dealing with the transport and health issues, citizens, including cyclists, public health professionals, local municipalities and the general public.</p>
Responsible institution	<p>Relevant state agencies of the UNECE/WHO Europe member states responsible for the development of national policies in transport, infrastructural and health sectors; Agencies and organisations that support and/or lend money for the development of transport and urban infrastructures and assess project proposals such as the Overseas Development Agencies (ODAs) and the International Financial Institutions (IFIs); WHO along with THE PEP partners.</p>
steps	<p>On transnational level:</p> <ol style="list-style-type: none"> 1. Review of existing CBAs in the UNECE/WHO Europe countries 2. Define which benefits and costs shall be included as well as the values that are used 3. Develop an internationally agreed methodology for CBA of transport and urban developments, which also includes effects on cycling 4. Support national policy adaption in countries to promote the application of the CBA approach

⁶⁴ <http://bca.transportationeconomics.org/home>. One of the most common economic evaluation methods is Cost-Benefit (also called Benefit-Cost) analysis, which uses monetized values (measured in monetary units) to compare total incremental benefits with total incremental costs. The results can be presented as a ratio, with benefits divided by costs (therefore it is often called Benefit/Cost or B/C analysis).

	<ol style="list-style-type: none"> 5. Develop guidance for health impact assessment of transport and urban interventions that also consider effects of the proposed interventions on cycling (and walking) – see also Recommendation 8.3 6. Promote and support capacity building activities in conducting HIA and CBA 7. Support pilot CBAs in selected countries which will include health benefits from increased cycling/walking opportunities based on HEAT and HIA tools
Horizon for implementation	5 years
Budget	The budget depends on the depth of the analysis and the number of pilots.
Good practice example	<p>Netherlands: The Ministry of Infrastructure and Environment (MIE) uses the OEI methodology (Overview Effects Investments) to analyze the social costs and benefits of investments in infrastructure and other policy measures. For large infrastructure projects the use of this method is mandatory. For bicycle infrastructure, up till now this method has hardly been used, partly because the investment costs usually are relatively small. For smaller projects a social cost-benefit analysis (SCBA) is also a useful means of structuring the discussion and providing objective information for the purpose of decision making. Therefore, MIE has commissioned a study to evaluate the possibilities of applying the OEI tools to bicycle measures.</p> <p>http://www.fietsberaad.nl/library/repository/bestanden/Decisio_Social%20costs%20and%20benefits%20of%20bicycle_Summary.pdf</p> <p>Along with the updated national cycling plan the Dutch cycling experts came up with an infograph highlighting the many ways that investments in cycling project have highly positive social returns.</p> 

BICYCLE PARKING UTRECHT

The Jaarbeurs bike parking at Utrecht station is a very efficient and well-maintained bicycle-hotel. Even though this was a costly investment, the social costs are low compared to the benefits



THE HAGUE BIKE BRIDGE

The cycling bridge is a part of the fast cycle route in The Hague. This bridge crosses the A12 highway and the railway tracks, providing a direct connection for cyclists from one part of the city to another. The total benefit from increased mobility is over €28 million.



Norway: EkspressEffekt is a user-friendly tool for demand and cost-benefit calculations of bicycle highways. The tool is based on the willingness-to-pay for travel time savings and comfort improvements (reduced number of crossings and increased share of separated cycle path). For 6 of 10 studied bicycle highways, a positive net benefit is calculated with the given assumptions. The Institute of Transport Economics (TØI) has on commission from, and in cooperation with, the National Public Roads Administration (SVV) developed a simplified tool for demand and cost-benefit calculations of bicycle highways (BH). <https://www.toi.no/getfile.php/1344738/Publikasjoner/T%C3%98I%20rapporter/2017/1561-2017/1561-2017-sum.pdf>

5.5 INCLUDE CYCLING IN THE PLANNING PROCESSES AND FACILITATE MULTIMODALITY

Cycling is often not sufficiently integrated into the whole transport system which limits the use of bikes in daily-life trips to short distances. Cycling infrastructure is often considered in a very late stage of development projects when all other infrastructure and facilities are already in place. Thus planning cycling infrastructure requires a high level of creativity on how to fit it into already existing structures leading to higher costs and additional adaptation. This habit also reduces the quality (as only “space-leftovers” can be used) and acceptance (as it is hard to motivate people who got used to other modes of transport to a later behaviour-change) of cycling infrastructure.

Nevertheless, proper infrastructure is essential to increase cycling. The aim is to increase efficiency in providing cyclist-friendly infrastructure and even reduce the need for long-distance transport by considering cycling from the very beginning of the planning process and integrating cycling in spatial planning.

It is recommended to include cycling into the regulations of infrastructure planning. Cyclist-friendly planning principles should always include cycling unless it is proven not relevant. Cycling for daily-life trips is used mostly for short distances. Bike-use could be extended if integrated in the whole transport system as part of the transport chain (bike&ride, bicycle carriage on public transport vehicles, quick and smooth change between different transport modes etc.). Multimodal transport agencies help to operate the whole transport system more efficiently. Besides infrastructure planning, general requirements of cycling should be integrated in spatial and land-use planning.

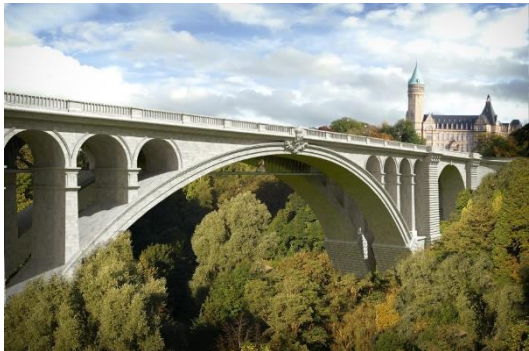
With the consideration of cycling in the early planning stage, adequate space and quality for cycling infrastructure at reasonable costs can be guaranteed which will lead to safer and more convenient cycling routes and thus help raise the share of cycling. With the integration of cycling into the whole transport chain, the operating distance of cycling will be extended. Laying a focus on cycling in spatial and land-use planning will make the most fundamental change visible: it will help to reduce transport needs, provide more space for non-motorised traffic and result in more liveable and attractive cities and settlements.

Overview of recommendations

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| 5 | Include cycling in the planning process and facilitate multimodality |
| 5.1 | Incorporate cycling in all infrastructure planning |
| 5.2 | Consider cycling in spatial planning and building regulations |
| 5.3 | Facilitate multimodality between cycling, public transport and walking |

Recommendation 5.1: Incorporate cycling in all infrastructure planning

Description	<p>Infrastructure planning principles should always include cycling unless it is proven not relevant. Compulsory regulations at all administrative levels should set the basic principles of cyclist-friendly infrastructure planning. All technical details should be defined in non-compulsory cycling planning guidelines, manuals and design standards ensuring flexibility to take into account local, regional and national circumstances. These cycling-specific guidelines should contain detailed recommendations on the infrastructure (e.g. width, curve radius) and auxiliary facilities (e.g. type, size and number of bike stands), especially in countries setting first steps for cycling promotion.</p> <p>The designation of a national or local cycling officer could ensure that cycling needs are considered by the check and approval of all relevant infrastructure plans.</p> <p>At European and transnational level, several transport infrastructure regulations and plans are in place. These are mostly focusing on road, rail, waterway connections and transport hubs. Cyclist-friendly regulations and plans should help to keep cycling routes connected by complementary infrastructure elements (bridges, tunnels, etc.) or keep roads usable for cyclists. All regulations should complement each other according to the subsidiary principle.</p>
Beneficiaries	<p>Transport planners, authorities at all administrative levels and users of cycling infrastructure</p>
Responsible institution	<p>Infrastructure planning is usually regulated on national level by ministries or departments responsible for transport. When planning is regulated on lower level (regional or local), coordination body should ensure the harmonisation of local/regional standards.</p> <p>EU and transnational institutions, agencies and ECF</p>
Steps	<p>On national level:</p> <ol style="list-style-type: none"> 1. Define basic, cyclist-friendly planning principles and establish working group. 2. Develop planning guides, manuals and standards or adapt existing transnational guidelines to the specific requirements of cycling by involving experts of all transport modes is highly recommended. 3. Promote guides, manuals, standards e.g. through workshops. 4. Review guides and manuals on a regular basis (every 5 years). <p>On EU and transnational level:</p> <ol style="list-style-type: none"> 1. Work towards an agreement between stakeholders, lobby groups on the definition of basic principles. 2. Aim for strong cooperation and harmonisation with relevant EU and transnational institutions, agencies and affected stakeholders 3. Lobby for legal approval of regulations and plans 4. Implement outcomes on national level
Horizon for implementation	<p>Development of cyclist-friendly planning principles should take 6-12 months, development of planning guides, manuals, standards should take 6-12 months.</p>

	<p>New regulations on EU or transnational level (or the amendment of the existing ones) would require 2-3 years due to the involvement of stakeholders and the broad public.</p>
<p>Budget</p>	<p>Development of planning regulations, guides, manuals, standards is a low cost measure. Budget should be provided by ministries, regional or local authorities, state transport agencies.</p> <p>Legislation measures would have relatively low costs, but preparatory measures (e.g. cooperation, public participation process) would require significant resources. By including cycling components into EU regulations, EU funds could be used for the construction of complementary cycling infrastructure elements. These elements are cheaper and faster to build as a part of a complex road or railway project than a follow-up individual project.</p>
<p>Good practices</p>	<p>FRANCE: According to the French regulations (Environmental Code) public space must be provided for cyclist. On the occasion of developing new roads or renovating the existing ones, appropriate cycling facilities must be provided based on traffic demand.</p> <p>LUXEMBOURG: Since 2014, the Minister in charge of Transport and Public Infrastructures authorises any public terrestrial transport infrastructure project only under the condition that the recommendations of the national cycling officer are included. This principle must be applied for road and rail projects as well as for multimodal transport hubs. Based on this regulation, during the renovation of the iconic Adolphe Bridge, a new suspended cycle track will be built for cyclists. Adolphe Bridge, Luxemburg (Ministère du Développement durable et des Infrastructures)</p>  <p>GERMANY</p> <p>City of Kiel employs a cycling officer within the city administration since 1987. The city cycling officer is head of office of the cycling forum – a general decision board with representatives of the city council, cycling clubs, senior clubs, city administration, public transport companies and of the police. The city cycling officer of Kiel has to check and approve all details of transport planning documents regarding their cycling friendliness and their conformity to the cycling forum decisions. Due to this structure consensual cycling decisions and consequent implementation are guaranteed.</p> <p>EU Regulation 1315/2013/EU on Union guidelines for the development of the</p>

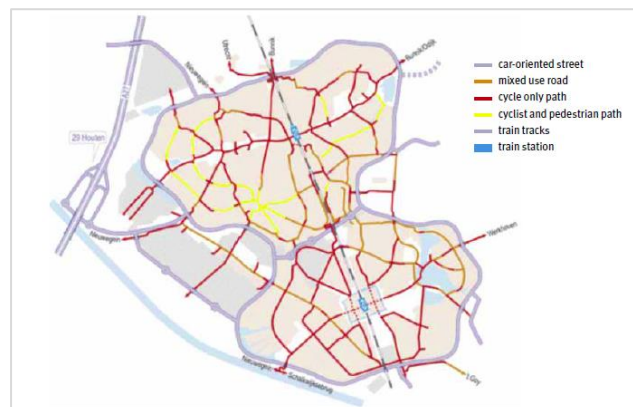
Trans-European Transport (TEN-T) network is a good initiative since it refers to the synergies with other policies, like EuroVelo routes

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Recommendation 5.2: Consider cycling in spatial planning and building regulations	
Description	<p>Clear, long-term vision and consistent implementation of land-use strategies are crucial to develop liveable and attractive cities and reduce motorised traffic demand. An integrated and sustainable land-use strategy and connected regulations should take into account the needs of cyclists and non-motorised traffic in general. Spatial planning should ensure short distance trips suitable for cycling. Regulations should for example define that all new development projects (trade, industry, office, schools, public, residential) must provide access and parking (short and long-term) for cyclists.</p> <p>Countries setting first steps for cycling promotion are recommended to build long-term spatial planning strategies first. Building regulations should contain detailed requirements for safe and sufficient bike parking spaces for retail stores, office buildings, housing units, public buildings, shopping malls as well as e-bike chargers. Cycling should be considered and integrated into the transport models (e.g. FLOW project).</p>
Beneficiaries	Regional and local governments, cyclists, residents
Responsible institution	Regional and local governments, ministries, state agencies
Steps	<ol style="list-style-type: none"> 1. Develop a clear vision for the city and set basic objectives. 2. Identify stakeholders and initiate participative land-use and spatial planning process. 3. Ensure short and bikeable trips by the proper designation of main functional areas. 4. Set criteria for public space for high quality cycling facilities, parking and B+R. 5. Introduce cyclist friendly building regulations: secure bike parking, chargers, positioning of entrances, wide doors, oversized elevators, changing rooms and lockers, repair stands. 6. Consistent application and regular review of land-use plans and building regulations.
Horizon for implementation	Land-use or spatial planning is a time-consuming process. All relevant stakeholders should be involved, which takes significant time and costs. Successful implementation is based on consensus, acceptance and ownership of relevant stakeholders. Development of local plans (mid-size settlement, city district) takes at least 6 months, regional planning could take more than 12 months. Data collection for planning should be started years before the planning process. Development of building regulations takes 6-12 months.
Budget	Participative planning process and involvement of interested parties requires significant cost. As a return, harmful environmental and health impacts can be significantly reduced by sustainable spatial planning.
Good practices	Spatial planning in the Netherlands has a long tradition and involves the national strategy on the allocation of land and water resources for sustainable economic and social development. The Spatial Planning Act (WRO) lays down how the spatial plans of the state, provinces and municipalities are to be effected. Example: Ac-

According to the regulations in The Netherlands, commercial units must be accommodated in the cities. Suburban commercial units have to justify that the project cannot be implemented in the city area. <https://www.government.nl/topics/spatial-planning-and-infrastructure>

City of Houten (The Netherlands) is a unique example of an entire city designed and built to prioritise cyclists and pedestrians. It is a greenfield development with good transit access, high-quality bicycle infrastructure, provision of public bikes and car-sharing, and application of employer contributions and educational programs to promote cycling. <https://www.itdp.org/wp-content/uploads/2014/07/22.-092211-ITDP-NED-Desktop-Houten.pdf>



Street layout of Houten (ITDP Europe, Nicole Fioretta)

Vauban, Freiburg (Baden-Württemberg, **Germany**) limits car use through parking-free residential streets, spatially and fiscally separated parking and filtered permeability to prevent through traffic. Vauban also features high quality non-motorized transport infrastructure.⁶⁵ (Photo credit: Pinterest)



Since 2017, all state financed projects for public buildings (new or renovation) in **Luxembourg** include a checklist of 50 criteria aimed at creating appropriate conditions for cyclists and pedestrians. These criteria were developed by the national cycling officer based on an international best practices study and in cooperation with the Administration for Public Buildings. The criteria cover the following topics: site selection, position of the various entrances, design of the entrance areas and sidewalk facing ground floors, paths from the plot limit to the entrance, bicycle parking outside and inside, signage, changing rooms, positioning of car parking, protection of existing cycle or pedestrian routes during the construction phase.

⁶⁵ Low-Car(bon) Communities: Inspiring Car-free and Car-lite Urban Futures, Foletta-Henderson, 2016, Routeledge



Seestadt Aspern is a totally new district in Vienna (**Austria**) on an area equivalent to 340 football pitches, accommodating high-quality living environment for some 20,000 people plus about the same number of workplaces. Aspern is connected to Vienna by metro (two stops of U2 line) bus and railway. Within

Aspern, priority was given to sustainable mobility. A local bike rental scheme, cargo bike rental scheme, secure bike parking facilities, and car sharing scheme is in operation. Most of the public space belongs to pedestrians and cyclists.

Public space and cargo bike in Seestadt Aspern (Cycle Competence Austria)

Hungary: a Governmental Decree (mandatory for all municipalities) on spatial planning and building regulations requires bicycle parking for all buildings, where cycling “could be expected”. In practice, authorities require bicycle parking for most of commercial, public (including schools), and residential units. The minimum number of parking spaces for bikes calculated as follows (examples):

- 1 spaces for each residential unit
- 2 spaces for every 150 m² area of commercial units
- 2 spaces for every 500 m² area of commercial units (above 1000 m² total area)
- 2 spaces for every 15 rooms in hotels
- 2 spaces for every 75 m² in restaurants
- 2 spaces for each 50 m² in schools and universities
- 1 spaces for every 10 employees for industrial units
- 1 spaces for every 100 m² area for offices

Recommendation 5.3: Facilitate multimodality between cycling, public transport and walking

Description	<p>If cycling is combined with public transport the average commuting distance can be stretched. This applies to every-day's travelling as well as for reaching touristic destinations without using a car.</p> <p>For cyclists it should be easier to use adequate bike & ride facilities or to carry bicycles on public transport. In order to make the transport of bikes easier, public transport vehicles (bus, tram, train, light train, metro or boat) should be able to carry bicycles in a comfortable and affordable way (at least along the national and international bicycle routes). Smooth connection between the bicycle network and the platforms should be ensured by ramps, special staircases or elevators.</p> <p>Multimodal route planners, applications, traffic information systems should include cycling networks and bike-sharing schemes. The introduction of innovative e-ticket systems and mobility cards should cover all sustainable transport modes, including public transport, car sharing, bike sharing, secure bike parking.</p> <p>In order to support multimodality and integration of cycling into the infrastructure network, it is recommended to establish multimodal transportation agencies (MTA). In the framework of a MTA, the management, planning and maintenance tasks of different transport modes can be harmonised and integrated. As a result, it will be easier to combine different modes of transport in one travel chain ("seamless mobility chain") and increase the usage of low-carbon transport modes.</p>
Beneficiaries	<p>Authorities and transport agencies on national, regional or local level. Local communities.</p>
Responsible institution	<p>Transport ministries or local governments and municipalities, transport agencies, public transport operators (railway, tram, boat, metro and bus companies), touristic agencies.</p>
Steps	<p>Multimodality for countries starting to promote cycling:</p> <ol style="list-style-type: none"> 1. Exchange information between the relevant actors of the transport sectors. 2. Assess travel behaviour and demand for bicycle carriage, identification of target groups 3. Set up basic technical regulations (e.g. number and size of bikes) and travel conditions (e.g. restricted periods), ramps and lifts 4. Implement vehicle conversions, procurements, constructions works 5. Introduce attractive tariff system, promotion <p>Multimodal agencies for more advance countries:</p> <ol style="list-style-type: none"> 1. Identify relevant, individual transport agencies 2. Discuss and agree on basic principles of a multimodal agency 3. Prepare legal and organisational framework 4. Establish management board and start integration process 5. Implement measures to improve multimodality 6. Evaluate and monitor the process
Horizon for	<p>Improvement of multimodality would take at least 12-24 months depending on the</p>

<p>implementation</p>	<p>level of vehicle conversions, construction works and procurements processes.</p> <p>Full integration of all transport modes into a single multimodal agency would take significant time. Long-term political commitment and predictability is crucial for successful integration.</p>
<p>Budget</p>	<p>Purchase or conversions of vehicles and connected construction works would have high cost. As an offset, bicycle carriage could increase number of passengers and ticket sales and decrease the costs of bike parking at PT stations.</p> <p>Establishment of a multimodal transport agency would need one-off investments (usually state funded), but could save significant operational costs in the long run by higher efficiency and lower GHG emissions.</p>
<p>Good practices</p>	<p>Switzerland: The Swiss railway company (SBB) provides not only high quality railway services, but leisure and holiday offers, travelcards and access to other services, like bike sharing or SchweizMobil. SBB and the Swiss bus company PostBus provide one of the best services for cyclists. More than 90,000 free parking spaces are available for bicycles at Swiss stations. Staffed cycle parking facilities are available at all bigger stations. Several services are available for cyclists: bike shipping on railways, bike carriage on trains and buses, bike or e-bike rental at 80 railway stations and 120 other locations, bike sharing scheme at more than 100 stations in 15 cities with 900 bikes and e-bikes.</p> <p>https://www.sbb.ch/en/station-services/car-bike.html</p> <p>(Photo credit: SBB)</p> <p>UK: Transport for London (TFL) operates as a successful multimodal transport agency integrating all transport modes and duties (tube, train, tram, bus, bike sharing, airline, boat operation, walking, cycling, congestion charging, integrated ticketing, taxi regulation, dial-a-ride service) at metropolitan level. https://tfl.gov.uk/</p>



(Photo credit: SBB)



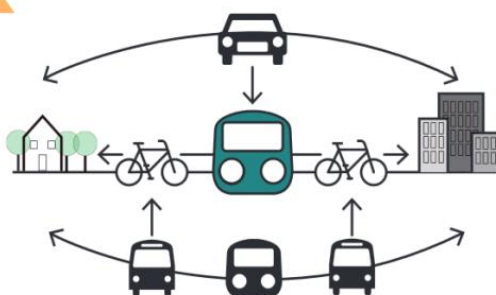
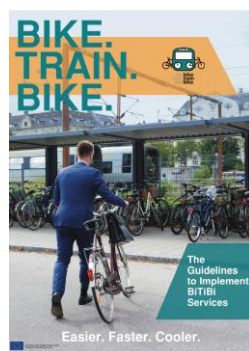
Cycle Superhighway and PT connections in London (Transport for London)

NETHERLANDS: The bike parking facility of the new Utrecht central station will have a capacity of 12,500 bicycles and provide quick and direct access to railways, buses, and trams.



Bike parking in Jaarbeursplein, Utrecht (Photo credit: Rob Hendriks)

BITIBI (Bike-Train-Bike) is a three-year project funded by the European Union aimed at improving the livability of European cities and improving the energy efficiency combining the bicycle and the train, it provides a seamless door-to-door transport connection. Pilot projects were implemented in the regions of Barcelona, Milan, Liverpool and in Belgium with the help from ten partners. In the framework of the project, a Guideline document was prepared that helps to implement multimodal projects.



Bike-Train-Bike project (source: <http://www.bitibi.eu/>)

5.6 PROMOTE CYCLING THROUGH INCENTIVES AND BEHAVIOUR CHANGE

In many countries, awareness and image for cycling is not very high. While in many countries tax benefits are available for people using their car or public transport for their daily commute to work, fiscal incentives for cycling are only granted in a few countries. Still, monetary incentives are a powerful tool to steer behaviour and to enhance the status of cycling. Additionally, the new introduction of e-bikes to the market opens up a new segment of bike use that goes far beyond conventional bikes in terms of distance and convenience, and contribute to a modern, trendy image of cycling. Yet again, the high potential is not fully tapped because of considerably higher purchase costs.

The aim is to have cycling acknowledged as equal mode of transport in the fiscal system, providing a level playing field for all modes of transport. At the same time, the aim is to promote cycling and reach a better awareness and image of cycling with the general public.

Fiscal incentives can range between tax benefits to install cycling-friendly infrastructure in companies and subsidies for commuting by bike (direct or indirect). Additionally, ecologic holistic regimes should be installed, promoting not only e-cars but also e-bikes. Promotion campaigns shall raise the awareness of cycling and its benefits and lead to a direct behaviour change.

Public authorities obtain an instrument to steer behaviour by monetary incentives. They have the potential to bring about a substantial modal shift. The promotion of cycling opens up cycling for groups that have not cycled previously.

Overview of recommendations

- | | |
|----------|--|
| 6 | Promote cycling through fiscal incentives and behaviour change campaigns |
| 6.1 | Promote the use of cycling through Mobility Management |
| 6.2 | Introduce fiscal incentives to promote cycling |
| 6.3 | Financial support for bikes (e.g. electric/cargo) for communities, companies and consumers |

Recommendation 6.1: Promote the use of cycling through Mobility Management

Description

Campaigns to promote the use of cycling, both for daily as well as touristic purposes, are a necessary element in creating a “cycling culture”.

Mobility Management (MM) offers a large set of instruments to promote sustainable transport modes by including demand management for car use by changing travellers’ attitudes and behaviour. At the core of Mobility Management are "soft" measures like information and communication, organising services and coordinating activities of different partners. “Soft” measures most often enhance the effectiveness of "hard" measures within urban transport (e.g., new tram lines, new roads and new bike lanes). MM is most effective when policy fields cooperate, i.e. by integrating those parts of urban planning, health and fiscal policies that can influence mobility behaviour.

Examples of MM include:

Category	Examples
Information	Travel information in advance and en route, information centres, web sites, apps
Promotion	Promotional campaigns, personal travel advice, target group-directed measures (for employers, the elderly, students, residents), individual marketing, trial cards, discount campaigns
Organization and coordination	Car sharing, carpooling services, demand-dependent travel, pre- and post-public transport (PT bicycles, train, taxi), transferring (Park & Ride, Bike & Ride), multimodal transport passes (Mobility Mixx, NS-Business Card)
education and training	Eco-driving, training of hotel and store personnel, bicycling or public transport courses for seniors, young people, immigrants
location-related measures	Mobility Management for employers, schools, events, shopping centres, recreational facilities, government agencies, hospitals or residential areas, bridges, tunnels, corridors (roadworks)
flexible in time and place	Teleworking, reducing the number of hospital visits, Peak Avoidance, other visiting hours (government agencies, banks, health care), flexible work hours, self-scheduling
supportive measures	Parking management, setting up (bicycle) racks for new offices and residences, financial measures, pay-to-drive, fee integration in public transport, combination tickets (event + public transport)

Source: EPOMM

Beneficiaries	Citizen, schools, employers, towns and cities
Responsible institution	Authorities at local, regional and national level; schools, private and public employers; Bike-and car-sharing companies, public transport operators; tourism agencies, shopping centres, etc.
Steps	<p>On urban level and regional level:</p> <ol style="list-style-type: none"> 1. Make MM an integral part of a Sustainable Urban Development Plan 2. Plan campaigns and promotional measures for walking, bicycling and public transport 3. Make personal travel advice available that helps reduce car use 4. Install car and bike sharing services within walking distance of homes 5. Encourage schools to set up a mobility plan to allow children to walk to school

	<p>safely</p> <ol style="list-style-type: none"> 6. Encourage local mobility centres to find ideas for outings and leisure destinations which can be reached by public transport 7. Apply mobility management within the government's own organisation 8. Integrate incentives in the land use planning policy for project developers to restrict driving by employees and visitors. <p>On national level:</p> <ul style="list-style-type: none"> - Promote sustainable travel and reduce negative consequences of the car - Have a vision of mobility management and how it contributes to goals for climate, health and flow - Have a vision regarding the roles and responsibilities of government - Decide how they will involve parties such as cities and regional authorities, companies, employers and employees, tourism operators, schools, youth groups, hospitals, the environment and energy sector, public transport authorities, housing and project developers - Put mobility management on the agenda of the national government and the EU to develop EU-wide supportive frameworks to broadly stimulate Mobility Management - Ensure that spatial planning policy contributes to more sustainable transport, less car use and shorter trips, against urban sprawl as well as functional and spatial segregation. - Incorporate mobility management in building permit processes - Have a taxation system that promotes public transport, bicycling, teleworking and smart Mobility Management - Have country-wide campaigns to modify mobility behaviour - Stimulate networking to exchange knowledge and experience - Promote research and innovation for Mobility Management - Embed mobility management into university education and provide Mobility Management training for persons working in mobility-related sectors. <p>Source: EPOMM</p>
Horizon for implementation	Continuous
Budget	Mobility Management measures (in comparison to "hard" measures) do not necessarily require large financial investments and may have a high benefit-cost ratio. The exact amount of resources needed depends on the scope of the campaign.
Good practice example	<p>Cycle-Friendly Employer Certificate</p> <p>Cycle-Friendly Employer certification was already developed in several European countries such as Germany, Denmark and Austria. In order to give European companies a special incentive to increasingly focus on bicycle friendliness, the EU-funded Bike2Work project developed an EU-wide certification framework for bicycle-friendly companies, based on six main criteria. Each bicycle-friendly measure would contribute to define the CFE level of a company. A minimum number of measures must be achieved per action field in order for employers to receive certification.</p>

https://ecf.com/sites/ecf.com/files/ECF_report_bike2work.pdf

No ridiculous car trip in Malmö: Malmö discovered that half of all car trips made in the city were less than 5 kilometres. The municipality decided to do something about it. Malmö found it “ridiculous” that traffic is jammed and expensive infrastructure is necessary, while many trips are short and people only get in the car out of habit or convenience.

In 2006, Malmö started the campaign “No ridiculous car trips”. Residents were challenged to write about their most nonsensical car trips for a chance at winning a prize. Anyone who wrote such a description would feel its meaning and resolve to do something about it. In 2007, the campaign resulted in 12,000 inhabitants making fewer short trips by car. Almost all residents appreciated this somewhat confrontational campaign.

Source: EPOMM (2013), Mobility management: The smart way to sustainable mobility in European countries, regions and cities.

See also: <http://www.copenhagenize.com/2010/09/no-ridiculous-car-journeys-malmo-sweden.html>

Austria: To improve the image of cycling the City of Vienna made 2013 a campaign for all-day cycling (“Radjahr Wien”). 190 events - from cost-free bicycle repair at swimming baths to the bicycle fashion show – were attended by a media campaign, which communicates the joy of life through cycling. The campaign evaluation showed, that 39% of the interviewed person recognized a more positive attitude for all-day cycling.⁶⁶



Promotion for a joyful all-day cycling: Bike-Fashion-Show Velo Style in Vienna.

Fotocredit: City of Vienna / Sebastian Philipp

France: A new regulation obliges all companies over 100 employees to work on a Company Mobility Plan (company travel and commuting plan) before January 2018 in order to promote commuting by sustainable mobility. Within this framework, they provide tax-free mileage allowance; eventually company bikes (tax free for the company) for commuters

⁶⁶Mobilitätsagentur Wien GmbH, Das RadJahr 2013 - Evaluierungsbericht zur Radkampagne der Stadt Wien, 2014.

Recommendation 6.2 Introduce fiscal incentives to promote cycling

Description	<p>Depending on the national fiscal system, the aim of a fiscal level playing field for commuting can be achieved in different ways:</p> <ul style="list-style-type: none"> • Starting countries: Abolishing/not introducing tax incentives for long-distance commuting; • Countries starting to promote cycling: introducing tax incentives for living close to work <p>Examples for fiscal incentives are:</p> <ul style="list-style-type: none"> • Abolishing/not introducing subsidies for commuting by car • Introduction of a tax-free mobility budget • Tax-free kilometric reimbursement for cycling to work • Tax incentives for bikes and cycling infrastructure offered to employees • Facilitate bike usage for business trips
Beneficiaries	<p>Employees: tax-free addition to net salary Employers: cost-efficient extra benefit that can attract talents; healthier + more productive employees, less parking lots needed The State: Cost-efficient fiscal instruments that encourage sustainable mobility, especially if they replace environmentally harmful commuting subsidies e.g. for company cars</p>
Responsible institution	<p>National finance ministries/fiscal administrations; employers</p>
steps	<ol style="list-style-type: none"> 1. Legislative process: adopt corresponding fiscal legislation to install tax-free cycling reimbursement and abolish subsidies for commuting by car, or at least to reduce fiscal incentives for cars. In case there is no political majority for the introduction of a specific tax benefit for cycling, the elimination of subsidies for commuting by car alone can already have a positive steering effect and create a fiscal level playing field for all modes of transport. 2. Promotion of the law: Ensure that companies offer their employees the fiscal benefit for cycling to work 3. Include monitoring and adjusting (e.g. amount of reimbursement)
Horizon for implementation	<p>Legislative process: Depending on national constitutional framework; after that, the uptake and generalisation of the measure will typically take a few years</p>
Budget	<p>Mobility budget: Depends on exact amount of tax-free mobility allowance; can be budget neutral when replacing tax subsidies for private use of company cars. Kilometric reimbursement: Depending on the amount paid per km, average cycling to work distance, and the fiscal system (tax revenue foregone) Tax incentive for company bikes: e.g. UK Bike to Work scheme: cost for state budget ca. 12 million £ per year (approx. 16 million €) → minor cost compared to company car tax subsidies</p>
Good practice example	<p>Abolishing/not introducing subsidies for commuting by car: Since commuting is far less costly by bike than by car, abolishing (indirect) subsidies for commuting by car (like low taxation of company cars, low fuel taxation or commuting allowances for car driving) can already have a significant steering impact on commuting behaviour</p>

towards cycling, even without the introduction of specific incentives.

Mobility budget: In countries where company cars that can be used for private purposes are an important part of salaries, the introduction of a tax-free “mobility budget” for employees could be an alternative to the complete abolishment of the tax incentives for these cars. The mobility budget could be used for commuting by all means of transport, and the saved amount transformed into other fringe benefits. Cycling being the most cost-efficient form of commuting after walking, this would make taking the bike to work more attractive.

Example Netherlands: By gradually increasing the taxation of company cars and offering mode-neutral forms of reimbursement, mobility budgets are becoming more and more attractive in the Netherlands. In 2014, 5% of employees had a mobility budget as part of their salary package. Projects to avoid peak-time congestion and to support sustainable commuting help to increase the effectiveness of the measure.

Tax-free kilometric reimbursement for cycling to work: The amount of the reimbursement should be high enough to provide a real incentive, and ideally higher for shorter distances since they represent the greatest potential for modal shift.

Example Belgium⁶⁷:

- Kilometric reimbursement in place since 1999, currently 0.22 €/km per day
- 83% of employees in companies with over 100 employees are offered cycling reimbursement
- 2013: approx. 350,000 beneficiaries = 8% of workforce; 40% more than in 2009
- High impact on modal share of cycling: 10% in companies offering reimbursement against 6% in companies not offering it

Tax incentives for bikes and cycling infrastructure offered to employees: While company cars that can be used for commuting and private trips are offered as a fringe benefit with advantageous tax treatment to employees in many countries, offering bikes as an addition to the salary is much less common and there are few countries that incentivise such schemes through low taxation of the fringe benefit. Offering (high quality) bikes to employees as an alternative to company cars could prove highly beneficial for changing commuting habits. Tax benefits could also be granted to companies for the instalment of cycling-friendly infrastructure like bike parking or showers.

Example company bike scheme in United Kingdom:⁶⁸

- Over 1.1 million employees participating in the scheme since introduction 1999
- Over 500,000 people currently commuting to work by bike through the scheme
- 65% of independent bike retailers say that the scheme is important/very important for their business

⁶⁷Source: Service Public Fédéral Mobilité et Transports: Diagnostic 2014 des déplacements des travailleurs entre leur domicile et leur lieu de travail (http://mobilit.be/sites/default/files/final_report_fr_5.0.pdf)

⁶⁸Source: <https://www.evanscycles.com/coffeestop/news/cycle-to-work-saving-the-country-72-million-a-year>

Recommendation 6.3: Financial support for bikes (e.g. electric/cargo) for communities, companies and consumers

Description	<p>Wider diffusion of high quality conventional bicycles and of innovative bicycles like electrically assisted bikes, folding or cargo bikes can steer behaviour change and therefore bring about a modal shift by replacing car or van trips. For instance, electrically assisted bicycles and folding bikes open up cycling for groups that have not cycled previously (commuters, the elderly), as they allow longer distances to be cycled with the same level of effort compared to conventional bikes and easier integration with public transport, offering therefore a high potential to replace car trips. Electric cargo-bikes have been able to replace vans in urban logistics in a number of pilot projects. While high quality conventional bicycles and of innovative bicycles have known a large uptake in several countries, their market development is still in the take-off phase in others. In markets with low sales figures, a financial support of 500€ and 1000 € for electric cargo-bikes could help to bridge the price gap to conventional bikes and facilitate market uptake of electric bikes, which in its turn has a high potential to achieve modal shift from car trips to cycling. In countries with longer cycling tradition, fiscal incentives should focus on cycle use, however some targeted financial support schemes e.g. for pedelecs and electric cargo-bikes due to their higher price, or schemes for small businesses can still be an option.</p> <p>E-mobility strategies and funding schemes should always include e-bikes and speed pedelecs as well, avoiding being focused exclusively on e-cars. Subsidies for electric bikes could also be given as a reward for cancelling a car's registration. Besides these targeted purchase subsidies, other, more general, funding schemes for research and development or infrastructure like charging points and secure parking can also contribute to the promotion of electric cycling.</p>
Beneficiaries	<p>Citizens, bicycle industry</p>
Responsible institution	<p>Depending on scope of the scheme: national/regional/local governments</p>
steps	<ol style="list-style-type: none"> 1. Inclusion in annual budgets 2. Implementation 3. Monitoring of market development
Horizon for implementation	<p>Typically, schemes are planned for on a yearly basis.</p>
Budget	<p>e.g. national programme for 100,000 electric bikes with financial support of 500 €: 50 million €</p>
Good practice example	<ul style="list-style-type: none"> • Paris: The city administration gives a financial support of 33% on the purchase price, max. 400 € - • France: since March 2017 the French state gives a financial support capped to 200 € for people living in towns in which no such financial support is provided (in 3 months, more than 70.000 applications). • Spain: Within an e-mobility financial support programme of the national government, buyers of e-bikes can get a financial support of 200€.

Within the Barcelona Metropolitan Area, 1,000 buyers per year can receive an additional 250€.

Austria offered pedelec subsidies for companies at national level and for citizens on federal state level since 2008. The amount varies from 200 up to 500 euro per pedelec. The conditions include sometimes the certified use of renewable power. These financial supports pushed sales of e-bikes twentyfold in Austria up to 20% pedelec market share in 2016. Fleet tests showed a doubling of cycled kilometers with pedelecs and a strong modal shift from car to pedelecs than from public transport.⁶⁹

Sweden provides 25 % subsidies of e-bike purchase (“elcykelpremie”) from January 2018 (<http://www.infrastrukturnyheter.se/20170920/20150/elcykelpremien-okar-nyttan-med-investering-i-cykelvag>). Everyone (individuals not companies) who buys an ebike until the end of 2020 gets this discount of the price up to 10 000 SEK (€1.000) per bike. You have to be above 15 years of age and can only buy one bike per person and year. For the years 2018, 2019 and 2020 the budget is 350 million SEK (€35 million) each year.

Ireland: The Cycle to Work Scheme is a tax incentive scheme which aims to encourage employees to cycle to and from work. Under the scheme employers can pay for bicycles and bicycle equipment for their employees and the employee pays back through a salary sacrifice arrangement of up to 12 months. The employee is not liable for tax, social insurance (PRSI) or the Universal Social Charge on their repayments. The employer is not obliged to take part in the scheme. However if they do, they must offer it to all their employees. The scheme is one of the most popular tax incentive schemes and the employee can save up to 52% of the cost of a bicycle and associated equipment (helmet, clothing etc). There is a limit of €1,000 total expenditure eligible for the scheme and the scheme can only be availed of once every 5 years.

⁶⁹ Kairos “Landrad Vorarlberg final report”, Bregenz 2010, confirmed by the Cerema study in France (55% of the buyers intend to substitute car use for e-bike use).

5.7 IMPROVE HEALTH AND SAFETY

Being physically active is one of the most important steps that people of all ages can take to improve their health. Each year, about 3.2 million deaths (9% of the overall mortality) worldwide can be attributed to insufficient physical activity⁷⁰. Sedentary lifestyle compounded with a lack of physical exercise has been reported to be associated with metabolic syndrome, cardiovascular diseases, lack of sleep, obesity and psychosocial problems. Despite the well-proven and intensively discussed health benefits related to physical activity, a large percentage of the world's and European population remains physically inactive. The lack of time to be physically active is reported as the main reason for that.⁷¹ In this context, active mobility, in the form of cycling as a means of transportation, is a highly promising approach to integrate physical activity into individuals' daily lives. Contrary to formal sport and exercise, utilitarian cycling does not require special time allocation, is relatively inexpensive and has the potential to reach out to a large segment of the population who are physically inactive.

Active lifestyles from early age on, e.g. by cycling to school or work, help reducing these important risks. Countries with the highest levels of cycling and walking generally have the lowest obesity rates⁷². Health professionals and public health workers as well as teaching staff may play a crucial role in advocating and promoting cycling, and integrating it in the daily life, and across all ages.

Furthermore, increasing the number of cyclists improves the safety of both, cyclists and pedestrians, mainly by traffic calming and speed reduction. This is particularly important considering that the road traffic injuries are the leading cause of premature death in young people. In the Pan-European Region, over 84,000 people died from road traffic injuries in 2013, with cyclists and pedestrians representing 4 % and 26 % of the victims.

The fear of safety risks is a major barrier to the uptake of cycling, and should be taken in account seriously. Therefore measures to increase objective and perceived cyclist's safety should be implemented in national and international road safety policies. Measures for cycling should be integrated in the national road safety policy considering that the relative risk and injury severity for vulnerable road users like cyclists is strongly depending on road vehicle speed and vehicle weight (heavy good vehicles and buses)⁷³.

Overview of recommendations

7. Improve health and safety

7.1 Integrate cycling as a tool to promote physical activity in the public health systems

7.2 Integrate health and cycling related aspects in formal and informal education & awareness raising

7.3 Integrate cycling in road safety policy

⁷⁰ Global Status Report on noncommunicable diseases. WHO, 2014
http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf?ua=1

⁷¹ Special Eurobarometer 412 "Sport and Physical Activity" 2014
http://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/ebs_412_en.pdf

⁷² Walking, cycling, and obesity rates in Europe, North America, and Australia, Bassett DR Jr1, Pucher J, Buehler R, Thompson DL, Crouter SE. J Phys Act Health. 2008 Nov;5(6):795-814. <https://www.ncbi.nlm.nih.gov/pubmed/19164816>;
<http://www.oecd.org/health/Obesity-Update-2014.pdf>

⁷³ Safety of vulnerable road users, OECD Scientific Expert Group on the Safety of Vulnerable Road Users (RS7), 1998
<http://www.oecd.org/sti/transport/roadtransportresearch/2103492.pdf>

Recommendation 7.1. Integrate cycling as a tool to promote physical activity in the public health systems	
Description	<p>A number of research findings support the importance of regular physical activity, in particular, cycling for good health. However, well-structured guidelines for physicians and public health professionals, raising awareness about the links between active mobility and health and also addressing issues that might be related to specific health conditions in certain groups of patients could be helpful in increasing the capacity of the health sector to effectively advocate cycling and walking and provide their patients with correct information.</p> <p>The guidance should be user-friendly and underpinned by strong scientific evidence on how physical activities and in particular cycling may prevent different Non-Communicable Diseases (NCDs). The guidance might also include instructions on how cycling could be recommended as part of preventive or rehabilitative treatments for different health conditions. Guidelines should include clear information on recommended duration of cycling, speed etc. for particular diseases considering individual parameters of patients (i.e. age, weight, etc.).</p>
Beneficiaries	Physicians, public health professionals, patients, general public
Responsible institution	WHO in cooperation with member states
Horizon for implementation	5 years
Budget	For the city of Strasbourg, half a million per year.
steps	<ol style="list-style-type: none"> 1. Identify relevant experts 2. Develop guidelines 3. Validate and adopt guidelines (by national authorities) as a recommended document 4. Promote dissemination and application of guidelines in accordance with the national rules and regulations 5. Ensure that physicians and public health professionals are equipped with relevant knowledge and skills (i.e. qualification raising programmes)
Good practice example	<p>The National Prevention Program started in 2014 and aims to reduce the growing number of people with chronic illness. In addition, the program should also reduce the major health differences between high and low skilled people. The focus of the program is on less alcohol, smoking, depression, diabetes, overweight and more movement.</p> <p>The National Program Prevention wants to achieve its goals through the deployment of laws and regulations, and programs that stimulate health policy</p>

For example, the Healthy School, Sport and Movement in the neighbourhood, and JOGG: Jongeren Op GezondGewicht (Young people on Healthy Weight). This program aims at more physical activities for youngsters, especially stimulating them to walk or bike to school. The 'Netherlands' Norm Healthy Movement (NNGB), is a standard for healthy movement. At least 30 minutes a day of activity can be easily included in daily commuting (<http://www.allesisgezondheid.nl/pledges>).

France – City of Strasbourg

In order to fight against sedentariness and mobility's inequalities which are connected with social inequalities and health's inequity, the city of Strasbourg put into practice a programme called "Sport-santé surordonnance".

In this experimental system, the physician prescribes physical activity to people suffering from chronic diseases. In 2017 the budget allowed to the action is 410 000 €, 1 400 people have been addressed last year, 300 physicians are included, 14 NGO associated (and the programme delivers more than 85 hours training per week). The experimentation led to a decree at the end of 2016 (<https://www.legifrance.gouv.fr/eli/decret/2016/12/30/2016-1990/jo/texte>) to allow every city to implement such a programme.

Recommendation 7.2. Integrate health and cycling related aspects in formal and informal education as well as in awareness raising

Description	<p>Increasing physical activity is a societal, not just an individual concern. It requires a population-based, multi-sectoral, multi-disciplinary and culturally relevant approach. Personal transport habits and positive experiences of cycling are founded in childhood, while children who do not cycle are not likely to become cyclists as adults.</p> <p>Health related benefits of cycling should be widely promoted in formal and informal education from the early years. The issues of health benefits of cycling as well as traffic rules and road safety should be included in the teaching programmes and curricula. A manual written in clear, concise and user friendly manner should be developed for teachers and parents, and opportunities should be provided for children to experiment with and develop cycling skills. Opportunities should be sought to develop safe cycling infrastructure and to provide conditions that enable regular cycling to school, and other education and recreational facilities.</p>
Beneficiaries	Ministries of Health and Education, teachers, school children and parents, public health professionals, general public
Responsible institution	Ministries for Transport and Health, Ministry of Education, schools, teachers
Horizon for implementation	5 years
Budget	
steps	<ol style="list-style-type: none"> 1. Revise existing curricula to adjust health and cycling related aspects by classes and grades in secondary schools 2. Provide trainings and awareness rising exercises for teachers 3. Develop school mobility management plans 4. Support cycling activities throughout different events (organise rallies and competitions within and among schools; define different nominations and awards etc.) 5. Develop cycling safety plans in the proximity of schools and other educational and recreational facilities, including the development of safe infrastructure, to provide enabling conditions for cycling 6. Use social networks and mass media for spreading the knowledge and illustrating linkages between health benefits of cycling and sharing experience benefits. 7. Organise discussions and debates in media, share experience of best practices as well as hindering factors for cycling.
Good practice	New cycling training standard introduced in Ireland in 2017: the Department of Transport, Tourism and Sport has developed the new 'Cycle Right' cycling training

example

standard which was launched in January this year and will be rolled out during 2017 to primary schools. This new cycle training, which includes an on-road element, will result, over time, in an increase in the number of children choosing to cycle to and from school safely. It is expected that between 12,000 and 15,000 children will avail of the training in 2017. Cycling Ireland will administer and manage the Cycle Right scheme registration and will maintain a web-based public register of qualified and approved Cycle Right trainers (<http://www.cycleright.ie>)

Denmark: a summary of the Danish concept to make kids cycling is provided by the Danish Cycling Embassy (http://www.cycling-embassy.dk/wp-content/uploads/2010/06/Cykelleg_engelsk_endelig.pdf). Example materials about how cycling is introduced to kids during their playing from pre-school to 12 years can be found here: http://www.cykelleg.dk/download/Cykelleg_enkelt sider.pdf

Germany: Cycling safety education is a mandatory subject in the curriculum of German elementary schools including a theoretical and practical education. More than 95% of all school children participate in the bicycle riding education each year. During the first two school years the children receive basic knowledge how to ride a bike, the 3rd and 4th year include theoretical and practical bicycle riding tests. The practical tests take place in the road network and are usually accompanied by police officers. (<http://www.deutsche-verkehrswacht.de/home/dvw-projekte/kinder/radfahrausbildung.html>)

France: "The ALVEOLE (Apprentissage et local vélo pour offrir un libéré de mobilité économique en énergie) programme, carried out by the French Federation of Bicycle Users (FUB), is the winner of the call for projects launched French Ministry of Ecology in 2016 to fight against fuel poverty. The program's direct target are social landlords, it aims to promote the use of bicycles among the inhabitants of affordable housing in order to facilitate access to employment and mobility in general.

The programme is structured around two key stages and one optional:

- Installing secured bicycle parkings (minimum size: for 12 bicycles)
- Bike learning sessions with tenant households
- (optionally) self-repair workshops

The principle and the main innovation of the programme is to deliver white certificates that finance the program up to 60%, thanks to the fact of being winner of the call for projects, as mentioned above. The ultimate goal is to create standard white certificate for installing secured bicycle parking, especially when combined with bike school trainings.

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Recommendation 7.3. Integrate cycling in road safety policy	
Description	Although cycling is in general a safe mode of transport, the fear of safety risks is a major barrier for cycling. Addressing both perceived and objective cyclist's safety, measures for cycling should be integrated in the national road safety policy. To meet the masterplan's objectives of halving the number of fatalities (and serious injuries), the safety of vulnerable road users within the UNECE Europe Region has to be improved. The main scopes for improvements are safe bicycles, safe cycling infrastructure, cycling-friendly regulatory and protection from motor vehicles. Due to the evidence of safety in numbers, more cyclists will improve cyclist's safety. Therefore every measure had to consider potential new barriers for cycling to avoid negative side-effects like a decrease of cyclists, which will automatically worsen cycling safety.
Beneficiaries	Ministries of Health, Cyclists
Responsible institution	Ministries for Transport, Road Authorities, UNECE
Horizon for implementation	10 years
Budget	
Steps	<ol style="list-style-type: none"> 1. Ensure basic bicycle safety features like brakes, bell and reflectors 2. Include cycling in the national road safety plan 3. Monitoring and benchmarking on cyclist's injuries and deaths based on exposure data (cycled kilometres) (see recommendation 8.1) 4. Bring road safety audits/inspections - which includes cycling - in operation and improve high risk sites for cyclists 5. Install safe standards for cycling infrastructure (see recommendation 3.3) 6. Lower speed limits to 30 km/h or 20mph or separate bikes from other traffic by cycling lanes/paths (see recommendation 2.2). 7. Provide cycling trainings 8. Implement awareness raising campaigns to vehicle drivers for the safety needs of vulnerable road users 9. Implement UNECE regulatory for better design of motorised vehicles with reduced blind spots especially for heavy good vehicles and buses to lower the risk of injury for cyclists (see recommendation 2.3).
Good practice example	Austria: Within the Austrian Road Safety Programme 2011-2020 cycling safety measures – e.g. the implementation of the bicycle street in the National Road Code or trainings for elderly cyclists - are included. The Austrian road safety programme has the objectives by 2020 of 50% fewer fatalities, 40% fewer serious injuries and 20% fewer injury accidents (https://www.bmvit.gv.at/en/service/publications/transport/downloads/rsp2020).

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5.8 ENABLE AND FOSTER MONITORING AND BENCHMARKING

Almost all experts agree on the huge benefits of cycling (see chapter 4). Still, there is a lack of reliable statistical data in order to actually prove, quantify and compare these benefits. Today, different sources of statistics vary significantly from each other and thus reduce their credibility. This is not only a problem for politicians and cycling related NGOs, but also a problem to justify allocated budget to necessary cycling investments. At the same time, it makes promoting cycling difficult and monitoring/evaluating of set measures impossible.

The aim is to enable and foster monitoring and benchmarking by making a comparable and reliable statistical database available, for all THE PEP countries and accessible to all relevant stakeholders.

The first step will be gaining comparable and reliable statistical data focussing on a minimum set of indicators that give information on the level of cycling. These indicators should be collected in all THE PEP countries in the same way. In the long run, these core indicators should be extended by organising national travel surveys that give more detailed background information. Secondly, a common methodology is needed to evaluate benefits of cycling. Once the above-mentioned database is available, the benefits of cycling should be incorporated as standard procedure into cost-benefit analyses of transport projects (see recommendation 4.3).

This common database will have an immediate effect on the credibility of all stakeholders dealing with the promotion of cycling. It will be used as justification towards financing institutions and the taxpayer and thus lead to higher allocation of budget dedicated to cycling. It will serve as a powerful monitoring and evaluation tool, comparing the effectiveness of set measures and find success factors (measures that work best and could serve as best practice for other countries) that will lead to focus the available money to those investments that promise the highest impact.

Overview of recommendations

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|----------|---|
| 8 | Enable and foster monitoring and benchmarking |
| 8.1 | Provide adequate and reliable statistical data to monitor the level of cycling |
| 8.2 | Support countries in collecting coherent and comparable data on international level |
| 8.3 | Highlight the benefits of cycling by developing and applying common tools like HEAT |

Recommendation 8.1: Provide adequate and reliable statistical data to monitor the level of cycling

Description

Reliable data on the current status of cycling is missing in many countries (see chapters 2 and 4). With an adequate statistical backing, target groups can be defined, the effectiveness of implemented measures can be calculated and the impact shown. Equally, for the promotion of cycling the demonstration of the benefits of cycling is crucial (see chapter 5.6).

To assess the impact of cycling with a common methodology, cycling specific data is needed:

- For the economy assessment: employment(FTE) and turnover as direct impact
- For the transport system assessment: km cycled per person per year
- For the environmental assessment: average emission factors for GHG, air pollution and energy demand characteristic for the vehicle fleet to be examined as well as external costs of transport
- For the health and safety assessment: active population, casualty related costs

Therefore it is suggested (especially for countries starting to promote cycling) to collect at least a minimum set of indicators:

- Modal share of cycling (indicator: % of number of cycling trips / total trips) or number of passenger kilometres cycled
- Number of bicycles (per 1,000 inhabitants, or per household)
- Number of bicycle sales ((indicator: average number of bicycle sales in the last five years per 1,000 inhabitants OR import/export of bicycles)
- Road safety (indicator: average number of fatalities (and serious injuries) per kilometre cycled)

For countries with a longer cycling tradition, it is recommended to additionally organise (and/or update regularly) a national travel survey in your country. This additional information gives better insight in the behaviour, needs and preferences of cyclists. For this task, use the common methodology and definitions of the Eurostat Passenger Mobility Guidelines in order to make results easier to compare with each other (also on an international level). These guidelines include all relevant aspects on how to organise a basic survey.

For all countries, it is necessary to consider different concepts in collecting/surveying travel data. In AT and DE for example the “main transport mode concept” is used. In CH on the other hand the “stage concept” is used, when changing transport modes a new stage starts, here “feeder-trips” are counted separately and walking and cycling is taken into account.

New, innovative ways of collecting data should also be taken into account. For example, track bicycle movements with a smartphone application. Another interesting topic is the big data market. Telecom operators, have an enormous amount of info/data about where people move during the day. Nevertheless, the privacy issue that comes along with big data may need an EU Directive to steer things in the right

	direction (see recommendation 10.2)
Beneficiaries	Beneficiaries are decision makers, experts and people who work with bicycle statistics at the national, pan-European and international level
Responsible institution	Responsible institutions are public services in each member state (ideally, the initiative has to come from the authority responsible for transport or a statistical agency) and other stakeholders (mobility service, statistical agency etc.)
Horizon for implementation	<p>Statistical indicator collection: short/middle-to long-term horizon (1-2 years). The time needed depends strongly on the level of reliable data already available in the respective country.</p> <p>National travel survey: long-term horizon. Enough time should be invested in the preparation of a good and reliable survey. It is recommended to organise such a survey at least every 3 years.</p>
Budget	The budget depends on the level of existing data as well as the magnitude, periodicity and level of detail of your national travel survey.
Steps	<p>Define and collect a minimum set of indicators:</p> <ol style="list-style-type: none"> 1. Get an overview about existing data on regional, national, EU and pan-European level 2. Check the quality of existing national data 3. Carry out first self-assessment based on minimum set of indicators 4. Define harmonised methodologies and improve data collection procedures on regional and national, level in order to get better data in the long term 5. Give national data input to existing databases (for example use UNECE Database questionnaire to issue national cycling data)
Good practice example	<p>Denmark organises their National Travel Survey <i>Transportvaneundersogelsen</i>. The survey is the main source of mobility statistics and covers 365 days a year. Each year the Department of Transport present the main results and they publish detailed data online.</p> <p>France combines two types of data collecting on the national and local level: a general mobility survey (the last was 2008, the next one will be 2018) and the annual updated traditional population and housing census, in which some questions about commuting and bicycle use has been introduced since 2015. https://www.insee.fr/fr/information/2555376 and https://www.insee.fr/fr/recherche?q=travail+v%C3%A9lo&debut=0 with analyse for each region https://www.insee.fr/fr/statistiques/2555735.</p>

Recommendation 8.2: Support countries in collecting coherent and comparable data on international level

Description	<p>In order to monitor the progress in the promotion of cycling on the pan-European level it is necessary to rely on comparable data. Reliable statistical data is also needed for applying various tools (like HEAT) for better planning and decision-making and for monitoring the effect of interventions and investments. Lack of data hampers the process of analyses and jeopardises the reliability of analytical findings.</p> <p>The UNECE Inland Transport Committee's Working Party on Transport Statistics (WP.6) already provides an internationally recognised framework for the collection of transport related statistics. This framework includes a web-based questionnaire jointly used by UNECE, ITF⁷⁴ and Eurostat. Based on this, common data could be collected from member states without burdening them with additional questions.</p> <p>In order to use this existing instrument, it is necessary to draw stronger attention on cycling. Right now WP.6 invites to add cycling specific questions to add to the WP.6 questionnaire.</p>
Beneficiaries	<p>National and local authorities, urban planners, traffic engineers, public health workers, people who work with bicycle statistics at the national, pan-European and international level</p>
Responsible institution	<p>Ministries of Transport, national statistical agencies, Ministries of Health (in relation to monitoring of different types of physical activity), UNECE, EUROSTAT, OECD</p>
Horizon for implementation	<p>A good and solid approach needs time. The awareness and the willingness to change are important factors.</p>
Budget	
Steps	<ol style="list-style-type: none"> 1. Relevant and interested parties should participate in sessions of WP.6 to start discussions and seek the commitment of member states to extend the work of the WP.6 to gathering detailed cycling related statistics through this framework. 2. Promote the importance of cycling data 3. Develop guidelines to support member states to install a reliable and comparable national travel survey 4. Create an information sharing mechanism/platform at national and international level (with members of the UNECE, Eurostat and OECD) and ensure availability of collected data to all stakeholders 5. Provide questionnaires to collect harmonised data on UNECE level (for example use UNECE database questionnaire to issue national cycling data)
Good practice example	<p>The Eurostat Passenger Mobility Guidelines are a good example on European level on how to collect some basic information about the cycling modal split. Unfortunately, these guidelines only concern EU member states. The UNECE can provide a</p>

⁷⁴ ITF: International Transport Forum

tool/guideline oriented for cycling only, and for all of the member states. The indicators mentioned in the previous recommendation are an ideal basis for that.

Furthermore, a system of financing for member states who collect data is desirable. The grant scheme of Eurostat for member states organising a national travel survey can be a good example for this.

Existing UNECE/WHO/OECD/UN databases are good practices for the collection of harmonised data on transnational level, although they donot provide cycling data.

The screenshot displays the UNECE website interface. At the top, the UNECE logo is visible. Below it, a navigation bar includes icons for Rankings, Profiles, Charts, Maps, and PDF. A prominent banner reads "Use our new Android mobile app to get statistics both in English and Russian". The main content area features a world map titled "Number of fatalities in road traffic accidents, year 2013", with a legend indicating fatality counts from 0 to 20,000. Below the map are several categorized sections:

- Country Overviews:** UNECE Member Countries in Figures
- Population and Gender:** Country Profiles, Work-life balance, Migration, Population, Fertility, families and households, Work and economy, Education, Public life and decision making, Health and mortality, Crime and violence, Science and ICT
- Economy:** Overview Tables, National Accounts, Labour Force & Wages, Price Indices, Industrial Production, External Economic Relations, Globalization Indicators
- Millennium Development Goals:** Poverty, Employment and Hunger (MDG 1), Education Enrolment, Completion & Literacy (MDG 2), Gender in Education, Employment & Politics (MDG 3), Child Mortality and Immunization (MDG 4), Maternal and Reproductive Health (MDG 5), HIV/AIDS, Malaria and Tuberculosis (MDG 6), Environment, Water & Sanitation (MDG 7), Official Development Aid & Technologies (MDG 8)
- Transport:** Road Traffic Accidents, Railway Employment, Road Traffic, Road Vehicle Fleet, Railway Traffic, Railway Vehicles, Inland Waterway Traffic, Inland Waterway Vessels, Oil Pipeline Transport, Transport Infrastructure
- Forestry (FOREST EUROPE/UNECE/FAO):** Overview Tables, Forest Resources, Forest Health and Vitality, Productive Functions, Biological Diversity, Protective Functions, Socio-Economic Functions

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Passenger transport

OECD Data

Passenger transport refers to the total movement of passengers using inland transport on a given network. Data are expressed in million passenger-kilometres, which represents the transport of a passenger for one kilometre. Components for road and rail are available.

Related topics
Energy

Latest publication
ITF Transport Outlook 2015
PUBLICATION (2015)

Indicators

- Road accidents
- Freight transport
- Container transport
- Passenger transport**
- Passenger car registrations
- Infrastructure investment
- Infrastructure maintenance

Passenger transport Road, Million passenger-kilometres, 1998 – 2015 Source: Passenger transport

Show: Chart Map Table fullscreen share download My pinboard

Country	Year	Value (Million passenger-kilometres)
Canada	2008	493 000
France	2014	883 810
Germany	2014	999 590
Italy	2015	782 460
Japan	2009	898 720
United Kingdom	2014	693 834

Perspectives: Road Countries: Highlighted Countries (6) Time: yearly quarterly monthly

Compare variables latest data available

Million passenger-kilometres

1998 – 2015

Recommendation 8.3: Highlight the benefits of cycling by developing and applying common tools like HEAT	
Description	<p>Research on the links between cycling and health, environment and economy is a rapidly developing field, and needs to be further supported. New/adapted tools are necessary to assess and visualize the impact and benefits of cycling in one step. By using a common methodology and existing data the tool should assess the impact on the environment, on health, safety and the economy in a single processing step. At the moment, health effects, including mortality and morbidity, can be assessed by using existing health impact assessment tools, such as the WHO Health Economic Assessment Tool (HEAT). But the broader spectre of benefits resulting from cycling is still missing.</p> <p>Therefore existing tools (such as HEAT) need to be further developed to clarify aspects related to morbidity as well as to improved assessment of the risks and benefits related to cycling. In addition, new tools need to be developed to make environmental and economic benefits readily and standardised assessable.</p> <p>For financing aspects consider recommendations 4.1, 4.2, for gathering data, please consider recommendation 8.1, 8.2. The methods have to be improved and adapted with the current state of knowledge in terms of less data needs, easier and faster assessment, programmability and automation, etc.</p>
Beneficiaries	Beneficial for all the UNECE countries, especially governments, transport planners and organisations trying to assess benefits of cycling
Responsible institution	Responsible institutions are: UNECE/WHO/OECD and their tools and databases;
steps	<p>On international level</p> <ol style="list-style-type: none"> 1. Continue research on influencing factors and interactions of benefits of cycling 2. Expand the WHO HEAT Tool, based on an analysis of users' and stakeholders' needs, and subject to an assessment of the underpinning scientific evidence and feasibility considerations, to include a module that takes into account the effect of cycling (and walking) on morbidity and/or cause-specific mortality. Other possible developments may include the use of different economic metrics (additional to the currently used Value of Statistical Life), and the application of the tool to specific population groups (e.g. children). 3. Develop a new tool for the assessment of economic and environmental benefits <p>On national level</p> <ol style="list-style-type: none"> 1. Use existing and newly developed tools for the assessment of national cycling benefits 2. Give user feedback to the tool developers for further improvements 3. Use the assessed benefits in transport infrastructure CBAs (→see recommendation 4.3)
Horizon for	ongoing action

implementation	
Budget	Make financing available for tool development, training people on how to use it and filling it with data
Good practice example	<p>The health and economic assessment tool (HEAT) for cycling and walking:</p> <ul style="list-style-type: none"> • is intended to be part of comprehensive cost-benefit analyses of transport interventions or infrastructure projects; • complements existing tools for economic valuations of transport interventions, for example on emissions or congestion; • can also be used to assess the current situation or past investment; • is based on best available evidence, with parameters that can be adapted to fit specific situations. Default parameters are valid for the European context. <p>HEAT calculates the answer to the following question: if x people cycle or walk y distance on most days, what is the economic value of mortality rate improvements. A guidance book and summary address practitioners and experts, focusing on approaches to the economic valuation of positive health effects related to cycling and walking. HEAT can be applied in many situations and has already been applied in several countries.</p> <p>In France, an institute has been created to collect and produce surveys on the links between health and exercise http://www.onaps.fr/l-onaps/. It has published several surveys about the health's benefits of biking, complementing the HEAT methodology with other factors.</p>

5.9 DEVELOP CYCLING TOURISM

Cycle tourism and recreational cycling are already well established in many European countries and their continuing growth in popularity across the continent makes an increasingly significant contribution to national economies – according to a study commissioned by the European Parliament in 2012, cycle tourism contributes more than €44 billion to the EU (+ CH and NO) economy per year. This is in addition to the related environmental and societal benefits. Still, in many countries the potential of cycling tourism is not yet fully realised. There is a lack of coordination between different levels of responsibilities. This does not only refer to the design of cycling tourism routes but also to the accompanying services such as public transport connections and accommodation providers along the route.

The aim is to maximise the use of existing tourism routes and integrate new ones into the system to increase the numbers of cycle tourists.

In order to ensure that levels of cycle tourism and recreational cycling continue to grow it is vital to coordinate their development on a national level through the establishment of national cycling tourism coordination centres and to bring together the relevant service providers (who are often SMEs) through cycling friendly service schemes. This will ensure that they successfully reach out to their market.

Through these measures, cycling tourism will reach a wider share of the market and become more accessible. Additionally, both touristic and recreational cycling will also play an important role as a ‘gateway’ for people to use the bicycle as part of their day-to-day mobility. The related infrastructure can often be utilised by users for their daily travels if designed in a holistic way.

Overview of recommendations

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| 9 | Promote cycling tourism |
| 9.1 | Establish national cycling tourism coordination centres |
| 9.2 | Introduce a national cycle friendly service scheme |
| 9.3 | Adopt and implement a national standard for signalisation of cycle route networks |

Recommendation 9.1: Establish national cycling tourism coordination centres

Description	<p>To make cycle tourism destinations successful it is important to establish organisational structures to coordinate the necessary actions on the national level, including integrating EuroVelo-related tasks.</p> <p>Mandatory tasks</p> <ul style="list-style-type: none"> • Route coordination (e.g. confirm the itinerary of official touristic routes, coordinate temporary diversions etc.) • Signing coordination (e.g. ensure the installation and maintenance of signs) • Marketing and communication bringing together relevant information from all stakeholders (e.g. run a national cycle tourism webportal). • Reporting (e.g. informing ECF of the current status of the EuroVelo network) <p>Optional tasks</p> <ul style="list-style-type: none"> • Network for services (e.g. cycling friendly service scheme - see recommendation 9.2) • Public transport connections (e.g. work with public transport operators with regards to bicycle carriage, publicity etc.) • Monitoring (e.g. arrange for the installation of counters, collection of qualitative data etc.) <p>Although there are may be some overlaps with the multi-modal transport agencies and ‘cycling networks’ (see chapter 5.7 Cycling & Planning processes), the national cycling tourism (EuroVelo) coordination centres will have a clear focus on practical work (e.g. see tasks listed above) with a strong link to cycle tourism and less emphasis on influencing policy.</p>
Beneficiaries	<p>Cycle tourists (domestic and foreign), tourism industry, including many SMEs</p>
Responsible institution	<p>Composition will vary from country to country but would typically include:</p> <ul style="list-style-type: none"> • National tourism ministry/authority • National highways/transport ministry/authority • Regional authorities • Cycling organisations (representing the users) • Organisations representing service providers (e.g. accommodation) • Public transport operators
steps	<ol style="list-style-type: none"> 1. Establish national coordination centre <ul style="list-style-type: none"> - Identify relevant stakeholders - Define structure and legal status of the coordination centre - Distribute tasks and responsibilities - Assure financing 2. Organise workshops/meetings to bring together representatives of the main actors to discuss and agree priorities and actions. 3. Consider establishing individual route itinerary committees to develop important national routes.
Horizon for implementation	<p>Will depend on the current status in the country but the following could be expected within the first year:</p> <p>Countries starting to Establish a working group with an initial</p>

	<p>promote cycling tourism: contact point for inquiries (e.g. EuroVelo routes).</p> <p>More advanced countries: Appoint an organisation(s) to be the main coordinator, on a temporary basis, which connects to the other relevant stakeholders</p> <p>Countries with long tradition to promote cycle tourism: Develop a full coordination centre</p>
Budget	€50,000-€1,000,000 per year depending on tasks covered
Good practice example	<p>SwitzerlandMobility is the national network of routes for non-motorised traffic, particularly routes for leisure and tourism. It was launched in 2008 and covers hiking, cycling, mountain biking, skating and canoeing.</p> <p>The supporting body of SwitzerlandMobility is the SwitzerlandMobility Foundation. By offering various services (route information, complete signing system, network of service providers etc.), the Foundation makes it easy for users to actively experience Switzerland in attractive ways.</p> <p>Within its network for non-motorised traffic, the Foundation also coordinates cooperation between public sector and private service providers. SwitzerlandMobility Foundation also provides a coordinated and effective marketing of active recreation in Switzerland.</p> <p>The members of the SwitzerlandMobility Foundation are various Swiss federal departments, the Swiss cantons, the Principality of Liechtenstein and many individual organisations from traffic, sport and tourism. It is also the National EuroVelo Coordination Centre for Switzerland. Website: www.veloland.ch/en/cycling-in-switzerland.html</p> <p>Danish Cycling Tourism is a non-profit association of public and private partners. Its overall objectives are to develop cycling tourism in Denmark, to create links between cycling tourism initiatives in Denmark and to create growth in the tourism industry through cycle tourism. Its work includes kick-starting new projects, coordinating various actions and disseminating knowledge and best practices on cycling tourism. Danish Cycling Tourism is the National EuroVelo Coordination Centre for Denmark. Website: http://cykelturisme.dk/english/</p>

Recommendation 9.2: Introduce a national cycle friendly service scheme

<p>Description</p>	<p>Cycle tourists have some specific needs (e.g. safe and secure bike parking, tools for repairing minor mechanical problems etc.) and service providers that cater for these requirements can promote their offer to potential customers through national cycle friendly service schemes.</p> <p>Such schemes have been established in many European countries and are often run by the National EuroVelo Coordination Centre (see recommendation 3.1). However, some countries remain that do not have any schemes while in other cases several different regional schemes create a confusing situation for users.</p> <p>In addition to providing a platform for promoting services to users, there should be the scope to build capacities for tourism operators to cater for the needs of cycling tourists. Furthermore, the provision of fiscal and financial incentives to develop services for cyclists (e.g. provision of protected parking facilities in hotels, camping sites, guest houses, restaurants, tourist attractions/monuments) should be encouraged.</p>
<p>Beneficiaries</p>	<p>Cycle tourists, tourism industry, including many SMEs</p>
<p>Responsible institution</p>	<p>Ideally the national cycle tourism coordination centre (see recommendation 9.1).</p>
<p>steps</p>	<ol style="list-style-type: none"> 1. Coordinate existing systems on a regional level and agree on a single set of criteria and a financing model. 2. If no existing systems exist, develop the criteria and a financing model. 3. Market and promote the scheme
<p>Horizon for implementation</p>	<p>Can be established relatively quickly (e.g. shorter than a year) and then grown.</p>
<p>Budget</p>	<p>Self-sustaining - from contribution of the service providers if the system reaches a certain size - but needs a €100,000-€500,000 start up support.</p>
<p>Good practice example</p>	<p>Bett+Bike (Germany)</p> <p>The largest cycle friendly service scheme in the world, Bett+Bike is run by the German cyclist federation ADFC and makes it easy for travelling cyclists to find appropriate accommodation across Germany and beyond. Over 5,500 hotels, B&Bs, youth hostels, Friends of Nature houses, and camping sites are currently included in the system. All meet the minimum requirements of the ADFC and offer many comforts and amenities for their bicycling guests, including short-term stays, secure bike storage, wet clothing drying, bike repair services, information materials, etc. The accommodation providers pay an annual fee. In return they receive publication in diverse media, inclusion on the App Bett+Bike as well as target group-appropriate marketing and advertising</p> <p>Website: http://www.bettundbike.de/en</p> <p>Accueil Vélo (CyclistsWelcome) (France)</p> <p>Accueil Vélo is a national mark guaranteeing a high quality of welcome and services for cyclists where its logo is displayed. The national system was developed to replace several regional systems, which had previously provided a patchwork cover-</p>

age of the country.

The quality mark Accueil Vélo covers services like accommodation, tourist offices, bike rental and repair companies, tourist attractions

All those awarded the quality mark are located no more than 5km from an official cycle route and have to respect certain conditions:

- Offering a warm welcome specially geared to cycling tourists via: a personalised welcome, information and advice (on cycling trails, weather, further Accueil Vélo services) and a special breakfast.
- Offering services such as: luggage transfers, clothes washing and drying, rental of bikes and accessories, bike-cleaning.
- Offering special facilities: a secure shelter for bikes and repair kits.

Website: <https://en.francevelotourisme.com/contents/practical-infos/accueil-velo-cyclists-welcome>

Recommendation 9.3: Adopt and implement a national standard for signalisation of cycle route networks

<p>Description</p>	<p>In some countries, there is no guideline nor a national standard for the signalisation of cycle routes.</p> <p>With no standardised system in place, there is the risk of different systems being used in different region will create confusing for users or of no signage being installed at all.</p> <p>Signalisation should show the main destinations, together with distances, and be coherent, complete and readable enough to provide information for orientation (as a minimum) to satisfy cycle tourists as well as local communities. The signs can also be used to communicate brands and quality.</p> <p>An national standard for the signing of local, regional, national and European cycle routes (EuroVelo) should form part of the relevant national traffic signing regulation. There are existing systems across the continent that can be studied (e.g. the THEPEP publication on Signs and signals for cyclists and pedestrians compares rules and practices in 13 countries: http://www.certu-catalogue.fr/catalog/product/view/id/1706/?_SID=U&link=2957)</p> <p>The UN Convention on road signs and signals (Vienna, 8 November 1968) is the legal instrument regulating road signs and signals on a global level and currently has 65 contracting parties (http://www.unece.org/trans/conventn/legalinst_10_rtrss_crss1968.html).It is recommended that governments should discuss and agree proposed signs and signals for cycling as an amendment proposal to this Convention, especially in the framework of the Group of Experts on Road Signs and Signals.</p>
<p>Beneficiaries</p>	<p>Cyclists and all public authorities with responsibility for traffic signing</p>
<p>Responsible institution</p>	<p>National highways/transport authority and national government</p>
<p>steps</p>	<ol style="list-style-type: none"> 1. Prepare a proposal for cycle route signage 2. Legislative process: adopt regulation related to traffic signing 3. Implement on a local, regional and national level.
<p>Horizon for implementation</p>	<p>Legislative process: Depending on national constitutional framework; after up-take, implementation of the new signage system will typically take a few years.</p>
<p>Budget</p>	<p>Will depend on the size of the cycle route network and the level of current signalisation. In case the routes are already signed as local routes and only additional route information panels have been installed €100 per km has to be spent. In case of complete signalisation (i.e. pillars, complete signs etc.) is needed €1,000 per km is needed.</p>
<p>Good practice example</p>	<p>SwitzerlandMobility have developed a standard signalisation system for non-motorised traffic (SN 640 829), which has been copied elsewhere in Europe. The system signs national, regional and local routes for hiking, mountain biking, skating, canoeing and cycling each with distinct colours. Individual routes are given numbers with one-digit numbers indicating national routes, two-digit numbers indicating regional routes and three-digit numbers indicating local routes. SwitzerlandMobility also provide route information panels at regular intervals.</p>

The same colour and numbering system is used by SwitzerlandMobility to illustrate the various routes e.g. on maps, information signs and the Internet.

<http://www.veloland.ch/en/traffic-regulations-and-signalization.html>

In Limburg, a province of Belgium near the Dutch and German border, the system of cycling ‘knooppunten’ was invented in the nineties. Each junction is given a number and these ‘knooppunt’ or node points can then be connected by users to make their own journey. Information panels with overview maps are provided at regular intervals, so that people can find their way and to see if the route is a car-free, on and unpaved/paved road, has steep gradients etc.. This system is very popular, and has been quickly adopted by neighbouring regions. Other EU member states consider implementing the same system.



Source: <https://nl.wikipedia.org/wiki/Fietsroutenetwerk>

Based on an extensive benchmarking study taking into account different signalisation systems all over Europe, **Luxemburg** have recently introduced a new signalisation system, which they believe combines the best of the existing systems.



5.10 TECHNOLOGY AND INNOVATION

The basic principles of the bike have hardly changed since the invention, 200 years ago. In recent years, technological developments accelerated and new types of bicycles, similar vehicles and tools that support cycling are ready for the market. Innovation can help to make cycling more attractive, safer and more comfortable. Many useful technological features have been developed and implemented by the automotive industry first. Route planners and cruise control are quite common and form the prelude to more autonomous driving. Intelligent Traffic Systems (ITS) offers opportunities for traffic management as communication between vehicles and traffic lights. Some of these features become available for cyclists as well. New cycling technologies include, for instance, travel and journey planning; placing sensors on bicycles to pick up air, light, surface, environmental information; connectivity; electric mobility; Public Bike Share; and data sharing. With B-ITS the flow of cyclists can be recognised and prioritised. Data can be collected either via the bike, by placing tags on them, or by apps on smartphones used by the cyclist. The opportunities to use technological innovations are enormous. E.g. preventing bike theft by placing tags on bikes, signalisation of spare places in large bicycle parkings, improvement of signing and DTIS.

Big data becomes big business. Yet the chances are not yet sufficiently used. The technology associated with the bicycle sector is still a patchwork, unregulated and difficult to compartmentalize industry. This causes potential problems considering the regulation, growth and clear comprehension of strengths and weaknesses in the sector. The role of government can be increased by agenda setting, steering on more open standards and stimulating cooperation.

This would stimulate cycling and benefit the users. For example, public bike sharing systems in different cities and countries could benefit from open standards and interoperable systems. Additionally, this becomes important considering the rise of Mobility as a Service (MaaS). One-stop shop for transport services must include active modes and as part of this inclusion cycling data and services must be interoperable and easily available for public authorities.

Overview of recommendations

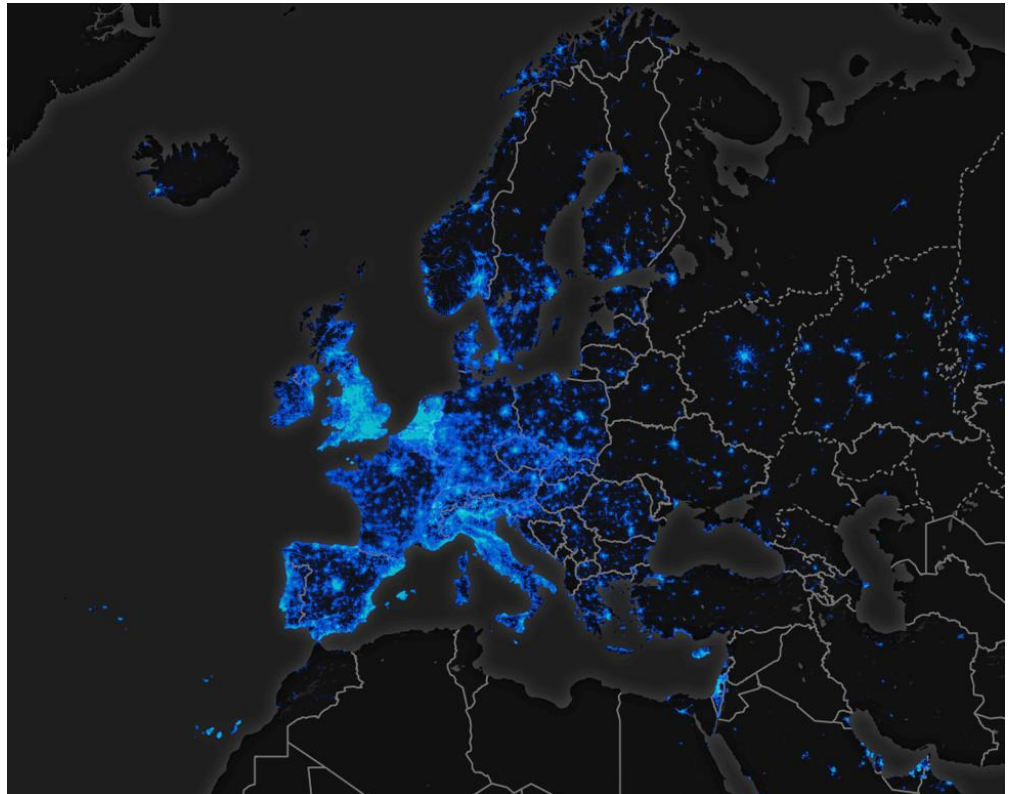
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| 10 | Technology and innovation |
| 10.1 | Introduce open standards for data exchange |
| 10.2 | Use smart data to improve cycling conditions |
| 10.3 | Support innovative bike-vehicles for the last mile logistics |

Recommendation 10.1: Introduce open standards for data exchange

Description	<p>The rise of numerous forms of data collection and innovative applications resulted in non-transparent patchwork. As every developer works on implementing its own standards, the exchange of data is restricted.</p> <p>The introduction of open standards can help to make applications accessible to the wider public and to organise better business collaboration. Possible applications are e.g. Multimodal Travel Information, Public Bike Sharing, Bike Parkings, Theft Prevention, etc.</p>
Beneficiaries	cyclists, business, local government, principals and concessionaires for public bike sharing
Responsible institution	EU, UNECE
steps	<ol style="list-style-type: none">1. Define the range of data sets and models2. Discuss different solutions with the industry3. Amend legislation, including privacy, if necessary4. Adapt new services and systems compatible with public authorities' standards
Horizon for implementation	1-2 years
Budget	Budget should be provided by national ministries, and can be part of working program on cycling policies.
Good practice example	European Standards Organisation CEN developed and reviewed Multimodal Travel Information data and services standards. This work ranges from collating and defining data sets and models, working groups looking into creating urban access data portals, to making sure that legacy and new services and systems are compatible with public authorities' standards.

Recommendation 10.2: Use smart data to improve cycling conditions	
Description	<p>Data collection can contribute to cycling policies (see recommendation 8.1 & 8.2). More knowledge on when and where people cycle and where not, which preferred routes they choose, what speed etc. helps to develop strategies to encourage people to go cycling and to make cycling more comfortable. It can help to invest in the right kind of infrastructure. Modern technology is a useful tool, and smartphones generate a lot of data that is helpful for local and regional policy.</p> <p>To encourage data collection from cyclists, to use this data to improve urban cycling and to allow access to data for individual cyclists governments should cooperate with third parties and develop strategies to share information.</p>
Beneficiaries	national, regional and local governments, cyclists
Responsible institution	national, regional and local governments
steps	<ol style="list-style-type: none"> 1. Develop a clear vision which data are required 2. Identify stakeholders and third parties that collect data 3. Support start-up pilots for data collection with apps and devices 4. Define standards for data collection with apps 5. Build and maintain national data bases for easy access of data
Horizon for implementation	5 years
Budget	depending on the scope of the data collection, € 50.000 - € 100.000 / year
Good practice example	<p>The 'Fietstelweek' (Bicycle Count Week) in the Netherlands was implemented to encourage cyclists to use an app during a week in September. The app registers all data in the background, and can distinguish between driving, public transport and cycling or walking. About 50,000 Dutch participated in this week. The Fietstelweek was organised in cooperation between national and local government, the cyclists' union and other stakeholders. The data gave insight in the speed, routes and behaviour on different days. For example, commuters cycle faster on rainy days. Additionally, it also gave insight to missing links and unnecessary detours in local networks. http://fietstelweek.nl</p> <p>Also in Belgium a Fietstelweek was held in 2016, with the support of the Cyclist Union and Fietsberaad.</p> <p>Bike citizens</p> <p>The Bike Citizen app offers cycle routes in over 450 cities worldwide. The app helps cyclist to navigate and records data in the same time. All routes that are recorded are displayed anonymously in heat maps and are used to assist with urban planning. In this sense it creates a bike community to help one another. The map material on the Bike Citizens cycling app is based on OpenStreetMap, a freely accessible geodatabase. If a cycle route appears not to be recorded correctly, it will be added to OpenStreetMap.</p> <p>Strava</p>

Strava is the most popular app among recreational cyclists, as it offers road racers the opportunity to compare their efforts on all kind of tracks. Yet it is also used more and more by commuters, and for other activities as walking, hiking, skiing etc. Since Strava has an enormous amount of users, its dataset is growing by millions of activities a week and comprises nearly a trillion GPS data points. The information in <http://labs.strava.com/projects/> is partially public, and invites to access projects. Besides a global heatmap (below) it shows e.g. interesting places and stops for local economy, clusters and routing errors.



Recommendation 10.3: Support innovative bike-vehicles for the last mile logistics

Description

The question of the last-mile logistics for e-commerce and home-shopping is essential to improve the sustainability of the cities and the safety of pedestrians and cyclists who are very much in danger with the lorries.

Big leaps in telecommunications (mobile telephony, internet) and cheap mobility make it possible to make other logistics chains, and traditional stores experience competition from online stores. These changes put great pressure on the supply of the city, and on the discharge of goods and waste from the city. Expectations have increased (can always get everything, direct delivery of orders over the Internet), while obstruction of goods traffic is getting less tolerated (congestion, safety, emissions, viability).

Innovation is able to provide solutions to help bikes to come up with this challenge.

Beneficiaries Business, local governments, population, environment

Responsible institution National states and EU for the necessary regulatory approval.

- steps**
1. Identify products and vehicles
 2. Local experimentation
 3. Amend legislation, regulation in order to approve
 4. Evaluate the benefits and support other developments

Horizon for implementation 1-2 years

Budget Budget should be provided by national ministries

Good practice example



K'Ryole is an electric self-propelled trailer for loads transport by bike to plug and unplug on the bike very fast, carrying up to 250 kg, with significant autonomy.
<http://en.k-ryole.com/>
 transport

Light Electric Freight Vehicles

The segment between bicycle and electric vehicle, the Light Electric Freight Vehicle (LEV) such as a Cargo Bike, offers a result. Research shows that many shipments in cities lend themselves to city logistics with LEVs. A study of the European CycleLogistics project shows that one in three motorized business transport routes in cities with a Cargo Bike can be performed. Also in the United States, research has been conducted on Cargo Bikes.

In recent years, ambitious starters have been on the market who want to take positions with LEVVs in city logistics or offer the vehicles. Recent starters include Foodlogica, Fietskoeriers.nl, Bubble Post and Greenolution. Also larger players like DHL and PostNL and the more traditional companies are experimenting with LEVVs.

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6 IMPLEMENTATION (CHAPTER UNDER DEVELOPMENT)

Starting at the 4th High-level Meeting on Transport, Health and Environment in April 2014, the Member States of THE PEP established the partnership on cycling and initiated the development of a pan-European masterplan for cycling promotion. The partnership on cycling is coordinated by Austria and France and overseen by the Steering Committee of THE PEP. As of September 2017, a total of 25 countries and the European Cyclists' Federation actively participated in the partnership.

THE PEP Partnership cycling will continue sharing good practices and monitoring the implementation of the pan-European Master Plan for Cycling after 2019. The partnership is aiming at extending the geographical scope to countries which have not been involved so far.

Close links between THE PEP Partnership and e.g. THE PEP Academy bringing together the national knowledge centers and to provide possibilities for know-how exchange will support the capacity building process necessary for the successful implementation of the pan-European Master Plan for Cycling Promotion

An important task will be to facilitate the implementation of the pan-European Master Plan for Cycling in the Member States on national level by implementation workshops, involving IFIs, UNECE, WHO, ECF, capacity building etc.

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