Interreg
Danube Transnational Programme
Danube Cycle Plans

More people cycling in the Danube region
Danube Cycling Strategy

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(with contributions from all partners
of the Danube Cycle Plans project
and special contribution from
the SABRINA project consortium)

A stream of cooperation

Project is co-funded by the European Union funds (ERDF, IPA).

Danube Cycle Plans | Policies, plans and promotion for more people cycling in the Danube region

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More information about Danube Cycle Plans

and the project activities & results are available on:
http://www.interreg-danube.eu/approved-projects/danube-cycle-plans

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"At the fifth High Level Meeting on Transport, Health and Environment held in Vienna in May 2021 46 ministers and state secretaries adopted the Vienna Declaration "Building forward better by transforming to new, clean, safe, healthy and inclusive mobility and transport". With the Vienna Declaration the ministers adopted the first ever Pan-European Master Plan for Cycling Promotion, calling countries to acknowledge cycling as an equal mode of transport and double cycling in the region by 2030. With the Danube Cycle Plans project the partners succeeded in contributing to the implementation of the master plan. The project can be seen as a role model of how countries can be supported in implementing the recommendations of the pan-European Master Plan for Cycling Promotion."

Robert Thaler, Member of THE PEP Bureau, former Chair of THE PEP and Head of Department Active Mobility and Mobility Management at the Austrian Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology.

"Cycling is an important building block for healthy and sustainable mobility - also along the Danube! With the Danube Cycle Plans we paved the way to improve conditions for cyclists in the Danube region and contributed to the practical implementation of THE PEP Pan-European Master Plan for Cycling Promotion."

Willy Raimund, Environment Agency Austria, Lead Partner

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Project is co-funded by the European Union funds (ERDF,IPA).

Executive summary

Already at current levels, cycling produces global benefits of 150 billion euros per year within EU-28. More than 90 billion euros of these are positive externalities for the environment, public health and the mobility system. These benefits include CO_2 emission savings, reduction of air and noise pollution, fuel savings, longer and healthier lives, less sickness absence at the workplace, the bicycle market, cycle tourism, easing of road congestions and savings on road construction and maintenance costs for road infrastructure for motorised vehicles.[1] During the pandemic, cycling emerged as an effective way to support physical distancing, to meet the minimum requirement for daily physical activity and an effective mode of transport for essential trips. Thinking of the current energy crises national governments and individuals can decrease dependence on fossil fuels and achieve significant fuel savings by replacing car trips by bicycle trips or different bike-and-ride combinations.

For all of these reasons, nine Danube countries cooperating in the Danube Cycle Plans project agreed on the following common vision: more people cycling in the Danube region. This vision is to be achieved by focusing actions on nine specific objectives:

- Objective 1: To coordinate efforts in the Danube region, building on the common history, culture, traditions, as well as reflecting the diversity of countries and people;
- Objective 2: To significantly increase cycling in every country to contribute to the overall target of doubling cycling in the Danube region as a whole;
- Objective 3: To increase the overall transport system's resilience by reallocating space in favour of cycling, walking and other active modes;
- Objective 4: To build, extend and improve the infrastructure for cycling transport, recreational cycling, cycling tourism in every country in the region;
- Objective 5: To develop and implement measurable national cycling policies, supported by national cycling plans, strategies and programmes including the setting of national targets in every country in the region;
- Objective 6: To significantly increase cyclists' safety in every country in the region as a whole;
- Objective 7: To integrate cycling into health policies, including those tackling non-communicable diseases and obesity;
- Objective 8: To integrate cycling, including cycling infrastructure, into land use, urban, regional and transport infrastructure planning.
- Objective 9: To increase the quality of cycle tourism (infrastructure and services) in the Danube region as a whole and the number of cycling tourists

By following these objectives, the countries of the Danube region will contribute significantly to the objectives defined in the pan-European Master Plan for Cycling Promotion (https://thepep.unece.org/node/825).

At the moment, conditions for cycling in the Danube region differ a lot. Some countries are more experienced in cycling promotion and better equipped with cycling infrastructure, whereas in other countries the importance of cycling is barely recognized. In general, cycling is treated as a side topic rather than an equal mode of transport. Responsibility for cycling is fragmented at subnational level. Regional/local authorities can be highly effective as

[1] Source: Steenberghen T. et al. 2017. Support study on data collection and analysis of active modes use and infrastructure in Europe

engines of cycling promotion, but may not receive sufficient financial, legislative and political support from national/transnational level to work effectively.

Action needs to be taken to change the current situation in direction of the defined objectives. Based on the experiences and findings of the 2.5 years of cooperation in the Danube Cycle Plans project, the partners identified a set of nine main fields of action with 24 sub-actions that should support their countries in achieving the objectives. In spite of ambitious efforts, the Danube Cycle Plans project could not touch all relevant issues related to the promotion of cycling in the Danube region. Cycle tourism, the combination of bicycle and public transport and the topic of liveability were identified as relevant for further work by the countries and therefore may be considered for further international cooperation. Three actions for another very important topic – safety – were provided by the partners of a sibling project, SABRINA.

The pan-European Master Plan for Cycling Promotion, adopted by 46 ministers of 41 countries during the 5th High Level Meeting of the Transport-Health-Environment Pan-European Programme (THE PEP) in May 2021, provided the framework for the cooperation in the Danube Cycle Plans project. By successfully implementing the project activities and achieving the expected project outputs, the Danube Cycle Plans project supports the implementation of the recommendations summarized in the master plan.

Background

Cycling is one of the most environmentally friendly modes of transport. Given the fact that the transport sector is one of the main GHG emitters and the only sector in which emissions have increased since 1990, promoting cycling is an important climate change mitigation activity. However, conditions for cycling in the Danube region differ a lot. Some countries are more experienced (HU, AT, CZ, SK), whereas in other countries the importance of cycling is barely recognised (SL, RO, HR, RS, BG). In general, cycling is treated as a side topic rather than an equal mode of transport. Responsibility for cycling is fragmented at subnational level. Regional/local authorities can be highly effective as engines of cycling promotion, but do not receive sufficient financial, legislative and political support from national/transnational level to work effectively.

This main challenge leads to 3 consecutive challenges:

(1) Lack of cooperation crystallises in the low number of countries (AT, CZ, SK, HU) having national cycling policies, supported by National Cycling Plans (NCP) in place. In the other participating countries, joint direction and coordination of activities is poor which counteracts efficient use of limited resources.

(2) Lack of coordination also leads to fragmented cycling infrastructure development. National cycle route networks exist only in some countries (SL, CZ, SK, AT) with differences in quality of infrastructure conditions. Existing design standards differ a lot between countries and in many cases do not reflect cyclists´ needs. The same is true for the availability of data visualizing current conditions. Financial support is inadequate.

(3) Cycling is often treated as a side topic in transport policies and most professional education. Future planners etc. do not get sufficient training on cycling. Thus, there is little awareness about the needs of cyclists and benefits of cycling. Capability to improve conditions for cyclists is low.

In the Danube Cycling Strategy (DCS), project partners (PP) develop a common vision for the promotion of cycling in the Danube region. The vision and the objectives set up in the strategy reflect the identified challenges regarding cycling in the Danube region. The strategy development process brought together the relevant national ministries participating in the project as PPs or associated strategic partners (ASP). It acts as a policy driver at macro-regional level inspiring key actors at national and EU level. Recommendations summarized for different topics break down the objectives into specific actions. For the identification of relevant actions, the pan-European Masterplan for Cycling Promotion[2] as well as the draft EU Cycling Strategy[3] provided valuable inputs. While some recommendations address the trans-national level (EUSDR, EU, UNECE, etc.) others target the national level. The cooperation with the SABRINA project resulted in the integration of three/four additional recommendation covering cycling safety.

[2] Pan-European Master Plan for Cycling Promotion, 5th High-level Meeting on Transport, Health and Environment, May 2021. https://thepep.unece.org/node/825

[3] EU Cycling Strategy. Recommendations for Delivering Green Growth and an Effective Mobility in 2030. European Cyclists' Federation, June 2017. https://ecf.com/what-we-do/eu-cycling-strategy

While the development process of the DCS was mainly steered by those countries represented in the partnership, the other countries of the Danube region were involved during the regular meetings in the framework of EUSDR (e.g. the Danube Region Transport Days in December 2021) resulting in a coherent strategy for the Danube region.

The Danube Cycling Strategy aims to provide decision-makers with answers to the following questions:

1. What are we dealing with? **Status of cycling** in the Danube Region
2. Why are we dealing with it? Highlighting the **benefits of cycling** for environment, health and transport
3. What do we want to achieve/Where would we like to go? A **joint vision and clear objective** to increase the level of cycling in the countries of the Danube region
4. What do we have to do? Concrete **actions** for all relevant target groups
5. How can the required **resources** be secured? See the last chapter for this report and the Danube Cycling Infrastructure Investment Plan elaborated in the course of the Danube Cycling Plans project.

The Danube Cycling Strategy should provide the strategic background for the improvement of the conditions for cyclists in the Danube Region. It should support decision makers on the national, macro-regional and European level to set action for cycling. At the end as many actions recommended in this strategy as possible should find their way in relevant policies at the national level. Furthermore the partners of the DCP project are providing a contribution to any upcoming update of the Action Plan of the European Strategy for the Danube Region (EUSDR).

Danube Cycle Plans and THE PEP

Transport, Health and Environment Pan-European Programme (THE PEP)

Transport, Health and Environment Pan-European Programme (THE PEP) is a unique intergovernmental, cross-sectoral, tripartite policy platform for policy-makers and stakeholders of the countries of the pan-European region for achieving healthy and sustainable transport and mobility.

Vienna Declaration

Building forward better by transforming to new, clean, safe, healthy and inclusive mobility and transport

Established in 2002 and serviced jointly by the United Nations Economic Commission for Europe (UNECE) and the World Health Organization (WHO) Regional Office for Europe, THE PEP is driven by the political commitments of the Member States through a series of High-level Meetings on Transport, Health and Environment, which convenes every five to six years.

The Fifth High-level Meeting on Transport, Health and Environment held in Vienna in May 2021 was hosted by the Austrian government. It brought together 46 ministers and state secretaries, and more than 850 participants from 42 Member States. At this meeting the Vienna Declaration "Building forward better by transforming to new, clean, safe, healthy and inclusive mobility and transport" was adopted by the ministers.

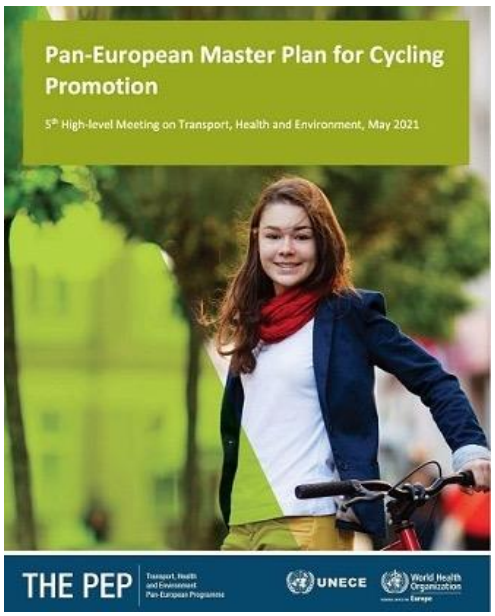
Pan-European Master Plan for Cycling Promotion

With the Vienna Declaration the ministers adopted the first ever Pan-European Master Plan for Cycling Promotion, calling countries to acknowledge cycling as an equal mode of transport and double cycling in the region by 2030. By adopting the master plan, the ministers agreed on following objectives:

- To significantly increase cycling in every country to contribute to the overall target of doubling cycling in the region as a whole;
- To increase the overall transport system's resilience by providing appropriate space in favour of cycling and walking;
- To extend and improve the infrastructure for cycling and walking in every country in the region;
- To develop and implement national cycling policies, supported by national cycling plans, strategies and programmes including the setting of national targets in every country in the region;

Project is co-funded by the European Union funds (ERDF,IPA).

- To significantly increase cyclists' safety in every country in the region and to significantly reduce the number of fatalities and serious injuries in the region as a whole;
- To integrate cycling into health policies, including those tackling non-communicable diseases and obesity;
- To integrate cycling, including cycling infrastructure, into land use, urban, regional and transport infrastructure planning.



The Master Plan was developed by THE PEP Partnership on Cycling actively involving 28 Member States, UNECE, WHO, European Cyclists Federation, Confederation of the European Bicycle Industry (CONEBI), experts and civil society organisations. It is designed to help national and local stakeholders streamline efforts to promote cycling. To help countries achieve the seven key objectives, the Master Plan includes 33 recommendations for a broad promotion of cycling grouped under 11 policy areas.

The pan-European Master Plan for Cycling Promotion is the key document behind the Danube Cycle Plans project and this Danube Cycling Strategy.

With the Danube Cycle Plans project the partners succeeded in contributing to the implementation of the master plan especially by implementing the following action:

- Developing/updating national cycle plans
- Defining a harmonized cycle route network for the Danube region
- Harmonize cycling infrastructure standards
- Building up knowledge centers at the national and the transnational level
- Organizing an investment event to involve relevant stakeholders from international financing institutions
- And many more …

Cycling in the Danube region

First of all, there is a lack of comparable datasets highlighting the status of cycling in the nine countries of the Danube region. There is only one dataset that provides comparable data among the eight countries of the European Union: Eurobarometer 406 - Attitudes of Europeans towards urban mobility[4]. National travel surveys provide additional data that will be used to describe the status of cycling in the Danube region.

How often do you cycle?

25% of Hungarians answered „At least once a day“ on that question, while only 5% of Bulgarians gave the same answer in 2013. The numbers for Slovakia, Croatia, Austria, Slovenia und Bulgaria are between 10 and 15 percent.

The daily use of cars is dominating the modal choice in Slovenia and Austria, while car usage in Hungary, Romania and Bulgaria is still below 30%.

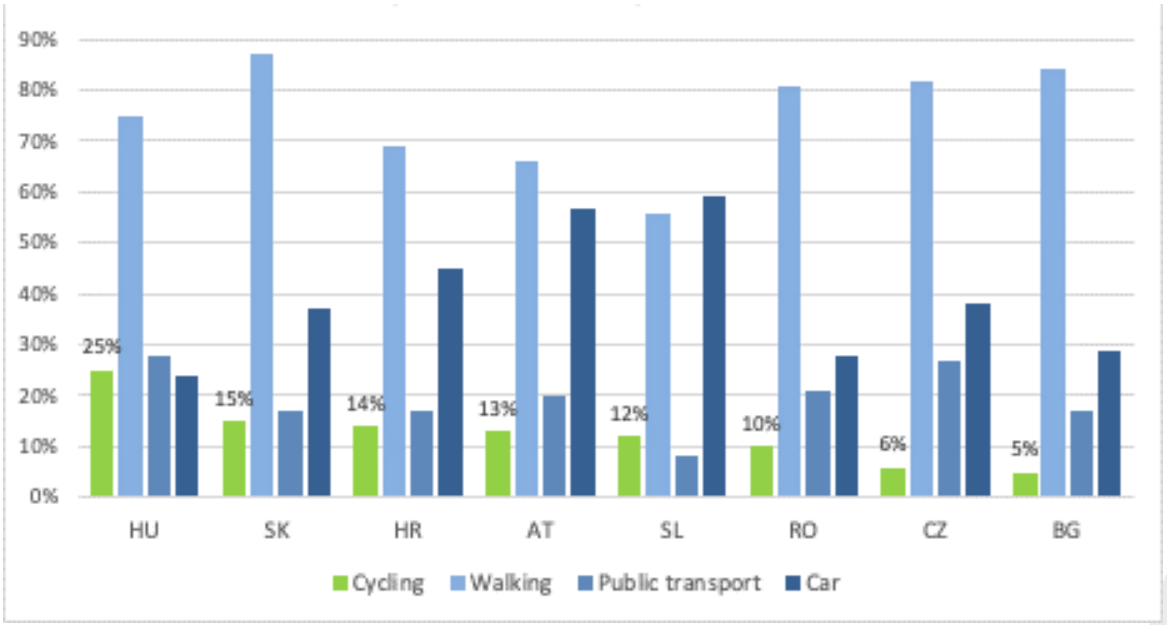


Figure 1: Use of transport modes at least once a day (data: Eurobarometer 406, 2013; no data for Serbia)

The modal split is one of the most common indicators to highlight the importance of the different modes of transport within a certain territory. The problem with modal split is that the survey methodologies can be different from country to country. Furthermore, the dates for national survey are not harmonized with the result that e.g. data from 2013 need to be compared with data from 2020. Interestingly, the data from Eurobarometer is corresponding quite well with the data from national surveys. Hungary is again taking the lead and Bulgaria is last.

[4] Unfortunately, Eurobarometer 495 (2019) put „privately owned bikes“ together with „scooters (including electric ones)“ in one category of transport modes which hampers the comparablity and usabiltiy of this dataset.

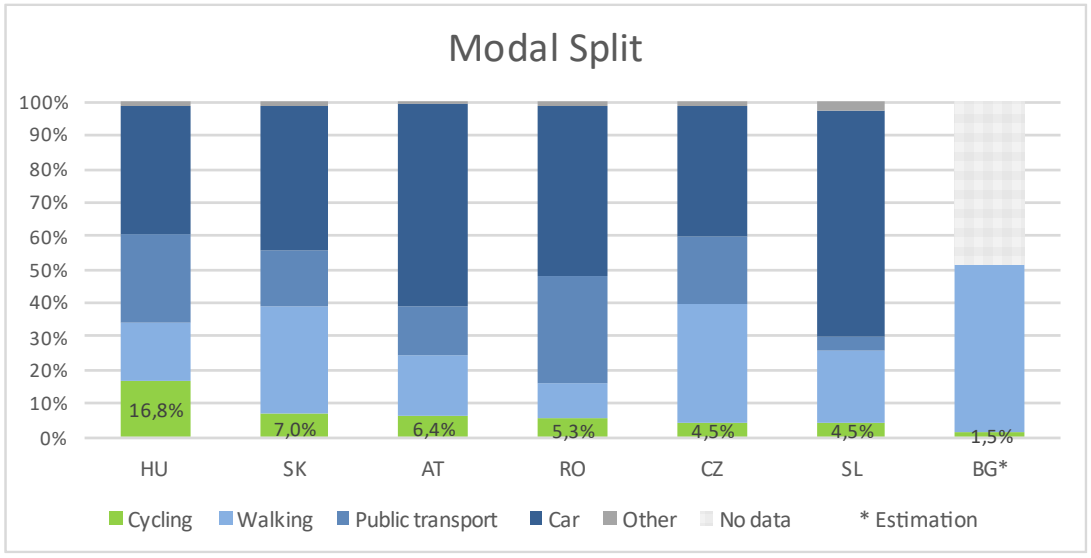


Figure 2: National modal splits (data: AT: Österreich unterwegs …mit dem Fahrrad 2017; BG: estimations from National Climate Strategy and Action Plan 2019; CZ: Česko v phybu, 2017-2019; HU: Hungarian Central Statistical Office 2012; RO: survey by INCDT and IMAS Marketing & Polls 2019; SK: National Mobility Survey 2015; SL: SURS 2017; no data for Serbia and Croatia)

Differences between countries, regions and capital cities

But there are not only differences between countries. Data from Eurobarometer allow a more segmented analysis of the regions.

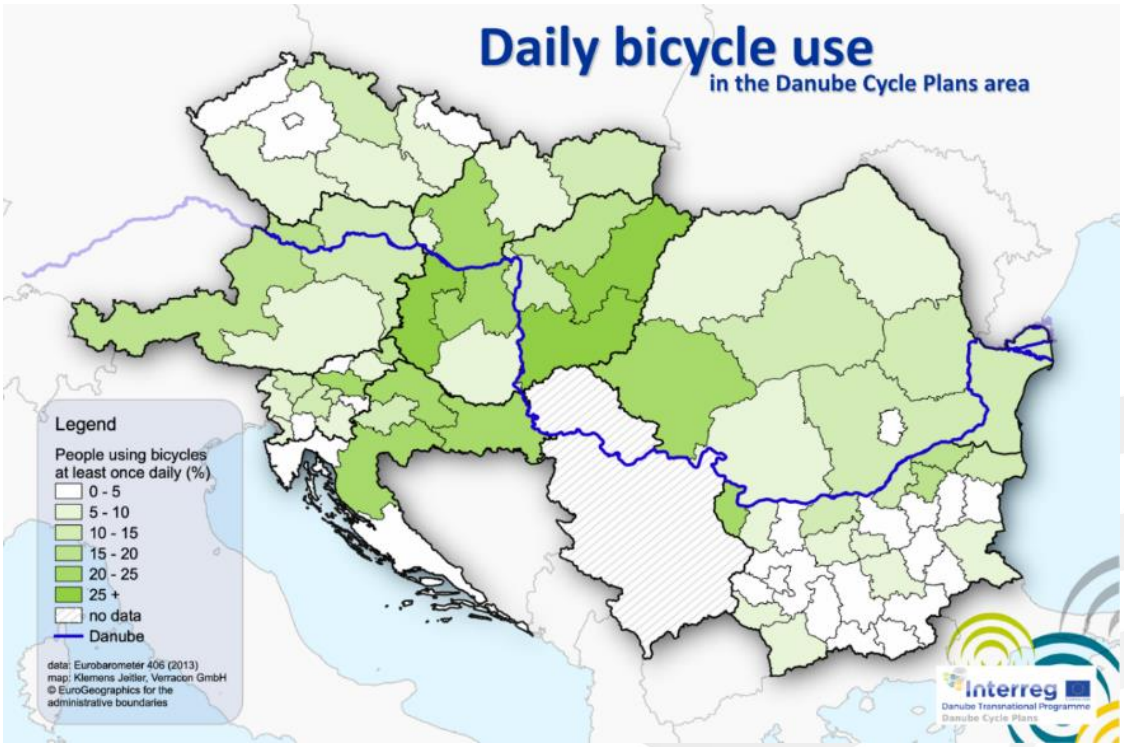


Figure 3: Daily bicycle use for regions of partner countries (data: Eurobarometer 406, map: Klemens Jeitler, geodata: © EuroGeographics for the administrative boundaries)

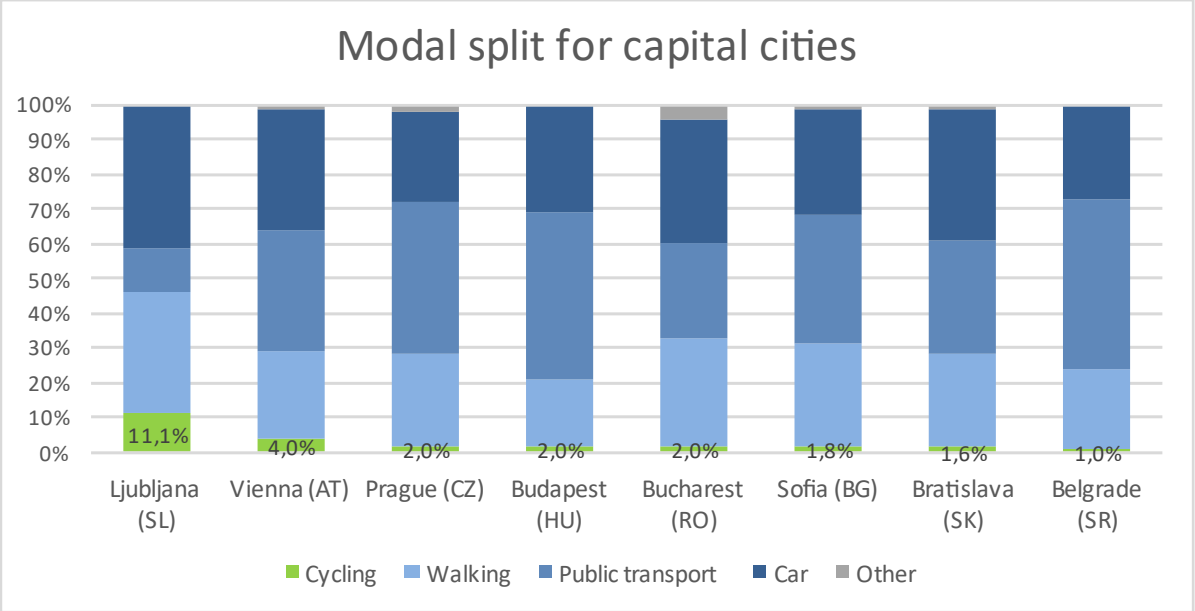


Figure 4: Modal splits for capital cities of the partner countries (data: Ljubljana: Survey on Travel Behavior 2013; Vienna: Österreich unterwegs… mit dem Fahrrad 2017; Prague: InnovaSUMP 2017; Budapest: BKK 2016; Bucharest: SUMP 2015; Sofia: SUMP 2017; Belgrade: Urban Audit 2015; Bratislava: Územný generel dopravy hl. mesta SR Bratislavy 2015, no data for Zagreb)

While in many countries cycling is especially booming in cities, the capital cities of the Danube region don't seem to take a leading role in pushing the usage of cycling. One exception is Ljubljana with a modal share of cyclists that is far beyond the share on national level.

Most countries have reported an increase of bicycle use[5]. Especially during the Corona crisis, most countries have seen a growth of bicycle sales[6]. Furthermore, e-bikes are getting more and more popular[7].

Road fatalities of cyclists on the rise

Most countries have reported unsafe road conditions for cyclists in various forms. Concerning road accidents, the share of cyclists in fatalities is rising, which is probably due to the overall rise of cyclists on roads. Likewise, the highest share of cyclists dying in accidents has been reported in Hungary, which is the country with the most cyclists (see Figure 5).

[5] E.g. in Romania the average number of bicycles per 100 households has increased from 27.5 in 2010 to 45.1 in 2019 (estimation based on data from the statistical office of Romania INS)

[6] E.g. the Romanian bicycle manufacturing company Pegas has reported increased sales of 30 % in May 2020, compared to the previous year (https://www.mediafax.ro/social/bicicleta-mijlocul-de-transport-ales-de-multi-romani-in-contextul-pande-miei-19238435)

[7] In Austria, the e-bike industry had a market share of 39 % in 2019, comparing to 22 % in 2016 (https://www.wko.at/branchen/k/handel/mode-freizeitartikel/vsso_factbox-fahrrad-2019_20-05-14_FINAL.pdf)

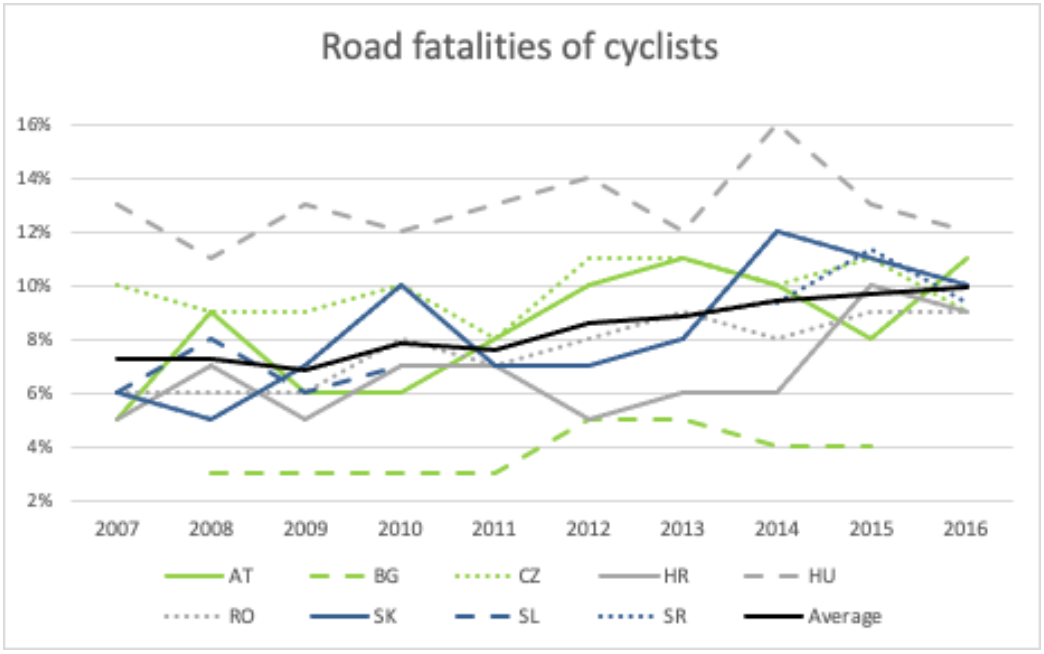


Figure 5: Road fatalities of cyclists 2007 – 2016 (data: ERSO 2018 – Traffic safety basic facts 2018, except Serbia: Ministry of Internal Affairs)

Bicycles and public transport - a dream-team to be kissed awake

Let's start with the good news: there is no country prohibiting cyclists to get on public means of transport in general. Possibilities and quality of services vary significantly between countries, means of public transport, daytime etc. All countries report at least some train categories (mainly regional trains) that transport bicycles, but facilities could be increased in quality and quantity. Most subway trains allow cyclists to carry their bikes, but usage is often prohibited during rush hours. Concerning busses there are certain possibilities for bike carriage in all countries, but in most of the cases these services are not offered regularly, the options are very limited and/or need to be pre-arranged. Most countries report, that it is much easier to take folding bikes on public transportation, because it doesn't count as bicycle but rather as a piece of luggage.

Bike parking at public transport stations is perceived to be an important measure to allow cyclists to store their bicycles safe at the stations throughout the whole Danube region. With that the catchment areas of public transport stations can be extended way beyond the traditional distances covered by pedestrians. While the need for more and better bike parking is on the agenda in the more western countries of the Danube region, it is still not widely accepted in the easter and south-eastern parts of the region. The challenge is to provide adequate bike parking facilities (and comfortable access to these facilities) in terms of quality and quantity taking into account the specific framework conditions at and around the different public transport stations.

Unfortunately, there is no data from national surveys available on trips combining bicycles and public transport. An Austrian survey[8] came to the result that more people would use the combination of bicycles and public transport if better infrastructure and services would be provided. 43 % of participants stated, they would use the combination of bicycles and public transit at least sometimes if there was better support, and 24 % would use bike-renting points at train stations if provided.

Have a plan

Currently, four of the nine partner countries have national cycling plan (Austria, Hungary, Czechia and Slovakia). Furthermore, most countries have regional or local plans for cycling support. However, two countries (Romania and Serbia) lack cycling plans on all levels. In countries where there are national cycling plans, they are monitored and evaluated on a regular basis, which is done by ministries or professional consultants. The evaluation results are incorporated in new plans and/or further documents. In the course of the Danube Cycle Plan project all participating countries either updated their existing national cycle plans (Austria, Hungary, Czechia and Slovakia) or developed national cycling plans for the first time (Bulgaria, Romania, Slovenia, Croatia, Serbia).

Who is pushing cycling forward?

In most partner countries the main **competencies** concerning cycling are on the local/municipal level. On national levels, the state is in charge of coordination, providing financial support or definition of design standards. Responsibilities on regional levels vary from country to country[9]. However, roles and responsibilities for cycling topics are not clearly defined in all countries: For example, in Romania, there are various ministries working on cycling topics but there are no clearly assumed responsibilities[10].

Concerning the **decision-making processes**, in all countries the most influential stakeholders are politicians and cycling associations/NGOs, followed by road safety agencies, urban planners and engineers. Cycling projects are often initiated by politicians, cycling associations/NGOs or urban planners. Many people contribute to the process, among them there are engineers, urban designers, maintenance managers and business owners. Decisions for cycling issues are made by top-down measures from the national level as well as bottom-up approaches from municipalities. Most projects for cycling in the partner countries are initiated on the local level. However, cycling experts are not always included in these processes, as explicitly reported from Serbia.

[8] VCÖ-Bahntest, 2020 (https://www.vcoe.at/files/vcoe/uploads/News/VCOe-Factsheets/2021/2021-01%20VCÖ-Bahntest%202020/VCOE%20Factsheet%202021-01%20VCOE-Bahntest%202020.pdf)

[9] Regions can have responsibilities for coordination and funding (e.g. Bulgaria), management of long-distance routes (e.g. Slovakia), or don't have any competencies for cycling transport at all (e.g. Romania)

[10] In Romania there is not ministry clearly responsibility for cycling. Minstries that could be responsible are: Ministry of Transport, Ministry of Entrepreneurship and Tourism, Ministry of Internal Affairs, Ministry of Environment, Ministry of Health, Ministry of Development, Public Works and Administration, Ministry of Sports,

Collaboration is a key to push cycling

Also here the situation is very different between the countries of the Danube region. An example of a country with many collaborations for cycling is Austria: There are meetings for cycling coordinators, a national bicycle tourism working group and an annual national bicycle summit ("Radgipfel") with about 300 participants. On the other hand, there were no regular meetings or working groups for cycling topics in Bulgaria, Romania and Serbia before the start of the DCP project.

Infrastructure – build it and they will come!

Research from the Netherlands and the Dutch Cycling Embassy provides evidence that there is a connection between the quality of cycling infrastructure and the people using bicycles. They compared the bicycle shares with the so-called bicycle balance score (which is based on concrete surveys of the existing cycling infrastructure) and came to the conclusion that cities with a better infrastructure have a 14% higher share of cyclists compared to cities where infrastructure is worse.

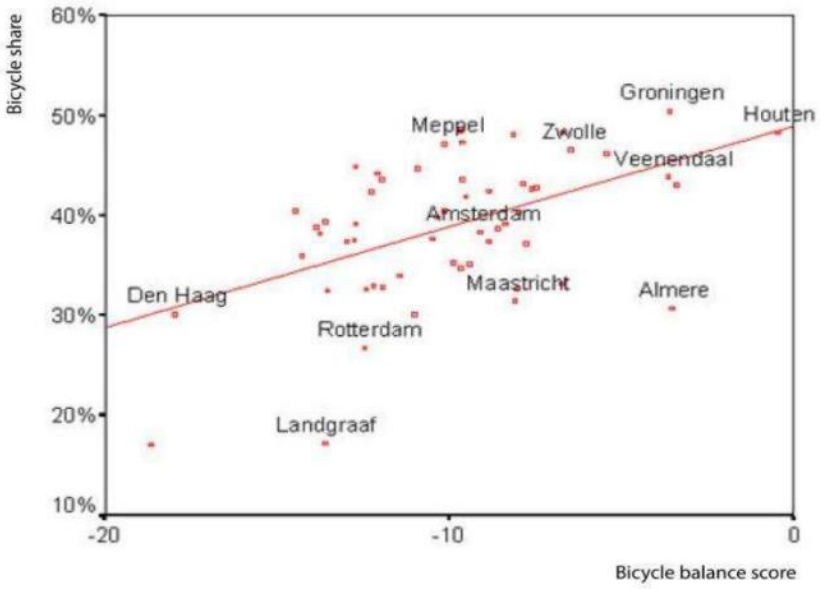


Figure 6: Correlation between the quality of cycling infrastructure and the modal share of cyclists (source: Fietsberaad)

The quality and quantity of cycling route networks and their infrastructure in the partner countries differ greatly. While the Czech Republic established their long-distance cycle route network already in 1997, in many other countries there are no official national cycle routes to this day[11]. Currently the country with the longest national cycle route network is Hungary with about 9.100 km of cycle tracks[12] and two categories for cycle tracks. For the

[11] E.g. in Bulgaria the only planned cycling network on national level in Bulgaria are the EuroVelo routes
[12] 4.000 km are independent cycle tracks or cycle and pedestrian tracks, 5.100 km are public roads assigned for cycling

year 2030, the target length of the Hungarian system is 15.000 km and 5 cycle-highways are currently under planning[13].

Offer great solutions – not until now

All countries report struggles with incoherence and diverse surface conditions. In Romania, it is estimated that at least 95 % of bike lanes don't meet the minimum requirements for quality established by law and good international practice[14]. There for the missing or different qualities are not only a result of the non-existence of the respective regulations and laws as such. All countries have a great variety of laws and regulations concerning infrastructure for cycling. However, there are differences: whereas in some countries the regulations are rather general[15], in others there are technical standards for specific elements[16]. What is interesting is that there are only three types of cycling infrastructure that can be found in all countries: cycle tracks, cycle and pedestrian tracks and cycle lanes[17]. Advisory cycle lanes exist in all but three countries. In Austria and Hungary, cycle highways are currently under construction. Bulgarian, Romanian and Serbian regulations lack most of the common types of cycling infrastructure (see Table 1). The regulations of other countries include relevant types of infrastructure but lack of detailed design standards like a minimum or standards width.

	Cycle tracks*	Cycle and pedestrian tracks	Greenways / multipurpose path	Cycle lanes	Advisory cycle lanes	Cycle routes	Contraflow	Cycle streets	Mixed-use zones	Cycle highways
Austria	✓	✓	×	✓	✓	✓	✓	✓	✓	In process
Bulgaria	✓	✓	×	✓	×	×	×	×	×	×
Croatia	✓	✓	✓	✓	×	×	×	×	×	×
Czech Republic	✓	✓	×	✓	✓	✓	✓	✓	✓	×
Hungary	✓	✓	✓	✓	✓	✓	✓	×	×	In process
Romania	✓	✓	×	✓	✓	×	✓	×	×	×
Slovakia	✓	✓	×	✓	✓	×	✓	×	×	×
Slovenia	✓	✓	✓	✓	✓	×	✓	×	✓	×[18]
Serbia	✓	✓	×	✓	×	✓	×	×	×	×

*definitions:

[13] See www.merretekerjek.hu for an online interactive map of the Hungarian cycle route network
[14] Federația Bicicliștilor din România, interview
[15] e.g., there is no specific law on bicycle infrastructure in Romania
[16] e.g., in Hungary the National Town Planning and Construction Requirements defines regulations about bike parking and keeping distance from cycle infrastructure
[17] See Table 1 for definitions of these standards
[18] Cycle highway in Slovenia is not defined as a special category, it is one version of cycle track/path.

- **Cycle tracks**: An independent road or part of a road designated for cycles, signposted as such. A cycle track is separated from other roads or other parts of the same road by structural means
- **Cycle and pedestrian tracks**: An independent road or part of a road designated for cyclists and pedestrians (specify km for cycle and pedestrian tracks).
- **Greenways / multipurpose path**: A greenway is a non-mandatory cycle track independent from the road network, which often follows a canal or a disused railroad. Its use is open to road users as signposted or defined in the national legislation. The definition of greenways and the exact range of users included (pedestrians, skaters, cyclists, equestrians etc.) varies from country to country.
- **Cycle lanes**: Designated areas for bike riding on the roadway. In contrast to a cycle track, a cycle lane is not separated from other parts of the road by physical segregation. Cycle lanes can be (1) painted lines, (2) lanes with a painted buffer separation area, (3) bollards, plastic posts, concrete blocks, planters, concrete or plastic barriers separating the bicycle area from the car traffic
- **Advisory cycle lanes**: Separated from an interrupted lane from motorized traffic. In contrast to a cycle lane a part of the carriageway is marked as a suggested space for cyclists, without being exclusively reserved for their use. Motorized traffic can and must drive on the suggestion lane so as not to drive in the middle of the road. It can be solution in streets with low traffic and limited street width.
- **Cycle routes**: Cycle routes on quiet streets with speed limits of 30km/h or lower, traffic calming or other low-speed designs
- **Contraflow**: Contra-flow cycling allows two-way cycling on streets that are one-way for other traffic, improving convenience and/or safety for cyclists.
- **Cycle streets**: A cycle street (or boulevard) is a main cycle route that is open to motorized traffic but prioritizes the needs of cyclists over other road users by providing cyclists with a high level of service.
- **Mixed-use zones**: Mixed-use zones (or shared spaces) are designed to encourage different modes of transport to co-exist on the same roads and public spaces.
- **Cycle highways**: A cycle highway is a mobility product that combines different types of infrastructure, such as cycle tracks or cycle streets, to provide a high-quality functional cycling connection (specify km).

Table 1: Infrastructure design standards in partner countries

Furthermore, there is no consistent pattern in **maintenance** of the cycling infrastructure. In some countries the responsibility is with the municipalities (e.g. Bulgaria), in other countries the responsibility is separated between levels (e.g. Slovenia, Czech Republic) and in other countries there is no regulation concerning the responsibility of maintenance at all (e.g. Serbia, Romania).

Money, money, money

Comparing the countries, the monetary support for cycling transport varies vastly. In Bulgaria, Romania and Serbia there is no official budget for cycling. In these countries, it is incorporated in overall transport projects. In Hungary - on the other hand - the government provides about € 80 million per year for cycling purposes. However, one has to take into account that the funding schemes vary between countries: As an example, in Hungary the national funding is almost equivalent to the total funding. In Austria, the national funding is supplemented by funding of the individual states. Furthermore, there is support from European Union's funds in various extends. An increase in budget dedicated to cycling can be seen over the last years. In Austria the subsidies for cycling infrastructure were even raised tenfold from 2019 to 2020 (from € 4 to 40 million; see * note: as the funding schemes between the countries vary in detail, this table does not represent the final support of bicycle transport

Table 2) and again from € 40 to 60 million from 2021 to 2022.

	AT	BG	CZ	HR	HU	RO	SK	SL	SR
National budget for cycling transport (total, in € mill.)*	40	-	32	-	80	-	13	7,9	-

Annual budget per resident (in €)	4,5	-	3,-	-	8,2	-	2,4	3,9	-

* note: as the funding schemes between the countries vary in detail, this table does not represent the final support of bicycle transport

Table 2: Annual national budget for support of cycling transport, excl. EU funding (data: AT: BMK 2020, CZ: State Fund for Transport Infrastructure (SFTI) 2020, HU: Ministry of Innovation and Technology, average 2014-2020, SK: Ministry of Transport and Construction 2020, SL: average 2018 – 2023, Ministry of Infrastructure)

Staffing

Six out of the nine partner countries have **national cycling coordinators** (see Table 3). Their competencies and responsibilities are mostly coordination, promotion, planning, etc. In Slovakia and Austria, there are cycling coordinators on regional and local levels as well.

	AT	BG	CZ	HR	HU	RO	SK	SL	SR
National cycling coordinator	Martin Eder	-	Jaroslav Martinek*	Ivica Jujnović	Máriusz Révész	-	Peter Klučka	Gregor Steklacic	-
Employees for cycling promotion**	3	-	(out-sourced)	-	9	4	4	5-7	-

Table 3: Staff for cycling promotion * applying ** in ministries, state level

Staffing for cycling: The amount of people concerned with cycling agendas depends widely from country to country. In Bulgaria and Serbia, there are no official employees working on cycling transport. Hungary is the country with the most people working in this area: There are around 9 full-time equivalents (see Table 3).

Support for employee training: In some countries, there is no standard budget for training of employees concerned with cycling affairs (like Serbia or Bulgaria). In others, there are conferences, seminars, etc. For example, in Hungary, there are trainings at the KTI Institute for Transport Sciences and in Czech Republic there is the Urban Mobility Academy (a cooperation between various institutions concerned with support for SUMPs including cycling transport matters).

Cycle tourism

The high potential of cycle tourism is recognized in all partner countries. However, there are vast differences in development of infrastructure and support by officials. In Austria, bicycle tourism is a well-established tourism branch with thousands and thousands of bike tourists every year. The national cycling route network is well equipped for tourists and there are standards for signalization. Furthermore, there is a working group for cycle tourism hosted by the Austrian ministry for tourism and a lot of research is conducted in this area. This is in high contrast with the cycling tourism situation in other countries: In Romania, for example, there is barely any promotion for cycling tourism or legislation for marking and signalization of cycle routes. In Serbia, there are

regional routes for tourists, but no coherent connection or signalization standard of these tracks on the national level. The situation is similar for Slovakia.

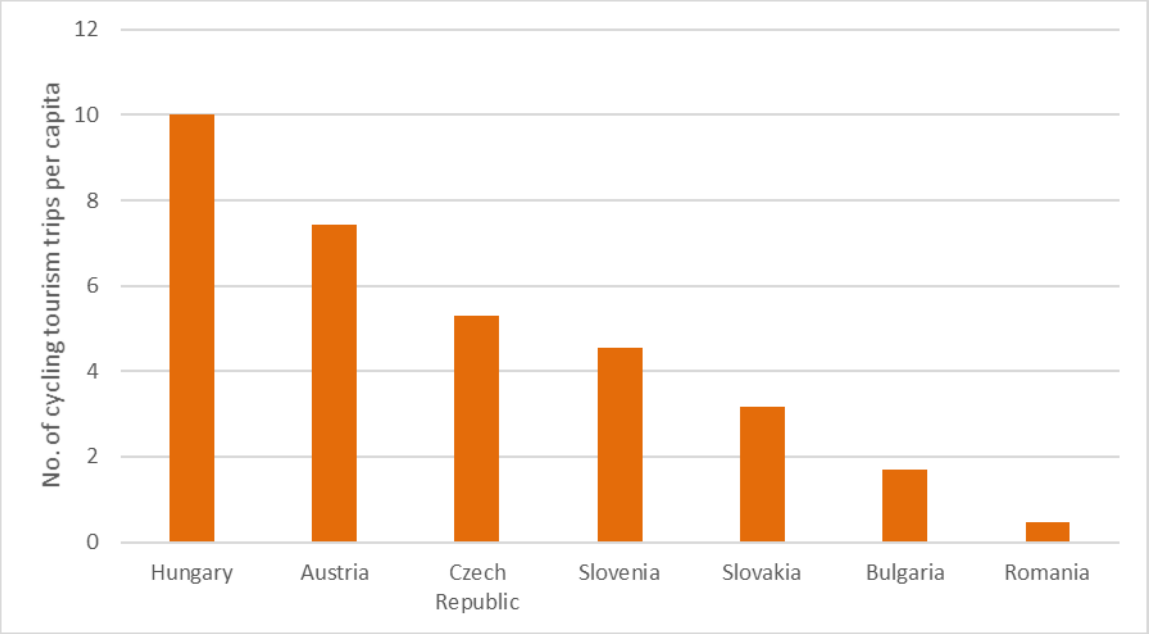


Figure 7: Cycle tourism trips per capita (Source: European Cyclists' Federation, Cycling Barometer 2013; no data for Croatia and Serbia available)

Except Bulgaria and Serbia, all other countries have **national cycle tourism coordination** bodies. These tasks are mostly carried out by tourist agencies, which are subordinate to ministries. An example from Hungary is the Centre for Development of Active and Ecotourism (AÖFK) that is responsible for cycle tourism on the national level. It is a non-profit Ltd., owned and financed by the Hungarian state.

The main arteries of transnational cycle tourism are the **EuroVelo** routes (see Map 1). With support and promotion, these tracks have high touristic potential, as the example of EuroVelo 6 shows: In Austria 770.000 cyclists have been counted in 2018, which is an increase of 15 % comparing to the previous year[19]. Nevertheless, the development and maintenance of these pan-European routes is insufficient in some countries. In Romania, the EuroVelo routes 6 and 13 are reported of being in an incipient status referring to signposting and connectivity and EuroVelo 11 in Serbia is still under development.

[19] https://pro.eurovelo.com/news/2019-09-03_new-data-confirms-popularity-of-eurovelo-6-atlantic-black-sea

Map 1: the EuroVelo network in partner countries (clipping of the full map, ECF)

National cycle friendly service schemes are established in Austria ("Bett+Bike") and Czech Republic ("Cyklisté vítáni"). In Slovakia, these standards are currently evolving, and Hungary will probably implement them in the new National Cycling Plan 2030. Slovenia is applying the „Green scheme of Slovenian tourism" and the brand Slovenia green, made by Slovenian Tourism Board (https://slovenia-outdoor.com/en/specialised-accommodation-for-cyclists/). There are no cycling friendly service schemes in the other countries.

Cyklisté vítáni

Figure 8: Cyklisté vítáni, the cyclist welcome service scheme in Czech Republic (cyklistevitani.cz)

Communication & Marketing

There are many **media campaigns** to promote cycling throughout the Danube region. Except Serbia and Bulgaria, all countries had bike2work initiatives. In Bulgaria, a similar campaign has been carried between 2014 and 2015, but the organization has stopped, due to demotivation, volunteers' burnout, lack of support and lack of funding. Other notable campaigns are "Bike to Shop" (Slovakia), "One and a Half Meter" (safety campaign, Hungary) or "studentObike" (free bike-sharing project for students in Romania).

Picture 1: The Romanian Bike2Work campaign (bike2work.ro)

Picture 2: Hungarian safety campaign: 1.5 m (1 m in the city) – "The distance that brings us closer"

(https://www.facebook.com/pg/Masfelmeter/photos/)

Picture 3: Slovakian campaign "Bike to School" (doskolynabicykli.sk)

Summary of national BYPAD Audits

During the Danube Cycle Plans project national Bicycle Policy Audits (BYPAD) were carried out in all the nine participating countries. The results of these audits reflect the status of cycling promotion based on the assessment of an evaluation group consisting of representatives of the administration, politics and user groups. The project partners summarized the results of their national BYPAD audits. The following graphs and texts are based on these results.

	AT	CZ	HU	SK	SL	HR	BG	RO	SR	Average	Highest Score	Lowest Score	Biggest disparity between the scores (highest-lowest)
M1. User Needs	1,80	2,33	2,50	1,50	1,60	1,90	1,00	1,63	1,30	1,73	2,50	1,00	1,50
M2. Leadership + Coordination	2,50	2,25	2,50	2,00	1,90	2,09	0,50	1,35	1,25	1,82	2,50	0,50	2,00
M3. Policies on Paper	2,50	2,33	2,50	2,00	1,50	1,44	1,00	0,95	1,27	1,72	2,50	0,95	1,55
M4. Means & Personnel	2,70	2,67	3,00	2,50	2,00	1,83	1,25	1,35	1,10	2,04	3,00	1,10	1,90
M5. Cycle Route Networks including safety	2,00	2,17	2,50	2,00	1,90	1,40	0,25	1,18	1,35	1,64	2,50	0,25	2,25
M6. Combining Cycling and Public Transport	2,30	1,33	2,50	2,00	1,50	1,10	0,50	0,55	0,83	1,40	2,50	0,50	2,00
M7. Supporting Cycling on Different Levels	3,00	2,00	2,50	1,50	2,10	1,29	0,50	0,93	0,99	1,65	3,00	0,50	2,50
M8. Land Use and Infrastructure Planning	1,70	1,83	2,00	1,70	1,90	1,58	1,75	1,09	1,55	1,68	2,00	1,09	0,91
M9. Evaluation + Effects	2,30	1,50	1,75	1,80	1,70	0,99	0,00	0,73	1,15	1,32	2,30	0,00	2,30
Average	2,31	2,05	2,42	1,89	1,79	1,51	0,75	1,08	1,20				
Highest Score	3,00	2,67	3,00	2,50	2,10	2,09	1,75	1,63	1,55				
Lowest Score	1,70	1,33	1,75	1,50	1,50	0,99	0,00	0,55	0,83				
Biggest disparity between the scores (highest-lowest)	1,30	1,34	1,25	1,00	0,60	1,10	1,75	1,08	0,72				

Figure 9: Results of national BYPAD audits in the countries of the Danube region[20] (table)

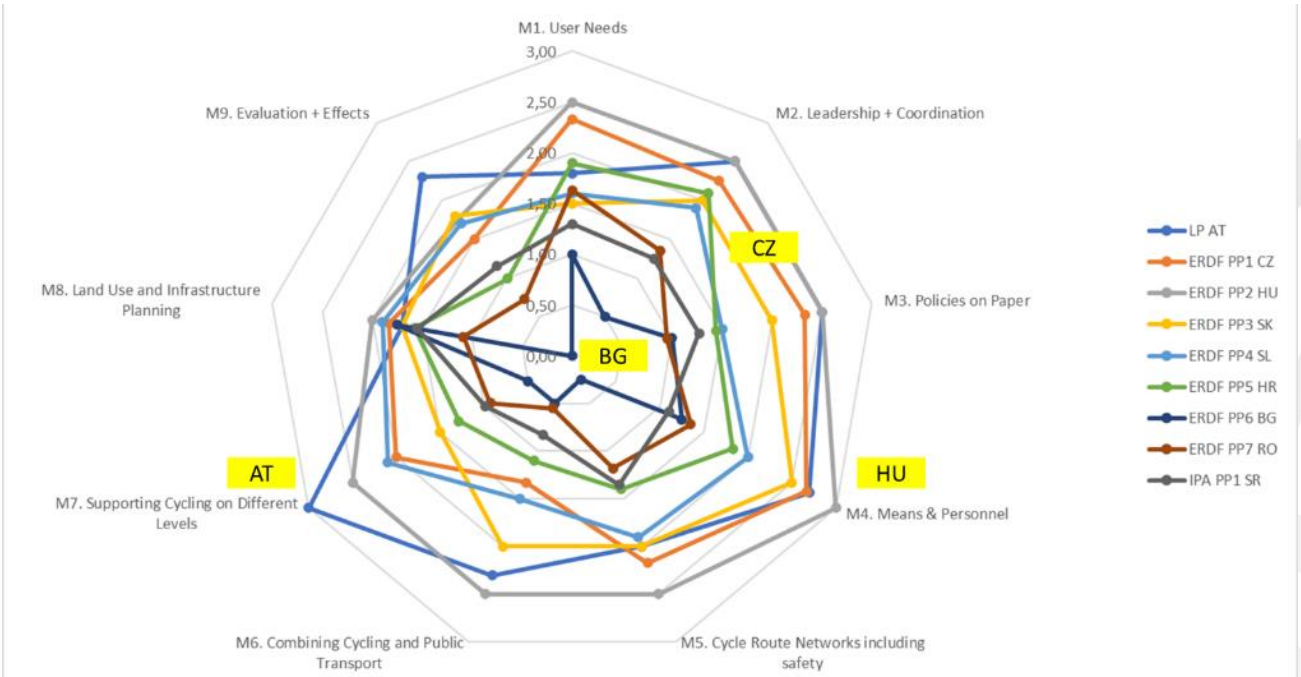


Figure 10: Results of national BYPAD audits in the countries of the Danube region (star-graph)

[20] Level 0 = no activity in the concerned area; Level 1 = ad-hoc oriented approach; Level 2 = isolated approach; Level 3 = system-oriented approach; Level 4 = integrated approach

The results underline the findings of the status quo analysis. Bicycle policies supporting the promotion of cycling differ widely throughout the countries of the Danube region. In general there is the trend that support is provided on a higher level in the western countries of the region while support is decreasing eastwards. In selected countries a system-oriented approach in cycling promotion was identified for few areas concerned (e.g. M4 Means & Personell in Hungary or M7 Supporting Cycling on Different Levels in Austria). On the other hand there are areas were no activities at all were set e.g. M9 Evaluation + Effects in Bulgaria. Figure 9 gives a good overview regarding countries that might be able to offer good practice examples in specific areas for countries that would like to improve. In general there is room for improvement for every country and every area of action.

In the second phase of the BYPAD evaluation process the participants were asked to suggest, discuss and agree on recommendations for improvement. The following paragraphs tries to condense the most important recommendations to come up with general conclusions for the whole Danube region.

General conclusions:

The self-assessment clearly highlights the need for improvement in all dimensions:

- A national coordination body should take care of all cycling related issues incl. cycle tourism. Similar structures on the regional/local level are highly recommended.
- Regular surveying/polling of cyclists' opinions and needs as well as the inclusion of cycling representatives in all relevant working groups are seen as an adequate means to improve cycling policies at all levels.
- For a successful implementation National cycling policies/plans/strategies should include an obligatory programme of measures including budgets, timetables and responsibilities.
- Sufficient resources (budget and personnel) should be provided at all levels incl. funds for maintenance and operation if feasible. These resources should be secured for the longer term to give all stakeholders the necessary planning security.
- Cycle route networks defined for the national level should be supplemented by regional and local cycle route networks. These networks should include a target network, the status as well as the necessary development standards for the different sections of the network. Clear focus should be given on a network coherence and the elimination of bottlenecks. The implementation of the network development process should follow a clear development plan, be coordinated and monitored by a responsible body at the national level.
- Continuously screen the relevant laws and regulations to update them in favour of cycling.
- Provide the strategic framework for a coordinated development of bike+ride facilities (bike parking, bike carriage, etc.) including quality standards, funding, etc. at the national level supported by an action plan for the Danube region. Facilitate communication and coordination between the key stakeholders and services providers.

- Provide tailor made funding and support schemes to improve conditions for cyclists at the local and regional level.
- Different training and inspiration formats should increase the capacities and capabilities of people responsible for improving the conditions for cyclists in the Danube region.
- Increase expert knowledge and capacity by providing opportunities to exchange at national level considering the current state-of-the art at European level.
- Recognize cycling as an equal mode of transport and establish political consensus that cycling generates tremendous benefits and is part of the solution to cope with the climate crises as well as the energy crises in all the countries of the Danube region.
- Raise awareness that land use planning laws and regulations (can) create (settlement) structures that positively and negatively influence the framework conditions for cycling. Ideally install mechanisms that ensure that the needs and requirements are taken into consideration in all infrastructure developments.
- Conduct regular surveys to monitor development in bicycle usage on the national level and make sure that the methods are harmonized with the ones implemented in the other countries of the Danube region.
- A network of automated counting stations can provide continuous data about the bicycle usage.

Benefits of cycling

„Cycling is by definition the best way of solving the problem of pollution in cities. Investments in safe and separated cycle infrastructure networks as part of the National Recovery and Resilience Plans would be a no-brainer and no-regret.“ Frans Timmermans, European Commission Executive Vice-President

Cycling contributes to implementation of the 2030 Agenda for Sustainable Development and pursuit of the Sustainable Development Goals.

In the following section the manyfold benefits of cycling are summarized shortly. Additional evidence on the benefits of cycling can be found in the publications of WHO, ECF, etc.

Economic Benefits: For every kilometer people cycle, society earns at least € 0.68. Good walking and cycling accessibility increases the attractiveness and economic potential of shops. On a monthly average, pedestrians and cyclists spend 40% more money than those who come to shop by car.

Clean Air: Air pollutants such as nitrogen oxides (NOx) and particulate matter (PM) are caused to a great extent by motorized traffic. In many cities people are exposed to concentrations of PM and NOx exceeding the health-compatible limits. Cycling, which emits neither NOx nor PM, significantly improves air quality, especially where it is most needed: in cities.

Health Benefits: Cycling contributes to a healthier and safer society. 23 per cent of adults and 81 per cent of adolescents do not meet the global minimum WHO recommendations for physical activity. Regular cycling to work reduces the total risk of mortality by about 10 per cent.

Project is co-funded by the European Union funds (ERDF,IPA).

Safety: On European roads 2160 cyclists die every year, similar to 10 years ago. The health benefits of active exercise still outweigh the associated risks or costs with a mean rate of 9 to 1. Sustainable mobility measures can effectively contribute to tackling urban safety problems and achieving the EU's goal of halving the number of deaths and serious injuries in road accidents by 2030.

Climate: The objective of Paris Agreement (limiting temperature rise to well below 2° C) will require reducing GHG emissions by 80 to 95 per cent by 2050. Transport is the only sector in which GHG emissions have increased since 1990. Replacing car trips with cycling and walking reduces GHG emissions and fuel consumption.

Energy: Cycling (besides walking) is the most energy efficient mean of transport in the Danube region especially on short distances. By replacing car trips by cycle trips or different bike+ride combinations national governments and individuals can lessen dependence on fossil fuels and achieve significant fuel savings.

Resilience: Sustainable transport strengthens the resilience of cities. The more integrated and diverse the possibilities that sustainable mobility offers in the city, the more efficient and resilient the whole transport system.

Covid: During the pandemic, cycling emerged as an effective way to support physical distancing, to meet the minimum requirement for daily physical activity and an effective mode of transport for essential trips.

Vision and objectives

One of the basic conditions to have a well-developed cycling strategy is a formulated vision, which helps specify aims and objectives we want to achieve. Would it be possible to make an analysis without defining an ideal status to make comparison? Would it be possible to find out what's good and what's wrong, what's useful and what's useless? Have you never faced the question of investments in cycling - is it a good idea at all? Aren't there other priorities to address? In addition, there are much more similarly provocative questions; therefore, each of us needs to enter the discussion being convinced that what we strive for its' good. Well, what's good?

Our common vision is as basic as obvious: **we want to have more people cycling in the Danube region**.

For that we **need to promote cycling**, which will contribute to sustainable livelihoods, a better environment, a decreasing the demand for fossil fuels to reduce energy dependency, improved health and safety, greater social inclusion and economic prosperity, and overall improvement in the quality of life of our citizens. To that end, we **acknowledge cycling as an equal mode of transport**.

To achieve our vision, we have established the following objectives to be implemented by 2030 in the countries of the Danube region:

- Objective 1: To **coordinate efforts** in the Danube region, building on the common history, culture, traditions, as well as reflecting the diversity of countries and people;
- Objective 2: to **significantly increase cycling** in every country to contribute to the overall target of doubling cycling in the Danube region as a whole;
- Objective 3: To increase the overall **transport system's resilience** by reallocating space in favour of cycling, walking and other active modes;
- Objective 4: To build, extend and **improve the infrastructure** for cycling transport, recreational cycling, cycling tourism in every country in the region;
- Objective 5: To develop and implement measurable **national cycling policies**, supported by national cycling plans, strategies and programmes including the setting of national targets in every country in the region;
- Objective 6: To significantly **increase cyclists' safety** in every country in the region as a whole;
- Objective 7: To integrate cycling into **health** policies, including those tackling non-communicable diseases and obesity;
- Objective 8: To integrate cycling, including cycling infrastructure, into land use, urban, regional and transport infrastructure **planning**.
- Objective 9: To increase the quality of **cycle tourism** (infrastructure and services) in the Danube region as a whole and the number of cycling tourists

Project is co-funded by the European Union funds (ERDF,IPA).

By following these objectives, the countries of the Danube region will contribute significantly to the objectives defined in the pan-European Master Plan for Cycling Promotion (https://thepep.unece.org/node/825). They furthermore provide the general framework for the elaboration of national cycle plans in the countries of the Danube region.

Fields of action

1. POLITICAL AND STRATEGIC SUPPORT

In some countries in the Danube region, cycling is not viewed as an equal mode of transport and is not fully incorporated into national policies, nor is it included in curriculums for future town planners. Providing the relevant political/strategic support to promote cycling and monitoring the implementation of national cycling plans is crucial to create a level playing field for all modes of transport including cycling.

Action 1.1: Develop (update) and implement a national cycling plan

In order to have the necessary political support a National Cycling Plan (NCP) or a National Cycling Strategy is crucial. It provides the strategic background paper for the development and promotion of cycling at the national level. A NCP is a multi-year plan that establishes a global vision aiming at coordinating policies, setting objectives and actions for cycling including the necessary instruments and resources. It should reflect the country's characteristics. A responsible national authority should coordinate and monitor the implementation of the plan and ensure the involvement of all relevant stakeholders at the national, regional and local levels (see recommendation Action 1.2: Form and maintain continuous cooperation of strong (national) cycling working groups and appoint a national cycling officer).

The steps how to set up a national cycling plan are described in the DCP "Guideline on how to set up a national cycling plan": https://www.interreg-danube.eu/uploads/media/approved_project_public/0001/44/f8ecf58fffeb4f347bd9df73f96a208677bf4d73.pdf

Figure 11: Existing National Cycling Plans

During the DCP project NCPs for Austria, Bulgaria, Croatia, Czechia, Hungary, Romania, Serbia, Slovakia and Slovenia were elaborated. The partners will be happy to share information with any other interested country. For good practices examples beyond the Danube region THE PEP Partnership Active Mobility provides a valuable platform and source of information.

Action 1.2: Form and maintain continuous cooperation of strong (national) cycling working groups and appoint a national cycling officer

Cooperation between the relevant is necessary to implement National Cycling Plans and to generally push cycling in a country. (National) Cycling Working Groups (NCWG) typically consist of representatives of all administrative levels (e.g. national, regional, local), the transport, health, environment and economic sector, umbrella organizations of cities and municipalities, cycling advocacy groups and NGOs, federal road and railway administrations, touristic stakeholders etc. some 15 to 25 people in the core group. Meetings should take place on a regular basis with a clear agenda and good documentation. A national cycling officer/coordinator should be installed to chair the activities of the working group. The officer should ideally be supported by all relevant ministries and should have a specific mandate and a clear profile or description. The officer should have a strong technical competence, be empowered to reach out to a variety of stakeholders, play a coordinating and enabling role, be committed to and enthusiastic about cycling.

Figure 12: Meeting of national working groups © pressmaster; © nd3000 - Fotolia.com

During the DCP project in addition to the already existing NCWGs in AT, CZ, SK, HU NCWGs were established in BG, HR, RO, SR, SI.

Action 1.3 Support the implementation of the Danube Cycling Strategy by installing a Danube Cycling Working Group

For implementing the Danube Cycling Strategy as well as the other outcomes of the Danube Cycle Plans project the group the National Cycling Officers/Coordinators and/or the national responsible bodies should keep on meeting regularly, establishing a **Danube Cycling Working Group**.

Figure 13: Meeting of Danube Cycle Plans partner and THE PEP Partnership Active Mobility (Photo: Verracon)

Activities of the Danube Cycling Working Group should aim at:

- A better representation of active modes in the Action Plan of the EU Strategy for the Danube Region (EUSDR) especially in Priority Area 1B (Rail-Road-Air Mobility) and 3 (Culture and Tourism)
- A regular exchange of experiences with other cycling experts in THE PEP Partnership Active Mobility
- A better representation of active modes in all relevant EU policies and regulations, e.g. the TEN-T regulation, the energy performance in buildings regulation
- Making best use of the national recovery and resilience plans for cycling related investments

In addition to physical or virtual meetings (which could be organized in the framework of THE PEP Partnership Active Mobility) the working group will organize joint events, e.g. side visits, cycle tours, joint visits to Velocity conferences.

2. KNOW-HOW EXCHANGE AND TRAINING

Besides the necessary funds, the quantity and quality of staff being responsible for cycling is another crucial puzzle stone for improving the conditions for cyclists in the Danube region. Action need to be set on all levels and requirements of different target groups need to be taken into account.

Action 2.1: Establish knowledge centres for the training of professionals and enhancement of skills on national level and support the work of transnational knowledge centers

There's lack of knowledge about cyclists needs and existing good practices among professionals in Danube countries. Knowledge centers should be established to ensure knowledge transfer and cooperation, to provide trainings and research possibilities for the relevant stakeholders like road engineers, urbanists, planners, road safety experts, consultants, transport operators, etc.

Tasks of these knowledge centres would be to gather good practices on cycling, to provide consultations for interested institutions, to establish training programmes for different target groups, to support networking among professionals on projects and initiatives regarding cycling transport and cycling tourism in the Danube region as well as to engage with other knowledge centers in the Danube region at the national and international level. Regular contact with the National Cycling Working Group will be helpful. Furthermore can the knowledge centers play an active role in the implementation of the two following action.

Good practices for knowledge centers are the Urban Mobility Academy of Czech Republic as well as the cycling embassies of the Netherlands, Denmark or Cycle Competence Austria.

Action 2.2: Provide meeting and exchange formats on new developments in the promotion of cycling

Bringing successful projects, professionals, and politicians together to share their achievements in cycling policies implementation is crucial for cycling promotion. Regular national and international events to share and discuss latest good practice examples and challenges provoke media interest and ensure public visibility on cycling projects. Possibilities to meet and exchange on cycling development would enhance the interest in cooperation among Danube countries and will be key to demonstrate progress on the results achieved by various financial instruments, including national recovery and resilience plans. Suitable formats are national cycling conferences, regional Danube forums, inspiration events, etc. organized as annual/biannual regular events.

Project is co-funded by the European Union funds (ERDF,IPA).

Figure 14: Inspiration events © Kathy images - Fotolia.com; © kasto - Fotolia.com

During the DCP project the partners developed different formats for the involvement of crucial stakeholders (civil engineers, majors, etc.). Together with the experience to organize national cycling conferences this know how will be useful for the implementation of regular meeting and exchange formats in all interested countries.

Action 2.3: Establish training and education programmes for cycling in the Danube region

Education and training are crucial for the successful promotion of cycling in the countries of the Danube region. Initiatives need to be taken to come up with tailor made training and education programmes for different target groups. National, regional and cities´ authorities and academic institutions willing to initiate specific programmes should check funding and support schemes like ERASMUS+, COST Action, the Covenant of Mayors, CIVITAS EU, etc. These programmes and networks are designed to support joint initiatives, national or international, to build capacities or research including the field of cycling transport and cycling tourism and will complement national budgets on cycling activities. Possible partners in such projects would be academic faculties on transport, urbanism and tourism, research institutes and NGOs. The responsible national authorities should assist in formation of future partnerships, provide institutional support and engagement to host pilot and research projects, ensure institutional representation and host internship programmes.

A good practice example for a training scheme in the field of sustainable mobility in general is the S.T.R.E.E.T Project (Sustainable Transport Education for Environment and Tourism) co-funded by the European Union through its Erasmus+ programme.

3. CYCLING CULTURE

There are several parameters which can be adjusted in order to affect behaviour and to change attitudes towards mobility. Apart from external and personal constraints or the travel distance, the choice of a mode of transport depends on the perceived availability of transport alternatives. Additionally, we are facing an evaluation of personal benefit versus personal cost if a pattern needs to be changed. Thus, the aim of promotion is to inform road users and raise awareness of all available mobility options, including the bicycle.

Action 3.1: Launch campaigns to promote cycling for daily commuting and leisure purposes

Campaigns should aim to eliminate prejudices, errors of judgment and myths about cycling, to promote its positive effects, and for the bicycle to be gradually perceived as a practical, useful and effective means for movement around cities and their surroundings, as well as for gaining practical experiences from life at the countryside.

Every campaign should have clearly defined target groups and objectives (including indicators for evaluation) based on a sorrow analysis of the current situation and a concrete action plan with a clear timeline, responsibilities and resources.

Especially in countries with limited cycling traditions raising awareness by implementing campaigns needs to be done continuously. Motivation to use the bicycle instead of the car should be based on a variety of materials and channels and could also address the population more generally.

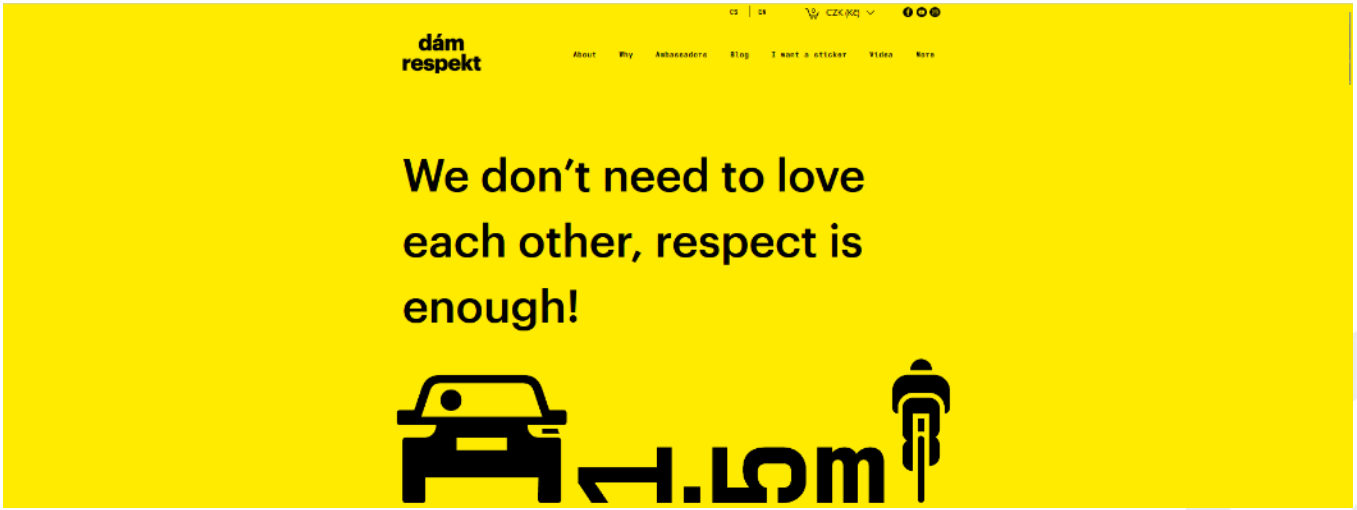


Figure 15: Campaign for mutual respect between drivers and cyclists in CZ (https://www.damrespekt.cz/en)

Good practice examples are Bike to Work/Bike to School/Bike to Shop campaigns in the countries of the Danube Region, the Austria cycles campaign (www.radelt.at/) or the campaign for mutual respect between drivers and cyclists (Damrespekt) in CZ.

Action 3.2: Promote cycling by using role models

Within cycling promotion, it is very important to make people of different age groups, professional backgrounds or social status interested in cycling as a common means of transport for everyday use. Cycling ambassadors shall continue to set a positive example to their peers and inspire for using healthy and sustainable modes of transport, including cycling. For the selection of cycling ambassadors it is necessary to define the key stakeholders at (inter)national, regional, local level and provide them with an opportunity to tell their story. They should involve well-known/famous people (e.g. politicians, sportsmen, actors/actresses, celebrities) as well as people from

everyday life. For making best use from the concept of cycling ambassadors an agreement for a long-term cooperation (including videos, interviews, presentations, etc.) should be found.

Figure 16: Danube Cycling Ambassadors: Leonore Gewessler, Austrian Minister for the Climate Action and Attila Valter, a Hungarian professional cyclist (Photos: Danube Cycle Plans)

Good practice examples for using role models for the promotion of cycling are the CityChangers Campaign (CZ) or the Danube Cycling Ambassadors established in the Danube Cycle Plans project.

Action 3.3: Support training offers to enable various target groups to develop cycling skills

Training offers for different user groups will allow more people to learn cycling and to feel confident when cycling. National authorities should support services providers to create more, and innovative training offers and to financially support their application. Discussion about individual programmes for children, students, elderly people, immigrants, drivers, etc. should involve all relevant stakeholders including educational institutions, Road Safety Agencies, driving schools, the Police, etc.

The most important target group will remain children. National authorities should aim at extending traffic education for children in nursery and primary schools with focus on bike riding in accordance with the road traffic regulations (theoretical and practical training).

Good practice examples are the bicycle exam in Slovenia (and other Danube countries), the E-Bike training for elderly people supported by the Austrian Automobil Club or the new funding scheme of the Austrian ministry of climate action to intensify bicycle training at primary and secondary schools.

4. CYCLE ROUTE NETWORKS

Consistent, high quality cycle route networks on all levels incl. signalization, maintenance as well as the necessary information about the routes are a precondition for more people cycling in the Danube region.

Action 4.1: Coordinate the definition, establishment and maintenance of the DanuVelo Network and the national cycle route networks

Cooperation is crucial for the definition of harmonized cycle routes for everyday cyclists as well as for cycle tourists in the Danube region as well as for the creation of adequate infrastructure for them. Besides the obvious necessity to cooperate with all relevant stakeholders on the local, regional and national level, cooperation on the international level ensures harmonized cycle route development across borders enabling cyclists to find coherent, safe, comfortable and attractive cycling infrastructure on their routes.

The responsible institutions in the Danube region should continue to exchange on the progress of implementing the DanuVelo network as well as to set steps to expand the network to those countries of the Danube region which didn't participate in the Danube Cycle Plans project. For that each country should identify a person who will be responsible for the coordination on the national level and the cooperation on the international level. An agreement for the coordinated development of the national cycle route networks including the provision of the necessary resources should ensure the sound implementation of the necessary improvements along the networks.

Figure 17: DanuVelo Network[21]

For the definition of a national cycle route network interested parties should follow the guideline developed in the course of the Danube Cycle Plans project: https://www.interreg-danube.eu/approved-projects/danube-cycle-plans/section/outputs-methodologies-and-guidelines

An example for an agreement between stakeholders for the long term management of a EuroVelo Cycle Route can be found here: https://pro.eurovelo.com/projects/2020-03-03_eurovelo-19---meuse-cycle-route-long-term-management-agreement

Action 4.2: Ensure that implementation of signalization is following national and European standards

The signalization of cycle routes is organized differently from country to country. Different institutions put different signs resulting in confused cyclists on the terrain. The common aim of the responsible authorities on national level should be to provide commonly agreed standards for the signalization of cycle routes of (inter)national importance. Existing international standards like the EuroVelo Standard needs to be taken in consideration. The tender documentation should ensure that the implementation of the signalization is following these rules and is done by qualified stakeholders/companies. In case that signalization is not in the competence of the national level, funding or other financial / management support schemes should define quality criteria that ensure the implementation of the signalization following the defined standards.

Figure 18: EuroVelo signalisation in Serbia © Verracon

Good practice: klimaaktiv mobil – the Austrian national support scheme for sustainable mobility incl. cycling – is only co-financing investments in signalization of it fulfils the defined national standards. The Slovenian ministry,

[21] Danuvelo core cycle route network presented with red coloured lines. EuroVelo routes presented with multiple colours line.

responsible for Road code adopted changes to rules on traffic signs and equipment on roads in 2016, that include also new horizontal and vertical traffic signs for wayfinding of cycle routes. These rules are mandatory to use for national and local road and cycle route managers.

Action 4.3: Provide qualitative and reliable information on cycle routes

In addition to improving the infrastructure of the routes and its signalization on the terrain it is necessary to provide high quality information on the existing cycling infrastructure. This should allow cyclists to easily select the most appropriate route for their trips, if it is 5 km for daily commuting or if a cycle tourist is planning a trip on cycle route(s) that passes multiple countries. Information provided should include the type of cycle infrastructure, the surface of the cycle route, the estimated traffic volume on the sections with no separated cycle infrastructure, the availability of e-bike charging and safe parking along the route etc. All countries should collect this data following a common standard and feed it into a common Geographic Information System (GIS) to be easily exported in all formats or embedded in other websites. The data must be provided also in format to include it in route planning application (Google Maps, Apple Maps, Waze, Bike Map, Strava, …). Besides a common standard for data collection the countries need to agree on procedures to update the data regularly (at least on an annual basis).

Terminology is also of utmost importance when promoting cycle itineraries. At present, ECF promotes EuroVelo network as a series of routes and paths suitable for cycling. The use of the term “route” may oftentimes be misleading as the cycling infrastructure is not equally developed (to the same standard or development level) across countries of the European Union while infrastructure development state is not readily available online for all proposed EV routes. This can cause issues as cyclists will inevitably encounter underdeveloped route sections (or not developed at all), causing discomfort but also exposing them to unnecessary risk. To mitigate this issue, ECF should market the EV network as a series of corridors, and clearly indicate that users should plan a cycling trip on their own and ascertain as much as possible that the route followed during their trip presents adequate cycling infrastructure. Only once a route becomes fully certified (meaning that an ECS route inspector performed on-site inspections), it should be marketed as a route, accompanied by a downloadable GPX file from the ECF webpage.

1. Rename ‘’routes’’ into ‘’corridors’’ in all ECF publications (online and hard copy);
2. Adopt ‘’corridor’’ naming in all future ECF public materials, except for the certified routes;
3. Update ECS inspectors manual;
4. Inform ECS route inspectors and relevant stakeholders of the change.

A good practice example of data collected and adequately provided to the end users is the information portal for the EuroVelo 8 cycle route (https://eurovelo8.hr/en/etape). After clicking on a section of the map the relevant date about traffic volumes as well as the surface will be provided. Furthermore, there are several specific online cycling trip planning tools, available for average cyclists, such as Komoot, Bikemap, Plotaroute, etc.

5. CYCLING FRIENDLY REGULATIONS

The harmonization and improvement of the cycling friendly regulations is essential to support quality/attractiveness of cycling and the safety of cyclists in the Danube region. Regulations to be included in this

task can be directly related to cycling like the ones for cycling infrastructure (e.g. defining cycling facilities and its standards), traffic rules (defining the rules while riding a bicycle, as advantage on the intersections, helmet obligations, 1,5 m bike overtaking rules for motorized vehicles, etc.) or technical standards for the vehicle bicycle (defining e.g. standard for the lights, reflectors, dimensions, etc.). Furthermore there are regulations that could possibly enable, promote and stimulate cycling like tax free remuneration for using the bicycle to come to work and within the work, legal position of the shared bike service provider (laws and regulations supporting the development, e.g. licenses, tax treatment etc.).

Action 5.1: Implement cycling friendly standards and regulations

In many countries the national laws and regulations do not reflect the needs and requirements of cyclists. Therefore it will be a continuous task of the responsible authorities on all levels to update the cycling friendly standards and regulations in the relevant national traffic laws and guidance documents taking into account the recommendations summarized in the DCP Catalogue of cycling friendly infrastructure standards. This should be done by installing national working groups that continuously monitor the incorporation of cycle-friendly standards and regulations into traffic laws and guidance documents. National roadmaps can be a valuable instrument for this work. These joint efforts should aim at creating standards and regulations that are mandatory – and not only recommended – for implementation.

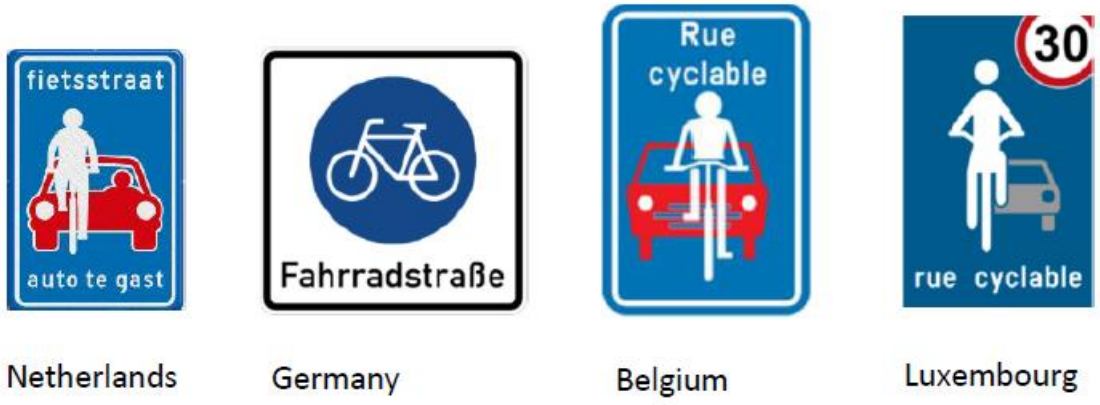


Figure 19: Examples of different road signs for a cycle street (source: Informal document WP.5 (2020) No. 6 THE PEP European Cycling Master Plan – Infrastructure Module)

In order to keep up with the state of the art and to push the relevant international regulations it is necessary to support the "Group of Experts on Cycling Infrastructure" established by UNECE`s Inland Transport Committee within the Working Party on Transport Trends and Economics/WP.5 taking care of the harmonization of cycling friendly infrastructure standards in the whole pan-European region.

6. SAFETY

Road safety is a key challenge of current transport and mobility policies and protecting vulnerable road users is a priority on European level. Promoting cycling shall help prevent injuries by implementing proper measures and

create adequate infrastructure. Measures designed to increase cyclists' safety should be incorporated into national and international road safety and cycling policies.[22]

Action 6.1: Strengthen focus on cyclists needs in Road Safety Audit procedures

To make Road Safety Audit (RSA) procedures more effective overall, they should be strengthened with more focus towards cyclists' needs. Consequently, education of auditors in this field must be updated. The European Parliament Directive 2019/1936 states that "[t]he exchange of experience on Safe System methodologies between practitioners and the information exchange between road safety auditors should be encouraged", as well as that "procedures relating to road safety audits and assessments should be established and implemented". The RSA procedures strengthening their focus towards the vulnerable road user (VRU) is especially important when cycling infrastructure is considered, as cyclists are the VRU group for whom the road fatality trend is still not in a significant decline. Within the same directive, it is stated that "[f]or road safety auditors taking their training from 17 December 2024, Member States shall ensure that the training curricula for road safety auditors includes aspects related to vulnerable road users and the infrastructure for such users", which clearly highlights the intention of the European Commission to give more attention to dedicated infrastructure for VRUs in planning, design, and early operation stages. It is therefore imperative to make sure that this updated curriculum does not cover VRUs and cyclists as one uniform group. Curricula should be planned in a way that emphasises a significant focus on considering the safety of cycling, as well as various types of cyclists and vehicle types (cargo, e-bike, and other micromobility modes that fall into similar category of infrastructure usage, such as e-scooters).

To make that happen, clear statements on an EU level should be made, emphasising the importance of considering cyclists in the updated RSA training curricula. This can be done through position papers, further directive amendment, social media or at-conference campaigns, etc. Furthermore, the responsible ministries/governmental bodies need to apply the directive into their respective legislative and training curricula with an emphasised focus on cyclist safety during the RSA procedure. Workshops on national level (including scientific institutions, governmental bodies and other relevant stakeholders) should be held with the goal of determining optimal RSA training curriculum for a given country. Following the curriculum, all future national RSA Auditors must be trained to consider cyclists' infrastructure during their RSA procedures. All new projects requiring RSA are to be evaluated with cyclists being considered according to the training criteria.

The United States Federal Highway Administration has published a guide, named Pedestrian and Bicyclist Road Safety Audit (RSA) Guide and Prompt List which can be seen as a good practice example. This guide, published in 2020, focuses on vulnerable road users and the creation of RSAs for their infrastructure. It is intended to support agencies that are interested in conducting pedestrian- and bicycle-focused RSAs. It includes information on safety risks for both modes, the RSA process, necessary data, and the responsibilities of the RSA Team. The guide also

[22] This chapter is largely based on the findings and much appreciated contributions by the SABRINA project consortium. Danube Cycle Plans and SABRINA are sibling projects funded by the INTERREG Danube Transnational Cooperation Programme (Call 3) in the priority of "Better connected and energy responsible Danube region" with the specific objective of "Support environmentally-friendly and safe transport systems and balanced accessibility of urban and rural areas", both running from 2020 to 2022. The two consortia was cooperating in several ways to find synergies of their respective activities and outputs.

includes prompt lists for pedestrians and cyclists that can be used in the field. It will also aid practitioners to understand cyclists' and pedestrians' issues in their jurisdiction and help improve their safety through performing adequate RSAs.

Action 6.2: Adopt the global 3-star or better infrastructure campaign for cyclists

Following the request of the United Nations General Assembly, on November 22, 2017, Member States reached consensus on 12 global road safety performance targets. Among those set goals, Goal 3 states that that all new roads must achieve technical standards that take into account the road safety of all users, or meet a 3-star rating[23] or better. For cyclists, 3-star rating means –at least–on-road cycle lane, good road surface, street lightning and road traffic with a maximum speed of 60 km/h. Goal 4 states that by 2030, more than 75% of travel on existing roads shall happen on roads that meet technical standards for all road users that take into account road safety. Likewise, iRAP (International Road Assessment Programme) recommends that the 3-star or better target be implemented in the project specification, for all road users, on existing and current roads, in the following manner: 4-star or better for pedestrians and cyclists, 3-star or better for motorcyclists, and 3-star or better for vehicle occupants. To make this possible, all new and existing road projects must take into account a minimal star rating threshold for cyclists, and adopt recognized national, regional or international road safety assessment methodologies which can be utilized for the safety assessment purpose of new and existing roads/routes for cyclists.

Actions to be taken are the organisation of multiple workshops, roundtables and discussions on the topic of adopting the national minimal standards for cyclists' needs to be held on a national level; development of a proposal for adequate cycling route assessment methodologies for defining the safety ratings by research institutions; responsible ministries and agencies agreeing on a methodology followed by its adoption.

Good practices examples are:

- New Zealand: 4-star roads of national significance, toll-road minimum 4-star standards, and a Safety Alliance to upgrade existing roads to 3-star or better standards (NZTA)
- United Kingdom: 90% of travel on English Strategic Road Network to be 3-star or better by 2020,and related targets for 4 and 5-star motorways (Highways England)
- Netherlands: No 1 or 2-star roads by 2020

[23] Star ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road for vehicle occupants, motorcyclists, bicyclists and pedestrians. Five-star roads are the safest while one-star roads are the least safe. Broadly speaking, every extra star rating results in a halving of crash cost in terms of the number of people who are killed and seriously injured. Importantly, star ratings can be completed worldwide, in urban and rural areas and without reference to detailed crash data, which is often unavailable in low-income and middle-income countries, or is sparse in high-performing high-income countries striving for vision zero outcomes. (Source: https://irap.org/3-star-or-better/what-is-a-star-rating/, accessed 30 September 2022)

- Sweden: 75% of network at 3-star or better by 2020 and near 100% by 2025

Furthermore it is to be mentioned that the independent Fund for Global Health has established the Three Star Coalition to build a group of like-minded organisations advocating for the design and construction of safer roads in the developing world. Specifically they advocate for roads to be built to a minimum 3-star standard for all road users.

Action 6.3: Define clear responsibilities to ensure the maintenance of cycling infrastructure

The maintenance of cycling infrastructure can have critical effects on cyclists' safety, which is especially true during winter months. Removal of ice and snow is essential in winter, whereas skidding due to gravel, dirt, and other materials can cause bicycle crashes in all types of climates. To increase cyclist safety, authorities need to maintain cycling infrastructure on a level that is appropriate for local conditions.

However, it might be unclear who the responsible actor for route maintenance is. Where the cycle route is on the road carriageway it will usually be the responsibility of the national or regional level road authority, and once the infrastructure layout changes (e.g. when the infrastructure changes from on-road facilities to segregated infrastructure) it usually falls under the responsibility of the local municipality. However, maintenance responsibilities are unclear when separated cycling infrastructure is very close to a road carriageway (i.e. when separated by an elevation, barrier, or a sidewalk). Every authority with responsibility for the maintenance of the route needs to know and accept maintenance responsibilities and accordingly plan for budgeting. Inter-authority responsibility conflicts might have dire consequences and lead to the route falling into disrepair. While it will be easier to define responsibilities for newly constructed infrastructure, an agreement on already existing sections of the cycle route networks will be harder to reach. A steering committee consisting of all relevant actors including governmental bodies, scientific and engineering institutions, national and county level road authorities, as well as representatives from cities and local municipalities need to agree on a clear split of responsibilities reflecting the competences and responsibilities of the different stakeholders in the country. Preferably these responsibilities may be reflected by strategic plans and/or maps, to allow users and stakeholders to identify responsible bodies in case of irregularities.

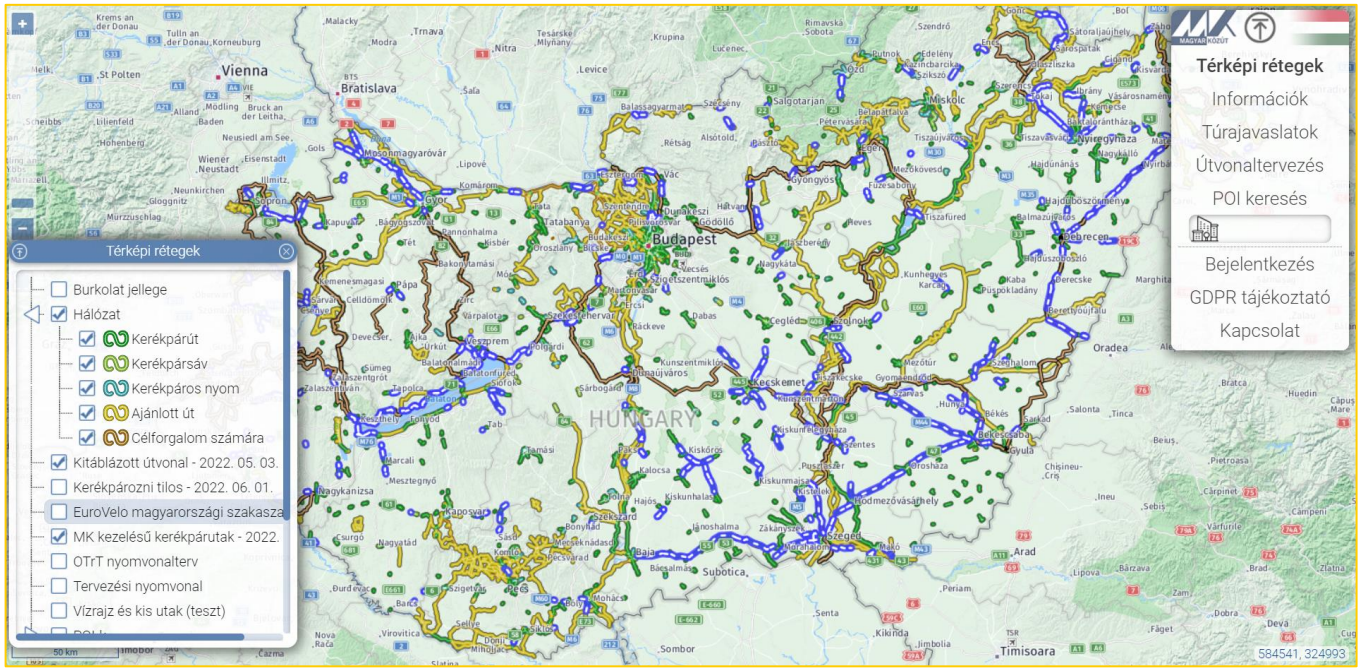


Figure 20: "KENYI" map of Hungary (road sections maintained by Hungarian Public Roads indicated in blue). Source: https://kenyi.kozut.hu/ (accessed 28 October 2022)

A good practice example is Hungary where a regulation in 2017 clarified responsibilities of cycle route maintenance, appointing Hungarian Public Roads (Magyar Közút, MK) as the responsible organisation for the national core network and cycle routes alongside main roads outside the built-up area of settlements. Their task includes regular surveillance and scheduled maintenance of cycle routes and the related infrastructure elements (bridges, rest areas, etc.) and signaling, as well as snow and ice removal on top priority routes from November to March. This work is done in cooperation with the responsible ministries, NGOs and particularly local authorities, which are responsible for the same tasks in their built-up areas. MK operates the "KENYI" cycle route database and map (http://kenyi.kozut.hu/, Figure 20), indicating –among others– the road sections where they are in charge of maintenance. As of 2022, MK maintain approx. 1100 km of cycle routes.

7. FINANCING

Financial needs for cycling investments may seem negligible in comparison to large road, rail or waterway infrastructure projects. From a pro-cycling perspective this is both true and false. False because this highly sustainable transport mode cannot be negligible. Therefore a reasonable attention has to be paid to its investment needs, which can be pretty high on local or regional level, where no external funds are available and current transport infrastructure is not enough attractive or safe for the promotion of cycling. And it is also true because a small fraction of the money dedicated to giant transport investments is enough for large portions of good quality bicycle infrastructure, therefore responsible bodies shall make sure that the equivalent of the 'rounding errors' or a few percent from the total budget of large investments should be always attached to active mobility projects. The following points give insights into how national and local bodies and international financial institutions can ensure or encourage the proper funding of such projects.

Action 7.1: Elaborate national cycling investment plans

The implementation of national cycling strategies require thorough planning of investments. The national cycling investment plan defines steps, schedule, estimated budget, potential sources and financial monitoring of cycling infrastructure (and other related) projects. Besides setting the base for the realization of such strategies, this plan would provide financial institutions with a well-structured, transparent and trustful presentation of development projects. This includes the following aspects:

- Making sure that national cycling strategies (or a set of programmes or an action plan based on the strategy) provide relevant information to elaborate an investment plan.
- Considering potential national and other (e.g. European) instruments for financing, e.g. budget dedicated to climate actions, infrastructure and (mobility/tourism) service development projects.
- Thorough consideration of conditions in case of risks, e.g. loans.
- If no action plan has been developed so far, planned investments have to be scheduled and prioritized.
- Linking financial sources and investments to create national plans.
- During the whole procedure, stakeholders –particularly financing institutions and programme management of European and national funds– shall be invited to discuss and negotiate conditions.
- Regional and local authorities aiming at developing own investment plans are also relevant stakeholders to be informed about and/or invited to contribute to the planning process.

Ministries of transport and/or tourism and other national agencies responsible for the financing and/or coordination of investment projects are responsible for the investment plan. Its timespan shall cover the timeframe of national cycling strategies' programmes or action plan. Investment plan shall be fully feasible, i.e. shall plan for a foreseeable future in terms of financial instruments and/or set reasonable deadlines for the update.

Action 7.2: Set up funding schemes to support local or regional authorities

Cycling related projects need dedicated budget (e.g., if a cycling infrastructure is being developed or a cycling promotion measure is being implemented) or budget line (e.g., if cycling infrastructure forms part of complex road or transport investments or cycling is considered as part of sustainable mobility projects). Governments shall ensure that regional and local initiatives are being initiated and initiatives do find their financial support in national budgets. Programmes translating European funds into national or transnational projects, as well as national budget items and financial instruments aiming to directly fund cycling projects are necessary to set the basis for development.

Ministries of transport, infrastructure and/or tourism and other national agencies responsible for the financing and/or coordination of investment projects play key role in considering bicycle investments when creating national funding instruments. The beneficiaries are regional and local authorities that would like to develop and/or finance their cycling projects.

The following steps shall be taken by the responsible bodies to create proper funding schemes:

- Apply a complex (top-down and bottom-up) approach and include all relevant stakeholders into defining projects for the promotion of cycling. Make sure that financing needs are considered from the very beginning. Support municipalities and regions in applying funds.
- Set rules and plan national budgets and other financial instruments with an eye on sustainable mobility related projects. Dedicate budget to the promotion of cycling: define programmes, set financial instruments and incentivize financial institutions to provide further solutions (e.g. loans, public-private partnerships).
- Access funds on international level (EU RRP, CEF, Interreg, etc.) and from international institutions (e.g. EIB) to generate additional budgets for the promotion of cycling.
- Monitor programmes and projects to ensure that the related objectives and targets are being met and to decrease risks related to financing (e.g. inflation), e.g. create a monitoring body overseeing cycling related funding and projects.
- Set schemes related to the annual budgets and programmes covering programming periods (particularly the 7-year programming in the EU).

Figure 21: Klimaaktiv mobil © BMK/Cajetan Perwein

A good example is klimaaktiv mobil, the national action programme for mobility management in Austria. The Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) developed master plans for cycling and walking and provides financial funds to regional and local governments, as well as businesses (transport service providers, tourism operators), public institutions (e.g. schools,

kindergardens), NGOs and citizens to help climate-friendly transition towards active mobility, e-mobility and smart solutions in transport. (photo: https://radkompetenz.at/en/members/bmk-klimaaktiv-mobil-2/)

Action 7.3: Access funds on international level to generate additional budgets for the promotion of cycling (EU Recovery and Resilience Plans, CEF TEN-T etc.)

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

International financial institutions (IFI) require strict conditions to be met for funding. This includes that the infrastructure related modules of national cycling plans are well-structured in line with IFIs' requirements, as well as all relevant data and information regarding new cycling infrastructure projects are available. Ministries and agencies responsible for funding bicycle infrastructure projects (or raising national funds for this purpose) shall contact IFIs and other donors in order to make them aware of the national plan and organise capacity building workshops with the main objective of presenting their projects to the IFIs. The organisation of bilateral meetings between country/region/city representatives and IFI experts for specific projects might be useful for smooth cooperation. The same applies to capacity building workshops for countries/cities 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).

A good example for funding schemes is the one of the European Investment Bank (EIB) for urban mobility projects. EIB's criteria for providing loans to transport infrastructure projects include 'climate-friendly', 'sustainable and safe' and 'innovative' character. Promotion of cycling (and pedestrian) networks is explicitly mentioned as a relevant type of urban mobility investments to be funded. The cooperation through knowledge transfer events may be illustrated by the following workshops:

- 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 (photo: https://unece.org/financing-transport-infrastructure)
- 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

Action 7.4: Raise awareness for the high total benefits of investments in cycling infrastructure

Guidelines for planning and assessing infrastructure projects usually do not or not fully consider the benefits of cycling. Strong efforts have recently been dedicated to understand the diverse and complex benefits of active mobility, particularly cycling, in many aspects (health, well-being, climate, economy, etc.). Governments are therefore advised to include these benefits into decision-making tools (such as economic appraisal methods, e.g. cost-benefit analysis) and ensure there use in future projects. They are expected to raise awareness about the need for cycling related data (health condition, economic advantages, etc.) and encourage the monitoring and collection of data through national protocols and financing (e.g. staff, software). It is necessary to adapt national guidelines to include cycling related benefits for project appraisal and set rules to make the use of these guidelines mandatory for projects before applying for funding.

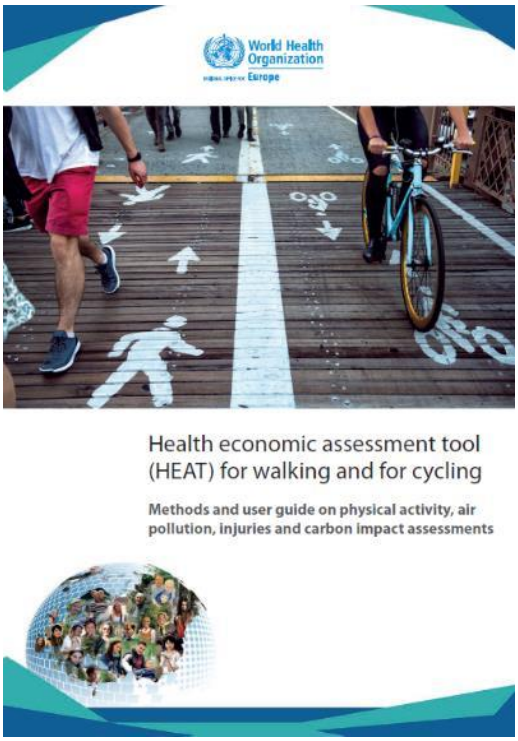


Figure 22: Health Economic Assessment Tool (HEAT)

WHO may expand its Health Economic Assessment Tool (HEAT), 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).

The Danube Cycle Plans project dedicated efforts to update current cost-benefit analysis techniques by a deeper consideration of cycling-related benefits. This has not only been summarized in a report but its first application was presented as part of an investment plan for better bicycle infrastructure in the Danube region.

8. INCENTIVES

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.

Action 8.1: Introduce fiscal incentives for cycling

Besides investment in cycling infrastructure and promotion activities fiscal incentives can facilitate the shift to cycling. Typical incentives could be (increased) mileage allowance for commuting to work by bicycle and bicycle business trips (payment or tax bonus), income tax reduction for the purchase of company bicycles, exception from tax on the use of company bicycles (job bike models). The role of the national level would be to change existing and/or create the necessary new laws and regulations and to set up funding schemes, secure financial resources, develop clear funding guidelines and to provide proper management structures in cooperation with the responsible institutions on the local and regional level.

Figure 23: Job-Bike © SVLuma - Fotolia.com

There are almost 300 tax-incentive and purchase-premium schemes for cycling across Europe offered by national, regional and local authorities to make it attractive to cycle more and drive less. While many incentives in Europe were already introduced in the last decade, the number of schemes has increased significantly since 2019. (ECF website -European Cyclists Federation: “Money for bikes: Tax incentives and purchase premiums for cycling in Europe” https://ecf.com/resources/financial-incentives.

Action 8.2: Provide communities, companies and consumers with financial support for the purchase of bicycles

Funding schemes for bicycle purchase support communities, companies and consumers and accelerate the penetration of the market with new types of bicycles like pedelecs, folding bikes or (e-) cargo bikes. These activities can support the modal shift to cycling for additional user groups and travel purposes.

The responsible authorities supported by specialized funding agencies should set up funding schemes, secure financial resources, develop clear funding guidelines and to provide proper management structures. Cooperation with the bicycle industry proofed to be beneficial for both sides.

There is a broad variety of funding schemes around Europe, once again to be found in ECFs overview: https://ecf.com/resources/financial-incentives. Some of these are being administered in cooperation with bicycle trade and industry (private public partnerships).

9. RESEARCH & DATA

In spite of growing scientific interest in active mobility, there is a lack of reliable statistical data to prove, quantify and compare the benefits resulting from more people cycling. Today, sources of statistics vary significantly from each other and thus reduce their credibility. This is 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. Data on cycling may help researchers of the Danube region find good solutions to challenges in mobility and provide decision-makers and planners with proper tools to make transport systems, incl. networks and services, more efficient and sustainable in these countries.

Action 9.1: Provide adequate and reliable statistical data for monitoring the level of cycling

The activities of the Danube Cycling Strategy should result in higher shares of bicycle usage in the countries of the Danube region. For monitoring the impact of actions implemented it is necessary to collect comparable and reliable data before and after the interventions. Based on an evaluation of the existing data on regional, national, EU and pan-European level a minimum set of indicators should be defined. A suggested minimum set of indicators would be e.g. modal share of cycling or the frequency people use their bicycles, kilometres cycled/capita and year or minutes spent cycling on a typical day, the annual number of cyclist fatalities per kilometre cycled. To get better data in the long term, it is crucial that surveys in the Danube region are done in a harmonized way, meaning regularly, with the same methodology so that data can be compared over the years. Initiatives aiming at harmonized data collection efforts on the level of EU (through Eurostat) should definitely be supported. In addition the responsible national authorities should support already existing data collection efforts and provide national input data to existing database (for example use UNECE Database questionnaire to issue national cycling data).

Figure 24: Bike counting station in Vienna © Umweltbundesamt/B. Groeger

An interesting good practice example is the Danish National Travel Survey Transportvaneundersogelsen covering 365 days a year. France on the other hand combines two types of data collecting on the national and local level: a general mobility survey (the last was 2018) and the annual updated traditional population and housing census, in which some questions about commuting and bicycle use have been introduced since 2015. https://www.insee.fr/fr/information/2555376; https://www.insee.fr/fr/statistiques/2555735. "Mobility in Germany", Germany's nation-wide mobility survey has a special analysis on cycling and walking.

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

Another good example is BKK (Centre for Budapest Transport of the Municipality of Budapest) that provides transparent, up-to-date figures about cycling by issuing monthly reports on cycling traffic since July 2021, publishing daily data of four bicycle counters since January 2017 (Figure 25) and daily no. of journeys by the urban bike-sharing system MOL Bubi since May 2021.

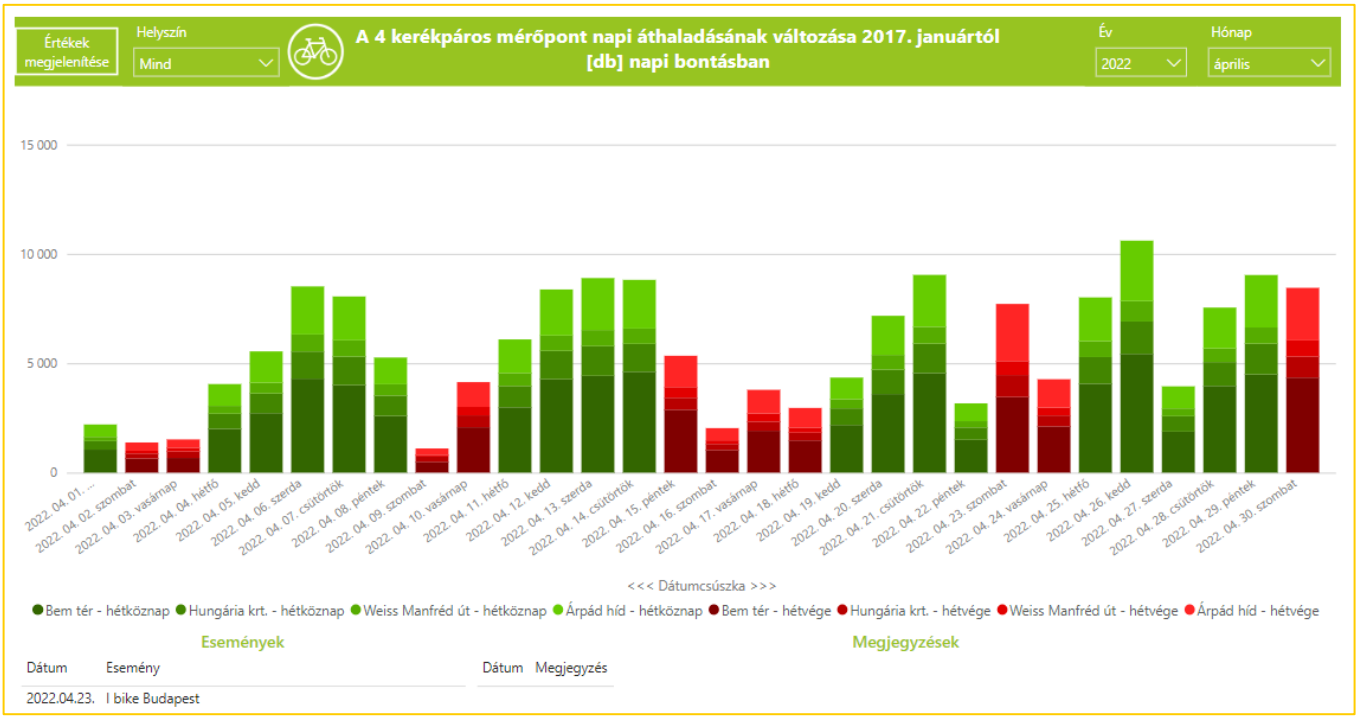


Figure 25: Data of four bicycle counters in April 2022 in Budapest. Source: https://bkk.hu/hirek/forgalmi-adatok-diagramok/kerekparos-meropontok-adatai/ (accessed 28 October 2022)

Action 9.2: Facilitate and incentivize research in cycling

Researchers play a key role in understanding how cycling (and other forms of active mobility) may contribute to reach mobility-related objectives and targets, such as tackling negative externalities of motorized road traffic (pollution, congestion, etc.) mainly in urban contexts, energy shortage, equity issues, etc. It is of utmost importance to reveal how travel behaviour may be affected, e.g. how and why would people shift from other modes to cycling. Extending knowledge about tourism trends and determinants of individual decisions about leisure activities may also be addressed by the scientific community. Countries of the Danube region are different not only in their mobility cultures but also in their research agendas. However, cooperation of individual researchers, research groups or centres, as well as national authority responsible for research policy may contribute to understand not only differences but also common patterns and interests in promoting active mobility and tourism, as well as effects of the related measures on national and regional level. For that, it is expected that national governments (e.g. in their annual budgets) and transnational programmes (e.g. by Interreg cooperation programmes and European scientific funding programmes, such as Horizon Europe) dedicate efforts and financial means to scientific work in these topics. Strengthening the scientific excellence and cooperation in this macro-region may help finding tailor-made solutions taking into account specific socioeconomic contexts, policy-making procedures, as well as cyclist and cycle tourist profiles and attitudes.

Due to the spread of intelligent transport systems, data-based research has become increasingly relevant with regards to cycling: e.g. smart bike-sharing systems, online trip planner and tracking applications, automated bicycle counters, mobility-as-a-service tools are providing a large volume data about the use of bicycles.

Responsible authorities may ensure their public availability and integration into planning and particularly into research, to make plans and recommendations for decision-makers better based on actual and reliable information about cycling.

GO BEYOND…

The Danube Cycling Strategy is summarizing the findings of the Danube Cycle Plans project formulating actions to be taken in order to achieve the overall objective of having more people cycling in the Danube region. In spite of ambitious efforts, this project could not touch plenty of relevant issues related to the promotion of cycling in the Danube region. In this point, we provide a quick insight into some topics we identified as relevant for further work by the countries and therefore may be considered by international cooperation programmes as a theme for future funding opportunities.

Tourism

Considering that cycle tours are extremely popular in most European countries, large portions of the cycling infrastructure was specifically built for leisure and tourism, and a wide range of services (accommodation, restaurants, bike rental, etc.) are specifically addressing cycle tourists, policies and actions for the promotion of cycle tourism are essential. The Danube region, with its varied cultural and geographical context, has high potentials to provide attractive cycle tourism products and services. Donauradweg, a section of EuroVelo 6 in Germany and Austria has traditionally been one of the top destinations by bicycle in Europe.

As part of its general objective to make more people cycling in the Danube region, this strategy has implicitly identified several steps to be taken for the promotion of cycle tourism, such as developing cycle route networks or strengthening the cycling culture. It is recommended, however, to dedicate attention and efforts to specific challenges related to cycle tourism development in the macroregion. In the Pan-European Masterplan for Cycling Promotion and the Danube Cycle Plans project, the following tasks have been identified to provide framework conditions that push cycling tourism in the Danube region forward:

- Establishment of national cycling tourism coordination centres
- Strengthening cooperation with tour operators and tourist agencies for the improvement/development of cycling travel products (e.g. Amazon of Europe project)
- Definition and implementation of national and/or transnational cycle-friendly service schemes
- Provision of national and/or transnational guidelines for the signalization of cycle route networks taking into account EuroVelo signalisation standards
- Supporting the integration of relevant information (routes, bike parking, public transport, bike rental, etc.) into the relevant channels used by cycle tourists in the Danube region.

Bicycle and public transport

The combination of cycling with public transport is a solution which can help to compete with the private car not only on short but also on mid-range and long distance trips. Adequate services to facilitate multimodality (bike parking, bike rental, bike sharing, folding bikes, bike carriage on ferries, trains and buses, etc.) need to consider the requirements of everyday cyclists as well as tourism cycling. In order to make sure that the limited budget resources are best used, it is necessary to develop a bike+ride strategy/action plan for the Danube region as well as toolboxes for the implementation of the relevant services. These activities should at the one hand be based on a sound analysis of the users' needs and on the other hand provides hands-on experiences from implementing pilot services in the region. Cooperation with railway companies, public transport companies and national or regional transport companies will be of crucial importance for this recommendation.

In times of energy crisis, the combination of bicycles and public transport shall be in the focus of mobility strategies and therefore an international cooperation might ensure that not only the local or regional criteria of commuting traffic but also the long-distance travelling of tourist are taken into account. In the Danube region, public transport networks, services and the mobility culture developed from the same roots in the 19th century, thus the countries may face similar challenges when addressing the topic of bike+ride as an alternative to the use of individual motorized modes. To achieve this, national, regional and local authorities, public transport operators, national or regional transport companies shall cooperate and set the scene for future tasks (e.g. ensuring the adaptation of infrastructure and vehicles and interoperability of services to increase the use of bicycles in intermodal trips).

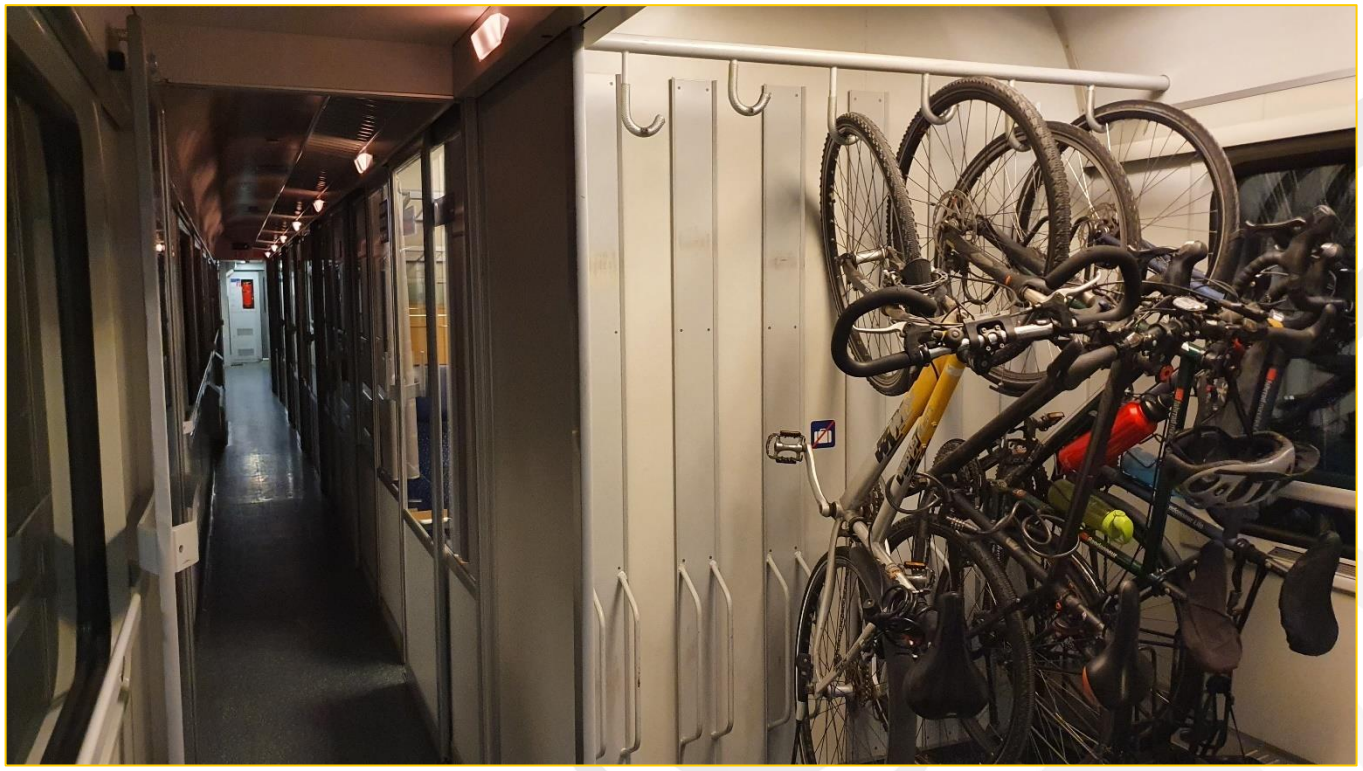


Figure 26: Example for bike carriage on night trains © Verracon

Figure 27: Example for bike+ride using folding bikes in Austria © BMK/Alexander Haiden

Good practices examples for everyday cyclists can most easily be found in the Netherlands where almost 50% of passengers in trains came by bike to the railway station. For cycle tourism, there are good examples from the Danube region including Slovakia, Hungary and Austria.

Liveability

Bicycle has been a symbol of freedom for decades. In the context of the 21st century, this is not anymore referring only to the people but also to the city where the use of bicycles has been gaining popularity. More attention dedicated to pro-cycling measures make the use of urban streets less dependent on the needs of motorized vehicles (dedicated lanes, parking places, traffic signs, posts and fences to prevent collision with pedestrians, etc.). Bicycle promotion has clear positive impacts on the liveability of neighbourhoods, as outcomes of cycling-friendly transformation of streets are more green areas and more space for leisure activities (such as, meeting points on street or restaurants with terraces), with less air and noise pollution and congestion. Previous studies indicate that increasing the share of walking, cycling and other micro-mobility options are beneficial to local businesses, too.

Pro-cycling measures are intrinsic elements of current planning approach to make cities more sustainable, strongly related to the implementation of Sustainable Urban Mobility Plans on the basis of common guidelines throughout Europe. In light of the ambitious efforts of the EU member states to have at least 100 climate-neutral cities by 2030, further efforts shall be dedicated to properly identify the role of cycling in this transition. The following list is incomplete but provides an insight into what shall be done to properly exploit benefits of cycling, particularly in the urban-suburban context:

- Include cycling in all policies, campaigns and actions promoting active mobility and tourism
- Take cycling into consideration when planning climate-neutral cities
- Make sure that cycling related aspects are considered in the redistribution of public spaces
- Raise awareness about the significance of cycling in healthy and sustainable lifestyles
- Develop Sustainable Urban Mobility Plans
- Encourage research into the role of cycling in making cities more liveable
- Support co-creation to find tailor-made solutions to urban mobility challenges

Figure 28: Pedestrianisation in Ljubljana (c) Verracon

SUMMARY OF ACTIONS

Action		Horizon of implementation	Contribution to objective*	Average priority for Danube countries**	Expected transnational impact**
1.1	Develop (and/or update) and implement a national cycling plan	Devel.: short Impl.: long	O2, O5, O7, O8, O9	8,11	5,67
1.2	Form and maintain continuous cooperation of strong (national) cycling working groups and appoint a national cycling officer	short	O1, O5, O7, O8, O9	7,67	6,11
1.3	Support the implementation of the Danube Cycling Strategy by installing a Danube Cycling Working Group	short	O1, O7, O9	3,22	8,11
2.1	Establish knowledge centres for the training of professionals and enhancement of skills on national level and support the work of transnational knowledge centers	Medium	O1, O2, O3, O4, O6, O7, O8, O9	4,78	6,00
2.2	Provide meeting and exchange formats on new developments in the promotion of cycling	Short	O3, O4, O6, O7, O8, O9	4,89	5,33
2.3	Establish training and education programmes for cycling in the Danube region	Medium	O1, O2, O4, O6, O8, O9	3,11	5,56
3.1	Launch campaigns to promote cycling for daily commuting and leisure purposes	Short	O2, O9	5,33	3,44
3.2	Promote cycling by using role models	Short	O2	3,78	3,33
3.3	Support training offers to enable various target groups to develop cycling skills	Short	O2, O4, O6	2,67	1,67
4.1	Coordinate the definition, establishment and maintenance of the DanuVelo Network and the national cycle route networks	Definition: short Establishment & maintenance: long	O2, O3, O4, O6, O9	5,00	7,89
4.2	Ensure that implementation of signalization is following national and European standards	Long	O2, O9	3,67	5,00
4.3	Provide qualitative and reliable information on cycle routes	Medium	O2, O9	5,44	6,44

5.1	Implement cycling friendly standards and regulations	Long	O1, O2, O3, O4, O6, O8, O9	5,33	4,56
6.1	Strengthen focus on cyclists needs in Road Safety Audit procedures	Medium	O6	n.a.	n.a.
6.2	Adopt the global 3-star or better infrastructure campaign for cyclists	Medium	O6	n.a.	n.a.
6.3	Define clear responsibilities to ensure the maintenance of cycling infrastructure	Medium	O6	n.a.	n.a.
7.1	Elaborate national cycling investment plans	Short	O2, O5	6,00	4,56
7.2	Set up funding schemes to support local or regional authorities	Medium	O2, O3, O4, O9	6,44	3,67
7.3	Access funds on international level to generate additional budgets for the promotion of cycling (EU Recovery and Resilience Plans, CEF TEN-T etc.)	Medium	O1	6,33	6,67
7.4	Raise awareness for the high total benefits of investments in cycling infrastructure	Short	O1, O4, O7, O9	4,89	5,44
8.1	Introduce fiscal incentives for cycling	Medium	O2	4,22	2,00
8.2	Provide communities, companies and consumers with financial support for the purchase of bicycles	Medium	O2, O9	3,67	2,22
9.1	Provide adequate and reliable statistical data for monitoring the level of cycling	Medium	O1, O4, O5, O6, O7, O9	5,44	6,33
9.2	Facilitate and incentivize research in cycling	Medium	O1, O2, O3, O4, O5, O6, O8, O9	n.a.	n.a.

* Contribution to objective: referring to the objectives defined in chapter Vision and objectives.

** Average priority for Danube countries and expected transnational impact: to calculate this value each country had the possibility to prioritise the different actions by allocating 100 points over all actions. Maximum amount of points given to one action was 10.

RESOURCES

Resources are fundamental for the implementation of each strategy. For the Danube Cycling Strategy different kinds of resources are necessary:

- **Financial resources** emphasize the fact that nothing can be done without the necessary money. Provide sustainable investment and efficient funding mechanisms.
- **Human resources** emphasize the fact that nothing can be done without adequate manpower.
- **Existing knowledge** considering that there is a lot of know-how and experience on different topics available within and outside of the Danube region

Financial Resources

To achieve modal shift towards cycling, investment in infrastructure and promotion is needed. However, cycling is rarely valued as an equal mode of transport or included in national investment plans. Ensuring the allocation of sufficient budgetary resources should be an integral part of any strategic document aiming at the promotion of cycling. Experience shows that a sustained minimum level of investment is a prerequisite for significant improvement in cycling conditions. Financing should be provided at all administrative levels in order to foster the implementation of cycling measures and guarantee the maintenance of infrastructure.

As an outcome of the Danube Cycle Plans project the rough costs for the implementation of the DanuVelo cycle route network were estimated. This rough estimation is accomplished with a more detailed investment plan for EuroVelo 6, an extension of the traditional Cost-Benefit Analysis (CBA) methodology to be more precise with the estimation of cycling infrastructure and the results of an application of this CBA for a selected cross-border infrastructure section along EuroVelo 6.

The calculation is based on the highest level of National Cycle Route Networks defined by the project partners, their current infrastructure conditions (four categories: Good enough cycling infrastructure, Adjusting Existing Adequate Roads, Construction improvement needed for existing service, forest and field roads and New cycling infrastructure needed) and an estamation of current costs for creating cycling infrastructure for each country.

The necessary amount of founding needed to complete the DanuVelo network has been estimated to be 5,2 billion €.

Out of the amount the investment necessities of the EuroVelo 6 route (running from the Atlantic Sea to the Black Sea) in the Danube region, i.e. for its section from Austria to Romania along the river Danube have been estimated to be around 438 million €.
An upgrade to cost-benefit analysis (CBA) methodology has been proposed that takes into account benefits that are specific to cycling and not mentioned in the traditional methodology, like health benefits of regular cycling, the value of safer environment for cyclists, or the less parking space needed in urban environments. By missing out on these benefits, the real value of these cycling projects can be underestimated, leading to less-than-optimal funding.

It has to be mentioned that these amount only cover the costs for the highest level of cylcing infrastructure.

Examples from all around Europe show that depending on the level of cycling 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.

For the approx. 74 million people living in the nine participating countries an ambitous estamiation of necessary spending would be 740 million € up to 1,85 billion € per year.

To get a more profound estimation of necessary investments in cylcing countries are recommended to elaborate National Investment Plans (see Ation 6.1).

Human Resources

Many examples show that, in addition to political will and the corresponding financial resources, a clear organizational structure with a sufficient number of qualified staff is required to promote cycling. The necessary projects cannot be implemented without the appropriate human resources. As a result, the available funds cannot be fully accessed due to a lack of sufficient planning maturity for the necessary projects.

Existing knowledge

Besides the necessary human, financial resources it needs to be mentioned that you do not have to start from scratch. You can draw on a wealth of literature to find answers. Especially the following documents should be taken into consideration:

- Recommendations from the **Pan-European master plan for cycling promotion** adopted by 46 ministers from 41 countries in Vienna, May 2021.
- The **toolbox of best available practices** from the countries of the pan-European region elaborated by the members of THE PEP Partnership Active Mobility
- Fact sheets that were elaborated in the **Central MeetBike (CMB)** project which was implemented in the CENTRAL EUROPE programme in 2011-2014. The Czech partner was one of the project partners in CMB, but as a student at that time.
- **EU Cycling Strategy**. Recommendations for Delivering Green Growth and an Effective Mobility in 2030[24].
- **Existing National Cycling Strategies and Plans**: ECF recently elaborated a report on the state of national cycling strategies and plans in Europe. This report can be found here. https://ecf.com/system/files/The_State_of_National_Cycling_Strategies_2021_final_0.pdf

[24] https://ecf.com/eu_cycling_strategy