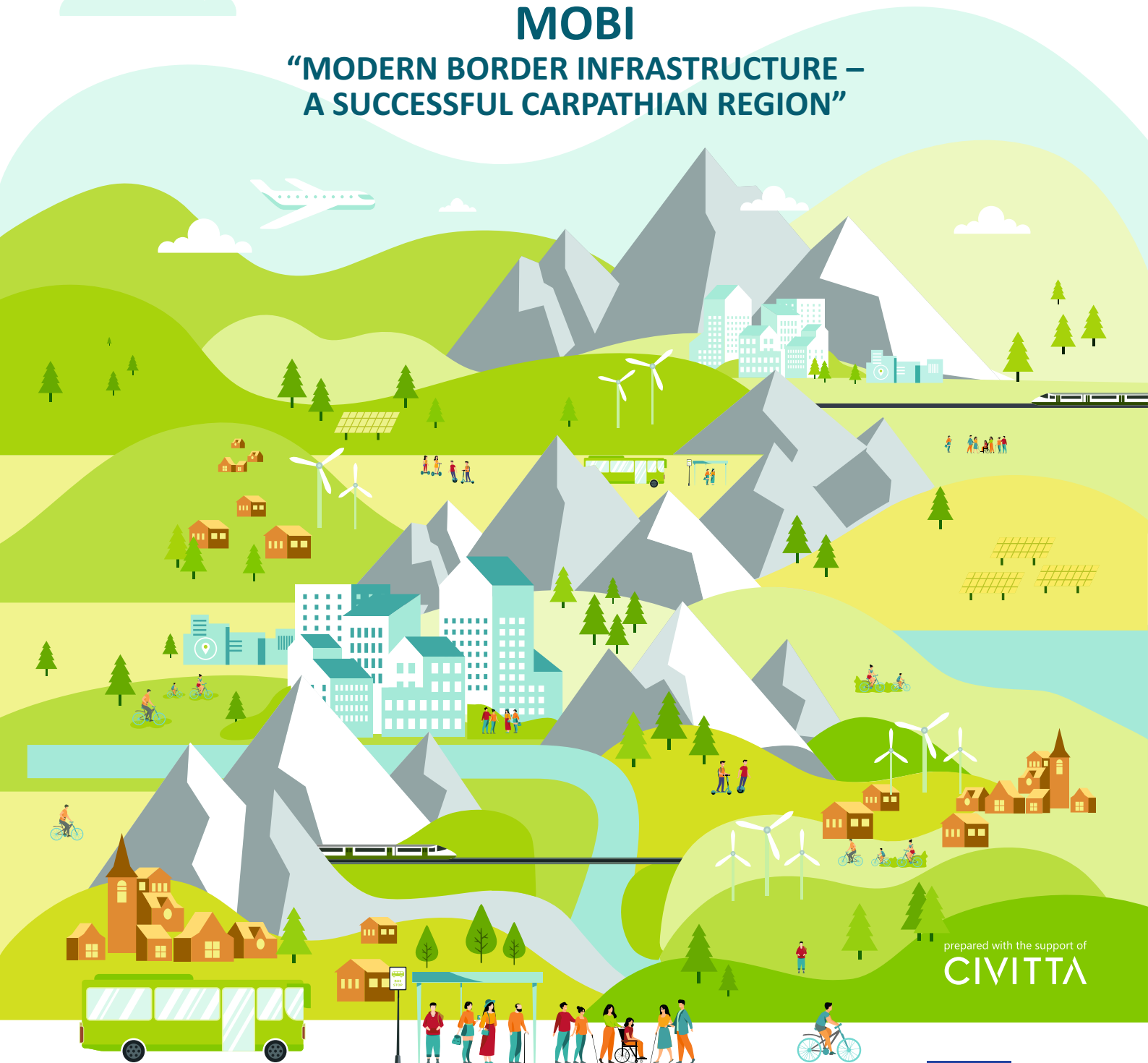




CROSS-BORDER MOBILITY PLAN FOR THE HUNGARY, SLOVAKIA, ROMANIA AND UKRAINE CROSS-BORDER REGION

MOBI “MODERN BORDER INFRASTRUCTURE – A SUCCESSFUL CARPATHIAN REGION”



prepared with the support of
CIVITTA

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2

MOTIVATION

This document aims at **improving the flow of passengers and goods** while greatly supporting **sustainable mobility patterns** within the Hungary-Slovakia-Romania-Ukraine cross-border region including following administrative unites: Szabolcs-Szatmár-Bereg county (HU), Košice and Prešov regions (SK), Maramureş and Satu Mare counties and the oblasts of Zakarpattia, Ivano-Frankivsk and Chernivtsi. The territory comprising these eight administrative unites will be further referred to as **“cross-border region”** in this document.

The Cross-Border Mobility Plan is a synergy but also a corelation of the individual, county level mobility plans developed within or in parallel with the MOBI project (Modern Border Infrastructure – successful Carpathian Region – financed by ENI CBC Programme Hungary-Slovakia-Romania-Ukraine 2014-2020).

The MOBI project is implemented by international consortium, which includes regional self-government bodies and professional institutions, namely: International Association of Regional Development Institutions “IARDI” (Ukraine), Self-Government of Szabolcs-Szatmár-Bereg (Hungary), Košice self-governing region (Slovakia), Maramureş County Council (Romania), Territorial Administrative Unit of Satu Mare County (Romania) and Road service in Zakarpattia oblast (Ukraine).

The aim of the project is: to create a sustainable platform for effective cross-border mobility of people and goods by improving transport and border infrastructure, strengthening cooperation between governments and professional organizations aimed at developing transport links in the border regions of Ukraine, Romania, Slovakia and Hungary. The project envisages the development of a joint Mobility Plan, which will include regional plans of each border region in the field of transport and border infrastructure, development of railway services, international air services, etc.

Expected achievements: the project plans to provide a strategic approach to sustainable and efficient development of transport and border infrastructure by developing several feasibility studies and implementing a pilot infrastructure project in Ukraine, namely reconstruction 4.350 km of bicycle road. As a result of the project, the mobility of goods and businesses will be increased, and due to economic development and improved infrastructure, the number of tourists and visitors to the border regions is expected to increase too.

The Cross-Border Mobility Plan is developed in the difficult context, given the Russian invasion, that brought significant changes in the flow of goods and persons. At the same time, this war catalyzed a number of transportation aspects of the global energy, food, and ecological-climatic crisis, as well as the demands for military mobility. This strategic document is not only focusing on the links between the wider European territory and the cross-border region, and how they have to adapt to the new mentioned transport patterns, but is looking especially at the interregional flows aiming to improve cross-border cooperation to foster territorial cohesion, sustainable economic growth and a better quality of life.



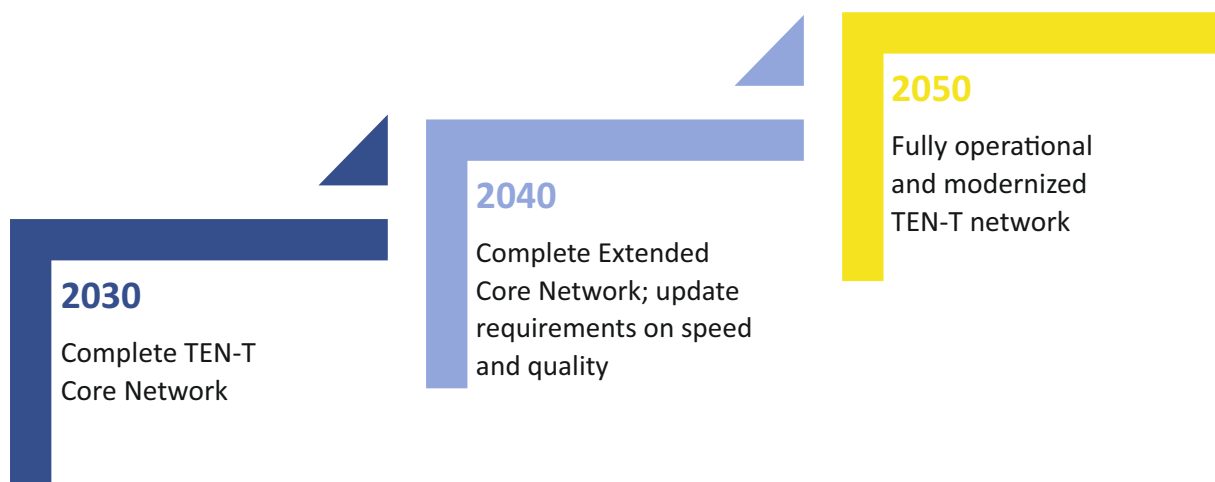
3

STRATEGIC CONTEXT

The European TEN-T network has a vital role in improving passenger and freight transport flows in and across Europe, being the backbone of the European transport sector. The latest revision of the TEN-T network, from July 2022, includes amendments to improve and extend connections to some third countries (i.e., Ukraine, Moldova) and diminish the interest for improve connections with others (i.e. Russia and Belarus).

The network is composed of 9 thematic corridors (see map) which ensure east-west and north-south connections throughout Europe. Each thematic corridor is composed of individual road, railway and inland waterways corridors, together with corresponding ports, airports and rail-road terminals. The TEN-T network is composed of 2 layers, the Core network (also including the extended core network) which represents the most important nodes and links of the trans-European transport network, and the Comprehensive network, a Europe-wide network ensuring the accessibility and connectivity of all regions in the Union, including the outermost regions and remote areas. The deadline for finalizing the whole TEN-T network is 2050, with intermediary milestones in 2030 and 2040 (see table) and these developments are expected to lead to a 0.4% reduction of GHG emissions and a 2.4% increase in GDP by 2050.

FIGURE 1 TEN-T DEVELOPMENT TIMELINE



At European level, the TEN-T network is complemented by the **EUROVELO NETWORK**, which is an extensive network of long-distance cycling corridors connecting multiple countries. Cycling has not been fully integrated into the TEN-T network's guidelines during the 2021 update, therefore the EuroVelo represents the main European network for alternative modes of transport, encompassing 17 corridors and 45.000 Km at the moment. The network is envisioned to reach 90.000 Km once fully implemented. These corridors have the potential to be a backbone for national and local cycle routes or networks, while also being an attractive brand for cycling tourism in Europe.

³The nomenclature of territorial units for statistics is a hierarchical system for dividing up the economic territory of the EU and the UK for the purpose of: the collection, development and harmonisation of European regional statistics, socio-economic analyses of the regions and Framing of EU regional policies (source: <https://ec.europa.eu/eurostat/web/nuts/background>).

The **PARIS AGREEMENT** is a legally binding international treaty on climate change, adopted at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. The main scope of the agreement is to maintain the global temperature increase “well under” the 2°C limit and to maintain efforts for limiting the temperature increase to 1.5 °C, compared to pre-industrial values. Building upon the key aspects of this agreement, the EU developed the **EUROPEAN GREEN DEAL**, a new European level strategy for ensuring sustainable development. It focuses on fostering development based on green technologies and sustainable solutions in order to reach the objective regarding climate neutrality by 2050. The pact identifies a series of main challenges for the following decades, such as: clean energy, sustainable industry, construction and renovation and sustainable mobility. Most relevant for the Cross-Border Mobility Plan are the measures and targets set for mobility, i.e. reducing transport related GHG emission should be at least 90%, compared to values from 1990, in order to significantly contribute to climate neutrality.

From the perspective of the European Green Deal (EU 2019) and the Paris Agreement (2015), transportation is one of the main drivers of global climate change. The statement made by the EU Transport Commissioner A. Vălean on the day of the announcement of the European Green Deal on December 11, 2019, emphasizing the need to shift long-distance passenger and freight transport from roads to rail and waterborne transport using multimodal technologies, is of fundamental importance for MOBI. This is crucial for the MOBI project area as it is the zone with the highest overheating among all areas of compact living on the planet, which has been observed over the past decade.

The **SUSTAINABLE AND SMART MOBILITY STRATEGY** has been launched by the European Commission in December 2020, aiming to guide the way in which mobility should be developed at European level, particularly taking into account the effects of Covid-19 on mobility and the corresponding needs resulting from the pandemic. The strategy is complemented by an Action Plan composed of 82 initiative meant to guide mobility planning in the following years. The core objectives of the strategy are sustainability, intelligence and resilience, all following the corresponding mobility related objective of the Green Deal. The strategy proposed 3 pillars for achieving the ambitious objective: i. All transport vehicles to be more sustainable; ii. Sustainable alternatives to be made widely available in a multimodal transport system; iii. Incentives to be developed in order to support the envisioned transition.

These three objectives work and support each other in order to shape a green, connected, automated multimodal and accessible mobility, while also using the crisis created by the Covid-19 pandemic as a means of accelerating the modernization and decarbonisation processes of the entire transport system and mobility, until the year 2050. In order to reach this result, several targets and milestones have been included in the strategy:



By 2030:

- At least 30 million cars with zero emissions in operation on European roads
- 100 climate neutral European cities.
- High-speed rail traffic doubled across Europe.
- Widespread automated mobility.
- Zero emission marine vessels ready for market.
- Collective transport planned for journeys under 500 km must have carbon neutral emissions.

By 2035:

- Large zero-emission aircraft ready for the market.

By 2050:

- Almost all cars, trucks, buses and heavy duty vehicles to be zero-emission vehicles.
- Rail freight traffic doubled.
- The multimodal, fully operational TEN-T (Trans-European Transport Network) for sustainable and intelligent transport with high-speed connectivity.

The **THREE SEAS INITIATIVE (3SI)** is a politically inspired, commercially driven initiative for improving connectivity between twelve EU Member States located between the Baltic, Adriatic and Black seas. The initiative was proposed starting with 2014, due to a shared interest in developing transport, energy and digital infrastructure connections on the EU's north-south axis. In 2022, five objectives for the 3SI are established, with one of them focused on Reliable, sustainable and inclusive connectivity, particularly dedicated to the creation of smart solutions for data exchange and a more efficient and secure use of connectivity networks in the transport, energy and digital sectors. Additionally, in 2019 the Three Seas Initiative Investment Fund has been introduced, a commercial fund targeting critical infrastructure investment, which accelerates economic development, improves connectivity and cooperation throughout the region. For the transport sector, the Fund supports the expansion of transport facilities and financing of new transport connections between Three Seas countries.

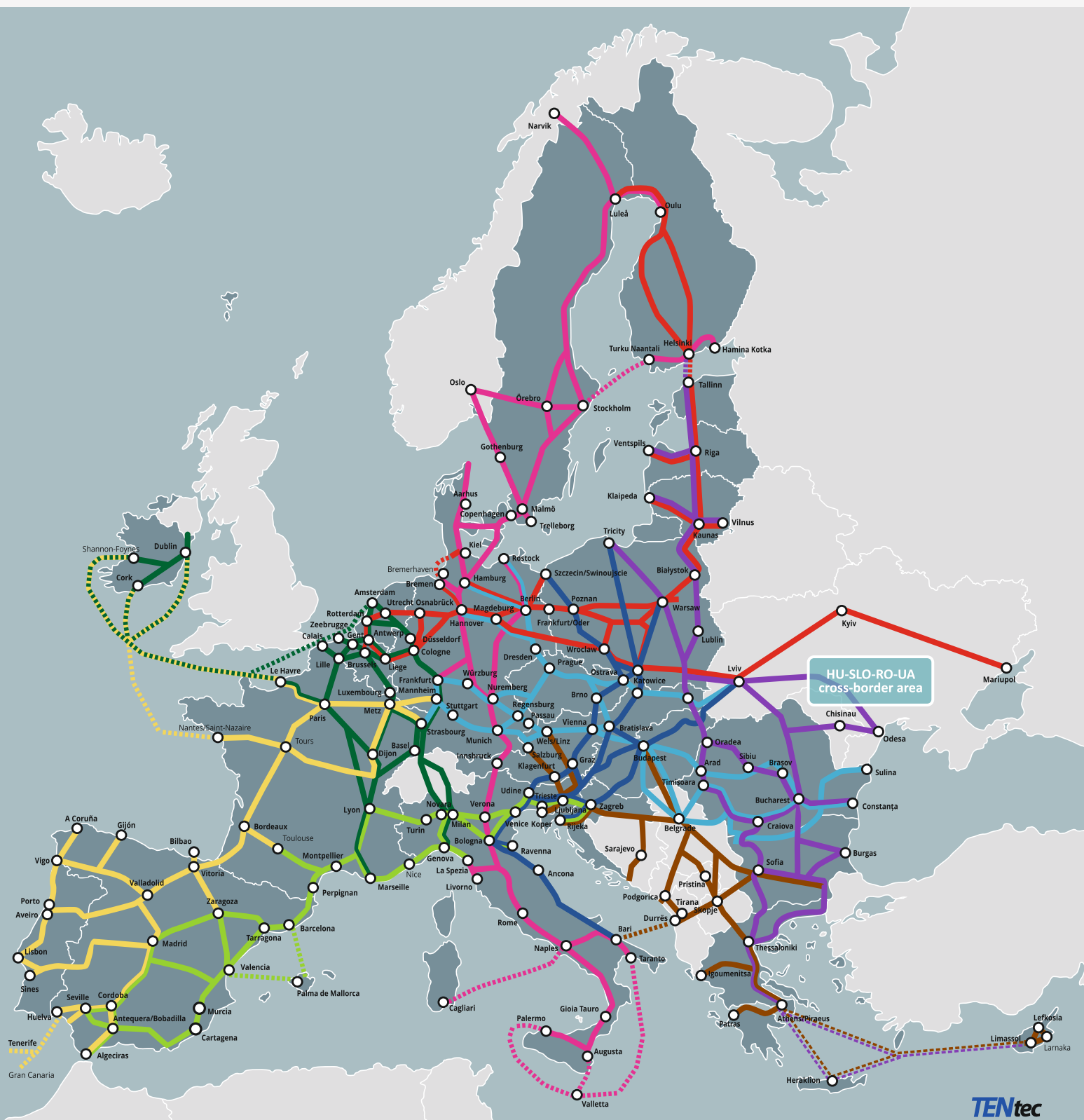
Among the most important factors influencing the formation of the Mobility Plan is the simultaneous acquisition of candidate status for joining the EU and partnership with the Three Seas Initiative (3SI) by Ukraine (as well as Moldova) in the last decade of June 2022. The 3SI includes 12 EU countries and strategic partners such as the United States, Great Britain, Germany, and Japan. In this macro-regional structure, actively developing since 2016, MOBI's main tasks fall under Priority #1, which receives over half of the investments attracted for projects in 3SI countries. Romania is currently heading the 3SI until the project is completed.

The only multi-level governance mechanism covering the whole of the Carpathian area is the Framework Convention on the Protection and Sustainable Development of the Carpathians (**CARPATHIAN CONVENTION**), adopted by seven countries in May 2003 in Kyiv, Ukraine. This convention is the second sub-regional treaty-based regime for the protection and sustainable development of a mountain region at European level. Building on the Carpathian Convention, the proposal for a **MACRO-REGIONAL STRATEGY FOR THE CARPATHIAN REGION** has been submitted in 2018 to the EC. The strategy's main objective is to strengthen the competitiveness and attractiveness of the Carpathian macro-region, based on its unique natural and cultural heritage and internal development potential. The strategy is composed of four main priority areas, one of which focuses on mobility, i.e., 3. Cohesive Carpathians: Increasing the functional accessibility of the Carpathians, particularly on initiatives to increase transport accessibility and digital accessibility and develop

mobility e-services. At the same time, the MOBI project area is located within the territory of the **PILOT EUROREGION “UPPER PRUT”**, which, by the decree of the Cabinet of Ministers of Ukraine dated February 14, 2002, No. 59-r, is responsible for “experimental development of mechanisms for cross-border cooperation as elements of the process of European integration and regional policy building”, and the first priority of which was defined in 2000 as “development of transport and communication infrastructure at the levels of trans-European corridors and local connections”. Moreover, the place of convergence of the administrative borders of Ivano-Frankivsk and Chernivtsi regions of Ukraine and Suceava county of Romania (which are part of both Euroregions - “Carpathian” and “Upper Prut”) with Maramureş County on the Ukrainian-Romanian border is located 60 km away from the aforementioned geographic centre of the European continent in Zakarpattia.

Finally, according to its historical purpose, confirmed in two World Wars, connectivity through this cross-border region, which was previously developed within a single state, is also important for ensuring military mobility. The territory of the MOBI project (where the geographical centre of the European continent is located alongside the railway crossing the Ukrainian-Romanian border in Dilove-Valea Vişeuului) is completely within the scope of the **EU STRATEGY FOR THE DANUBE REGION (EUSDR)** and the Central European Initiative (CEI - the headquarters of the V Pan-European Corridor, which crosses this region, is located in the CEI Secretariat in Trieste, whose countries signed the Ministerial Declaration “Towards Sustainable Transport in the CEI-Countries” in 1999). Moreover, the objectives and tasks of MOBI fully fall under priority 1b of the EUSDR (road, rail, and air transport), and its Supervisory Group, which includes representatives of all participating countries in MOBI, has developed relevant reviews to identify perspectives and development tasks for these transportation systems¹.

EUROPEAN TRANSPORT CORRIDOR



- ATLANTIC
- SCANDINAVIAN - MEDITERRANEAN
- MEDITERRANEAN
- NORTH SEA - ALPINE
- BALTIC SEA - ADRIATIC SEA
- WESTERN BALKANS
- NORTH SEA - BALTIC
- RHINE - DANUBE
- BALTIC - BLACK - AEGEAN SEAS

Map as proposed by the Commission in the proposal for the revision of the TEN-T Regulation (14 December 2021-COM (2021) 812) and amended (27 July 2022 - (COM (2022) 384).

4

VISION - 2040



- A region well linked to the main EU transport framework but with efficient and sustainable internal connections.



- A network of coherent cycling routes developed along rivers, agricultural roads, roads with low traffic or even as dedicate cycling lanes linking major touristic attractions to main cities.



- A complete network of railways, mostly electrified and with travel speeds above 160 km/h on main lines.



- A vast network for rivers, an ecological backbone of the region – used for freight, touristic shipment and cycling tourism.



- A network of motorways and safe express roads lining major cities.
- A vast network of “complete”* county roads linking remote areas to main urban nodes and local cities.



- A network of regional airports with good access to EU gateway airports and with intra regional commercial / business flights.



- Efficient border control units with a free flow of goods and persons.

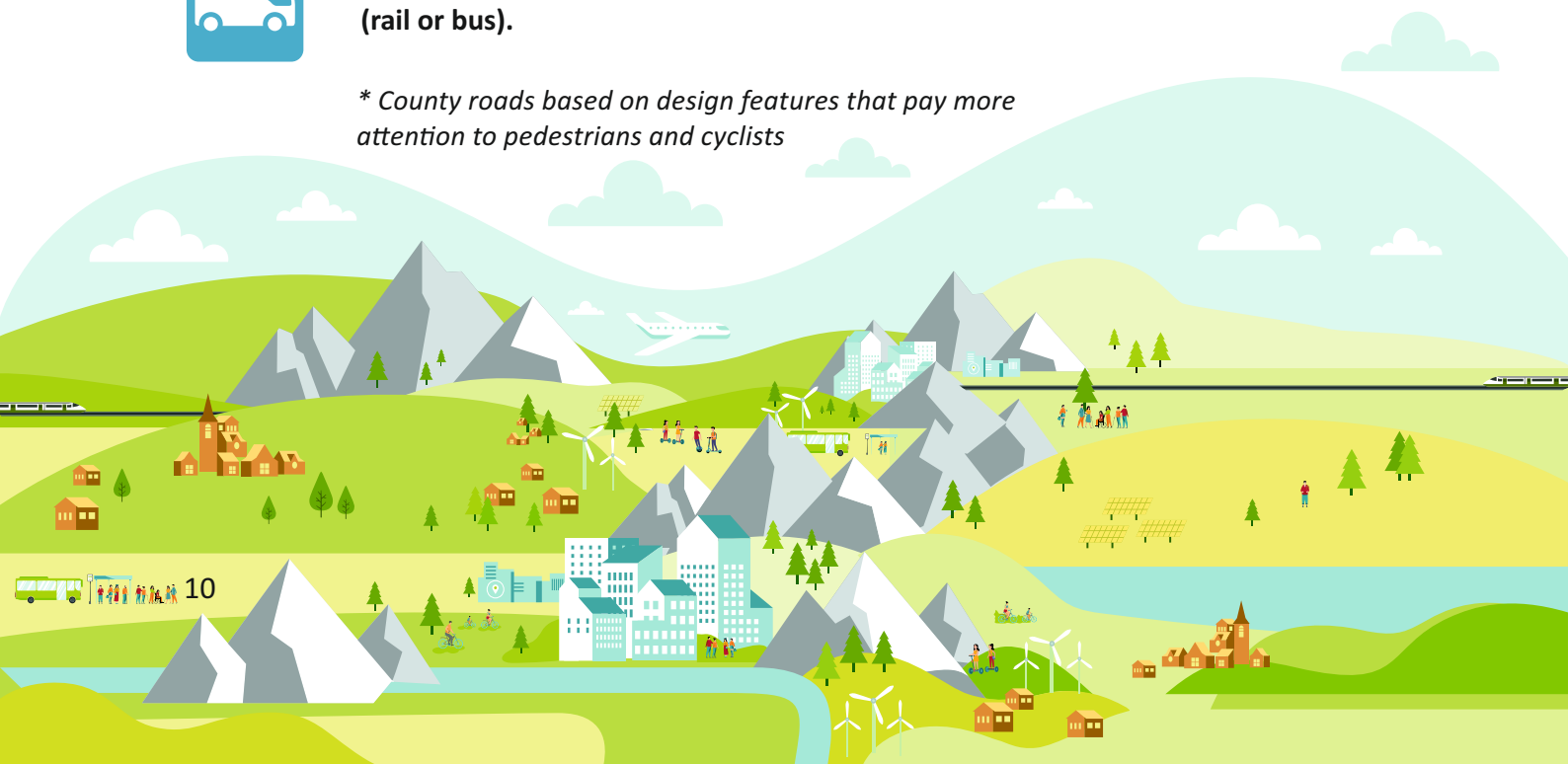


- Transition to EV- a wide availability of fast charging station along main transport corridors while cities are served mostly by zero-emissions public transport fleets.



- Most important cities benefit of coherent cross-border public transport services (rail or bus).

** County roads based on design features that pay more attention to pedestrians and cyclists*



5

ACTIVE MOBILITY (cycling and pedestrian infrastructure)

5.1. MAIN CHALLENGES

The cross-border regions is only crossed by one of the 19 EuroVelo routes. EuroVelo 11 East Europe is connecting the most northern part of Norway to Greece following a quite straight north – south direction and crossing Prešov and Kosice withing the cross-border region. The route is a several kilometres away from Nyiregyhaza. The route is functional in Slovakia and Hungary but there are still segments to be completed in Poland, Serbia or Northern Macedonia, as well as Greece.

Slovakian and Hungarian regions invested in cycling infrastructure in the last 10 years trying to build up regional cycling networks. Kosice and Prešov already have access to a large variety of cycling routes that are administered by NGO's and funded by grants. The main problem here is that these routes are not yet interconnected and fail to form a coherent network. In the case of Hungary, Nyiregyhaza is already connected to the EuroVelo 11 passing the Tokaj whine area. There are also multiple cycling roads (mostly as cycling lanes, separated from the road) connecting the cities to surrounding villages. There is even a possible connection between the Nyiregyhaza and Satu Mare (RO). As part of a cross-boder project a bicycle road has been built on the Somes dam between Satu Mare – Csenger and Fehergyarmat. As part of the MOVI project, a bicycle path with a length of 4.350 km has also been reconstructed. This will contribute to an increase in the number of tourists and visitors to the border regions of Hungary and Ukraine. The circular approach allows travelers to journey from the border crossing point between Hungary and Ukraine, namely "Tiszabecs (Hungary)-Vilok (Ukraine)," using the bicycle path that leads to the border crossing point "Velyka Palad (Ukraine)-Kishpalad (Hungary)."

The only concern in this case is the lack of cycling infrastructure within cities and villages, as between them, in most cases there are already cycle roads built. Cycling routes and cycling tourism in UA oblasts are at an early stage of development while for the case of Romanian cities they are planned to be implemented in the next 3-5 years.

Kosice and Prešov are the only cities that have a local bike sharing system while Satu Mare and Baia Mare are preparing such facilities guided by their sustainable urban mobility plans.

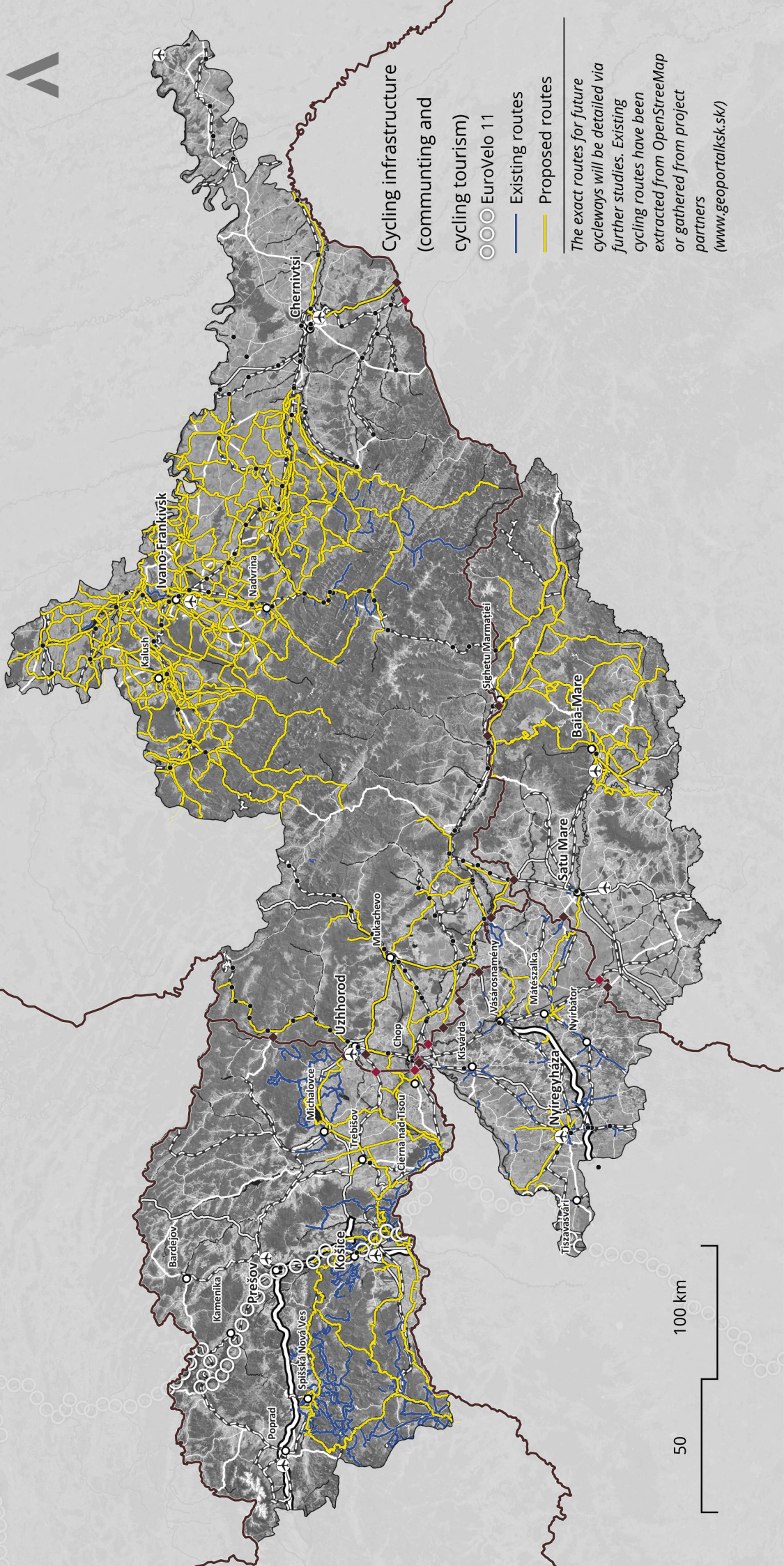


5.2. MAIN PROJECTS

- Extension of the Satu Mare – Csenger – Fehergyarmat cycling routes to a) Mateszalka b) Nyiregyhaza.
- Development of a cycling tourism and commuting network in Satu Mare council.
- Someș - Tisza Green Road (cycling routes from Chop to Satu Mare and Baia Mare (to be validated)
- Interconnection (via Kosice) of the Kosice region cycling routes
- Development of cycling routes along smaller cities in Košice region: Slovenské Nové Mesto / Sátoraljaújhely, Trebišov, Michalovce and Sobrance,
- Completion of Eurovelo 11, cycling infrastructure in Košice
- Development of bike – sharing systems in Satu Mare, Baia Mare and Kosice (Antik – private operator)
- Development of a cycling network in Zakarpattia and Chernivtsi oblasts:
- Development of a cycling route network in Maramureș county

UKRAINE

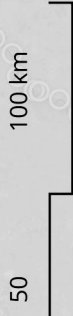
- Institutional support for the development of cycling, including the development and implementation of regulatory acts regarding the use of bicycles and their participation in traffic.
- Development of a Cycling Development Strategy and enhancing bicycle safety based on a scientific approach and considering progressive foreign experience.
- Promoting socially and environmentally oriented short-distance mobility based on the “City of Short Distances” concept and implementing the principles of intermodality to ensure optimal interaction between bicycles and other modes of transportation.
- Health connections - cycling routes in the Carpathian Euroregion. Construction and expansion of existing cycling infrastructure (cycling routes) in the adjacent border areas, together with tourism opportunities and promoting a healthy lifestyle.
- Creating bicycle paths on dams and canal embankments of the Berehiv Transboundary Polder System. Establishing bicycle infrastructure to develop tourism in rural Ukrainian-Hungarian areas based on the Berehiv Transboundary Polder System.



Cycling infrastructure (commuting and cycling tourism)

- ○ ○ EuroVelo 11
- Existing routes
- Proposed routes

The exact routes for future cycleways will be detailed via further studies. Existing cycling routes have been extracted from OpenStreetMap or gathered from project partners (www.geoportalksk.sk/)



- ▭ National border
- Populated places
 - Main cities in the study area
- Waterways
 - ▬ Lakes
- Rivers
- Transportation
 - ▬ Motorway
 - ▬ European road
 - ▬ Primary roads
- Secondary roads
- Tertiary roads
- Railways
- Railway stations
- Airports
- Cross-border points
 - ◆ Rail-crossing
 - ◆ Road-crossing

6.1. MAIN CHALLENGES

The initial development of railways through the cross-border region of the MOBI project, bypassing and crossing the Carpathians, took place in the second half of the 19th century through the intersection of historical connections of the “Silk Road” and “from the Varangians to the Greeks”, taking into account the results of the Crimean (Eastern) War. According to the initiators of railway construction in the “Danube Monarchy”, its main directions in this area were the Baltic-Mediterranean and “Trieste-Odessa”. The basis for their modern use and development is the AGTC Agreement under the auspices of the UN/ECE European Commission, which is responsible for its TEM/TER project and serves as the basis for the development of the TEN-T/RFC network of transport corridors of the EU. The key TEN-T corridor for the project is the modern “Rhine-Danube” and its connections with the corridors “North Sea-Baltic” and Mediterranean-Middle East.

The main rail transport corridors of the TEN-T network in the cross-border region follow an east-west direction connecting Ukrainian regions to central Europe and the North Sea, Eastern Europe and the Baltic Sea / Black Sea and Southern Europe and the Adriatic Sea (freight only). There are two corridors (North Sea - Baltic Corridor and Rhine - Danube Corridor) converging towards Lviv and continuing to Kyiv and Odesa (port) or Ivano Frankivsk – Chernivtsi – Suceava – Constanța (port).

While the TEN-T networks focuses on the Lviv – Odesa / Constanța links an essential secondary connection is not taken into account. There is a shorter route crossing the Carpathian Mountains via Khmenlnytski – Rakhiv – Sighetu Marmăției – Teresva and continuing to Central Europe via Chop - Čierna nad Tisou / Chop – Záhony (UA-HU) or Diakove – Halmeu (UA-RO) / Dilova – Valea Vișeului (UA-RO). This link should be at least considered for the TEN-T comprehensive network and can also work as an important alternative while the main connection via Lviv will be under rehabilitation.

After the changes in the vision for the development of the eastern part of the TEN-T network by the European Commission on 27.02.2022, the focus is on integrating Ukraine along routes through Lviv, Kyiv, Odessa to the east of the country, as well as Central Europe and the Eastern Baltic to the ports of the Black Sea (Constanța, Varna, Burgas), the Eastern Mediterranean, and the Adriatic. However, the shortest route through the Carpathians is not yet taken into account: through Kolomyia - Rakhiv - Sighetu-Marmăției - Tereșva with an extension to Central Europe through Chop - Čierna nad Tisou (UA-SK)/Chop - Záhony (UA-HU) or Dyakove - Halmeu (UA-RO)/Dilove-Valea Vișeului (UA-RO). These connections must be considered in the comprehensive TEN-T network, and will serve as an important alternative for the reconstruction of the 1520/1435 mm main line through Lviv.

Concerning the cross-border region analysed, the most relevant TEN-T corridors are the Rhine - Danube and the Baltic Sea – Adriatic Sea. Both are entering the Ukraine from Hungary (line 100 Debrecen – Záhony) and Slovakia (line 190 Kosice - Čierna nad Tisou) via Chop. This makes Chop an essential railway hub in the region and a important gateway to the Ukraine. All these important railway corridors bypass and thus don't reach Romanian counties Satu Mare and Maramureș. The line 400 linking Baia Mare to Satu Mare and continuing to the two border crossing points Carei and Halmeu (line 402) are only part of the TEN-T comprehensive network.

²Also, the Baltic Sea – Adriatic Sea Corridor but only for freight

In the cross-border region, main problems are arising from the lack of a coordinated vision among the interested countries (in contrast to agreements reached 100 years ago after the dissolution of Austria-Hungary) and relate either with the quality and continuity of the railway infrastructure or with passenger services. In the majority of counties, railway transport is characterized by a self-supporting loop of cargo and passenger rail operations: service is not attractive enough leading to a loss of passengers, either due to frequency, rolling stock (the age of rolling stock exceeds 40 years in most of the cases), or total travel times (usually to times slower than the same route by car), which leads to lower frequencies and discontinuation of services due to poor performances, which generates more loss of passengers due to low accessibility / attractiveness.

The most significant challenge for a higher level of integration of rail transport in the partner counties is the differences between rail track gauges used in Ukraine (1520 mm), which differ from the EU standard (1435 mm) are wider than those used in most of the EU territory. Such difference is a huge obstacle to interoperability, leaving the railway network inside EU vulnerable and therefore this challenge is being addressed by the TEN-T network update. According to current approaches (including the joint decision of the European Commission and the European Investment Bank dated 21.10.2022), this problem is being addressed by restoring the TEN-T network through the restoration of the original 1435 mm Euro gauge in western regions of Ukraine and in Moldova, with subsequent extension to the east.

The cross-border counties analysed in the MOBI project have a fairly good coverage of rail infrastructure the main concern remains the continuity of the lines in the border area along with their quality. The line 100 from Debrecen to Nyíregyháza and the line 190 from Kosice to Trebišov as well as the 191-line continuing to Humenné are in a better condition so that travel speeds can get close to 80-100 km/h but this is still far away from the potential of this route.

Even if connections via rail between major cities in the Slovakian and Hungarian part are in a better condition this does not necessarily apply to Romanian and Ukrainian regions. In both cases the railway network is fragmented due to geographical reasons as the lines have to cross the Carpathian Mountains. For example, Maramureş county is crossed by 2 branches of railway infrastructure, which do not intersect within the county. One services the north-eastern territory and is connected to the railway in Ukraine and the other services the western settlements of the county and provides a connection between Baia Mare and Satu Mare cities. There is a gap in the network between Baia Mare (the main city) and Sighetu Marmăției. So, everyone traveling from Baia Mare towards Ukraine must take a detour of more than 150 km.

In general, the most problematic connectivity issues appear near the border. In Szabolcs-Szatmár-Bereg, a 101 km trip from Nyíregyháza to the border crossings in Zajta takes on average 5 hours with two transfers being needed, while a cross border trip (if it were possible) would imply even longer travel times. In these cases, rail services are significantly less attractive than road transport and only used by carless residents. Investments are needed in improving connectivity between Debrecen / Nyíregyháza and Satu Mare, important lines such as 110 or 116 need to be upgraded while lines 113 and 114 (and 400 on the Romanian side) need to be extended to form a functional cross-border network.

³*These are the only electrified lines in the cross-border region.*

⁴*Second most important railway line in the Szabolcs-Szatmár-Bereg county.*

Similar challenges are visible along the border between Ukraine and Romania where the line 417 from Satu Mare to Negrești Oaș (less than 10km away from the border) is not used anymore. For more than 10 years the line between Câmpulung Tisa – Sighetu Marmăției – Valea Vișeuului was closed for cross-border trains even if it is an essential link in the Ukrainian railway network (connection between Chop and Ivano-Frankivsk, Chernivtsi and Odesa region through Moldova). Improving cross-border connectivity has to go hand in hand with creating cross-border passenger transport services. At the moment such services are available only on a few links such as Košice – Chop or Nyíregyháza – Mukachevo. There is also a direct train between Nyíregyháza and Košice but it takes a detour via Miskolc. Meanwhile the train between Dilve – Valea Vișeuului – Sighetu Marmăției – Câmpulung Tisa and Teresva is being relaunched (railway repairs still have to be finished). For all other cross border railway links passengers have to change trains and travel with another means of transport between train stations.

To improve quality of railway services investments in rolling stock remain essential while the upgrade of major railway hubs such as Baia Mare, Satu Mare are important to ensure a good transfer between international / national / regional and local transport networks. Additionally, as most large cities in the cross-border region benefit of extensive railway networks it is important to capitalize on this infrastructure assets and study or even develop metropolitan train services. This approach would help create an attractive option for commuting thus reducing car dependency in the suburbs.

The communication between the regional centers of Ukraine and Romania needs development, specifically:

- Ivano-Frankivsk (with an extension to Lviv) - Rakhiv - Valea Vișeuului (with a gauge change to 1435 mm) - Salva - Cluj-Napoca.
- Ivano-Frankivsk (with an extension to Lviv) - Rakhiv - Valea Vișeuului (with a gauge change to 1435 mm) - Salva - Bucharest - Constanta.
- Ivano-Frankivsk (with an extension to Lviv) - Rakhiv - Valea Vișeuului (with a gauge change to 1435 mm) - Salva - Sofia - Istanbul.



6.2. MAIN PROJECTS

HUNGARY

- Improvement of the Debrecen-Nyíregyháza-Záhony section of railway line No 100 (including electrification).
- Reconstruction of railway lines No 80 and 100c, Rákos-Hatvan-Miskolc-Nyíregyháza section.
- Reconstruction of the bridge on the Erpatak canal.
- Extension of lines 113/114 to Romania (including electrification).
- Construction of a new road bridge over the Tisza in the Záhony area (3 Seas).

ROMANIA

- Modernisation of line 300/400: Apahida - Dej - Baia Mare - Satu Mare (minor repairs, electrification in phase 2).
- Modernisation of line 409 Câmpulung Tisa - Valea Vişeuului.
- Metropolitan train Baia Mare (Baia Mare - Tăuţii Măgheruş - Seini / Baia Mare – Ulmeni).
- Metropolitan / touristic train Sighetu Marmatei – Borşa.
- Construction of a railway lined between Baia Mare and the Maramureş International Airport.
- Feasibility study for the extension of the regional railway network (Baia Mare - Târgu Lăpuş - Dej / Baia Mare - Sighetu Marmatei).
- Modernisation of the Halmeu train station and logistic terminal.
- Establishment of cross-border passenger rail routes: Satu Mare – Petea – Csengersima – Csenger / Municipiul Carei – Urziceni – Merk.
- Modernisation of the Baia Mare central railway station (intermodal hub and bus terminal)
- Extension of the 402 line till Hungary (connection to line 113/114)

UKRAINE

- Reconstruction of the Rakhiv - Valea Vişeuului railway (already completed by Ukrzaliznytsia on the section to Dilove village) - Sighetu Marmatei - Campulung la Tisa, considering the preparation of a prefeasibility study for the restoration of the European gauge along the Krakow-Lviv-Ivano-Frankivsk-Chernivtsi-Suceava-Yasi-Chisinau route, in accordance with the aforementioned decision of the European Commission and EIB dated October 21, 2022.
- Relaunch of passenger and freight traffic in the Câmpulung Tisa – Valea Vişeuului cross-border area. the transportation of both cargo and passengers through Teresva-Kimpuţung la Tisa, Sighetu Marmatei, Valea Vişeuului/Dilove.
- Installation of a gauge-changing mechanism from Ukrainian to European gauge at the stations of Valea Vişeuului or Dilove in order to establish the Ivano-Frankivsk - Bucharest route using existing infrastructure.
- Procurement of rolling stock with gauge-changing capability, drawing on the experience of Spain (Talgo company).

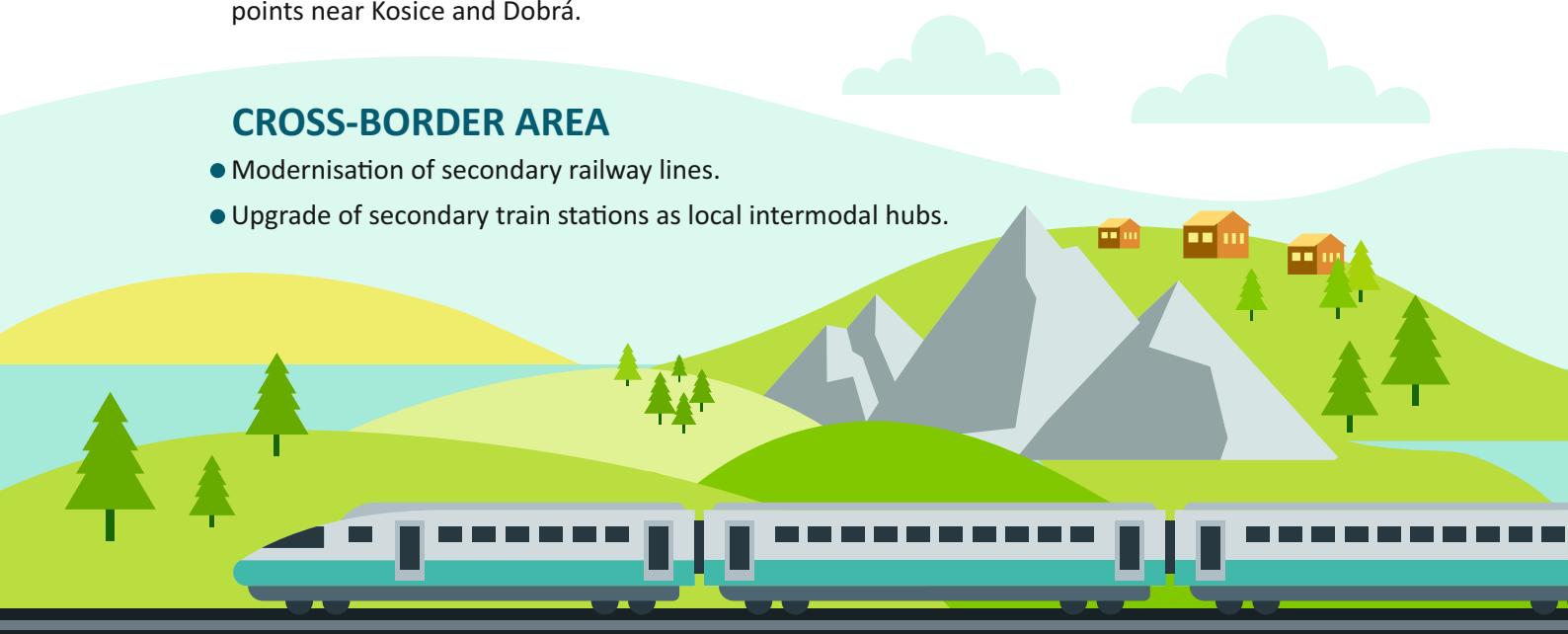
- Reconstruction of the narrow-gauge Irshava-Berehove railway line to standard gauge in order to establish regular connections with Irshava (by electric train).
- Reconstruction/launch of railway connection between Solotvyno and Velykyi Bychkiv.
- Utilizing the best global experience for the development of Ukraine's transportation sector, improving the quality and reliability of transportation and logistics services, taking into account Ukraine's external economic and regional connections.
- Developing multimodal transportation technologies and infrastructure complexes for various modes of transportation, including combinations such as "aviation-railway-road" and "waterway-railway-road".
- Implementing a new approach to licensing road carriers and ensuring market access procedures for road transportation in line with existing European practices.
- Ensuring comprehensive innovative development of transportation, including the implementation of a state strategy (targeted approach) for innovative development and investment projects in the transportation sector.

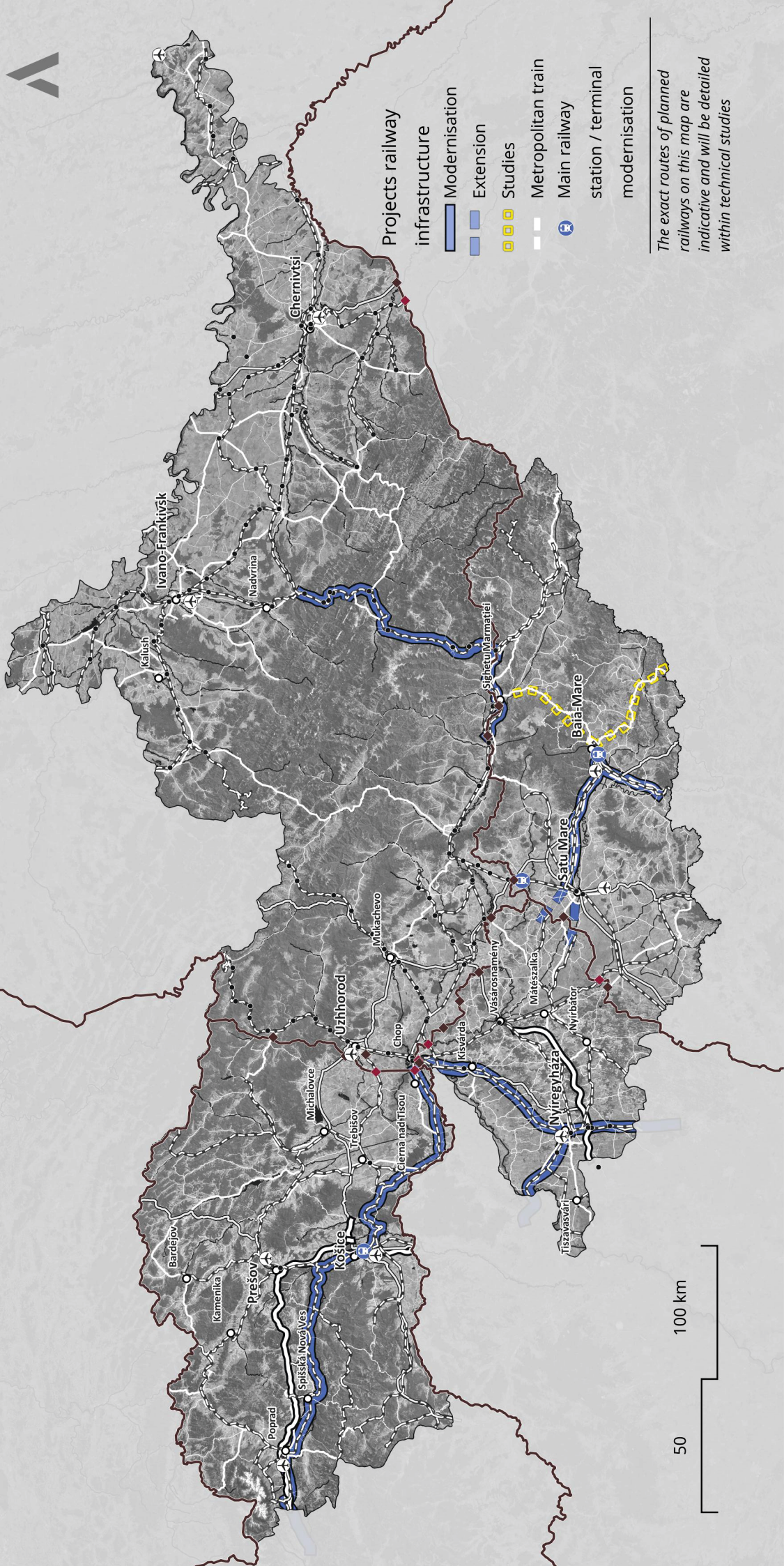
SLOVAKIA

- Modernisation of the Žilina - Košice - Čierna nad Tisou railway line.
- The use of the existing 1520 mm railway track from Uzhhorod to Kosice will allow for the continuation of some long-distance internal Ukrainian trains traveling to Uzhhorod, as well as regional trains providing connections between this part of Slovakia and the stations of Romanian Maramureş through Ukraine and to Kosice International Airport.
- Implementation of the Kosice railway station upgrade (ERTMS and track configuration). Modernization of the Kosice-Hidasnemeti-Miskolc railway line.
- Electrification and renovation of the railway between Slovenke Nove Mesto and Satoraljaujhely.
- Modernization of the broad-gauge line from Haniska to Matovske Vojkovce, including transshipment points near Kosice and Dobrá.

CROSS-BORDER AREA

- Modernisation of secondary railway lines.
- Upgrade of secondary train stations as local intermodal hubs.





Projects railway infrastructure

- Modernisation
- Extension
- Studies
- Metropolitan train
- Main railway
- station / terminal
- modernisation

The exact routes of planned railways on this map are indicative and will be detailed within technical studies

- Cross-border points**
- Rail-crossing
 - Road-crossing

- Secondary roads
- Tertiary roads
- Railways
- Railway stations
- Airports

- Rivers
- Transportation**
- Motorway
- European road
- Primary roads

- National border
- Populated places**
- Main cities in the study area
- Waterways**
- Lakes

7.1. MAIN CHALLENGES

The cross-border counties are in different stages of the development and improvement of passenger transport services and, as such, face different challenges.

Though current European trends focus more on improving user experience for public transport passengers, it is important to note that eastern European countries still face challenges with maintaining a good quality infrastructure, particularly in rural areas, which then affects the possibility to connect certain areas to main urban centres.

In Chernivtsi, Ivano-Frankivsk, and Transcarpathian regions the main challenges are related to ensuring a higher quality of road infrastructure for the provision of safe passenger services and enhancing the regulatory and monitoring capacity of local/regional authorities responsible for passenger transport services. Ukraine has not aligned itself to the EU Regulation 1370/2007 concerning the provision of passenger transport services and the market for the provision of bus services is characterized by monopoly. In this context it is difficult for local / regional authorities to work with operators and improve the attractiveness and predictability of services, being more equipped to influence the territorial coverage of the services.

As passenger transport on the road network is highly influenced by the quality of roads, in the 3 Ukrainian cross-border regions, the quality of infrastructure is affecting the possibility to provide safe, predictable transport services. This led to 23% of residents of rural areas facing a decrease in the standard of living due to the lack of regular provision of transport services.

In contrast, in Maramureş some of the rural settlements are connected through roads with lower quality infrastructure, but here ample rehabilitation of the road network has been possible using European funding and national programs and these investments have been focused on roads with public transport services.

Alignment with the EU regulation, particularly the development of public contract services at local or county level (i.e. between local authorities and one or more transport operators) ensuring free market competition, combined with the prioritization of road rehabilitation on public transport routes would set the basis for a higher level of quality of bus public transport. In parallel, Chernivtsi, Ivano-Frankivsk, and Transcarpathian regions should continue knowledge exchanges within the cross-border region in order to adapt faster to future challenges, which some of their neighbours have already faced.

In Maramureş, the county services are characterized by good coverage and a program well-tailored to user needs, but face challenges concerning amenities for users, particularly comfortable bus stops in rural areas and the provision of easy to use information about the routes and circulation schedule. Satu Mare faces similar difficulties as lack of information limits the number of users. Additionally, it faces further challenges related to low frequency of transport services, low speeds of transport, congestion on transport.

Problems in the Eastern Slovak Region are focused more on improving the efficiency of services, because bus transport is organized according to user demand and unprofitable routes are being cancelled, which can affect the coverage of the territory and attracting first time users. The counties deal with a continuous loss of passengers to individual car transport (ICT), especially those paying a full fare, which is causing significant losses in public passenger transport (PPT) revenues. Also, their legislative / institutional improvement needs are different from those of the Ukrainian counties and focuses more on improving integration and the use of ITS for better services.

The need and potential to improve the level of integration and use the intermodality potential of transport services has also been observed in Maramureş and Satu Mare.



7.2. MAIN PROJECTS

HUNGARY

- Upgrade of the Nyiregyhaza airport – a new 1500 m runway

ROMANIA

- Park & Ride P&R terminals for Baia Mare (Piața Izvoare or str. Vasile Lucaciu and Gara CFR)
- County wide public transport application and platform (continuation of the Overcoming Barriers project) – phase 2 and 3 (MaaS)
- Airport bus lines Baia Mare - Maramureș International Airport / Satu Mare – Satu Mare International Airport
- Upgrade of urban central bus stations: Sighetu Marmăției, Șomcuta Mare, Târgu Lăpuș, Borșa, Ulmeni and Seini.
- Testing a demand responsive transit system (DRT) for sparsely populated areas.
- Mogoșă bike-bus (equipping metropolitan buses with bicycle racks)
- Development of a touristic (hop-on / hop – off) bus network
- Metropolitan bus network (Borșa - Săliște de Sus – Dragomirești)
- Establishing a metropolitan transport system around Satu Mare.
- Development of the Gara Satu Mare intermodal hub to integrate a bus terminal.
- Cross border bus routes: Sighetu Marmăției – Ukraine, Satu Mare – Petea – Csengersima – Csenger or Carei – Urziceni – Merk.

UKRAINE

- Design and construction of an airport in the Zakarpattia region with a passenger capacity of 500,000 passengers per year (State Targeted Program for Airport Development).
- Modernisation works at airports (Uzhhorod, Ivano-Frankivsk, Chernivtsi).
- Combined rail-bus route Uzhhorod - Chop - Khust - Solotvyno with a transfer to the Solotvyno - Rakhiv bus using a single ticket (travel time: 5 hours).
- Utilizing the best global experience for the development of Ukraine's transportation sector and improving the quality and reliability of transport and logistics services, taking into account Ukraine's external economic and regional connections.
- Developing multimodal transport technologies and infrastructure complexes for various modes of transportation, including combinations such as “aviation-railway-road” and “waterway-railway-road.”
- Implementing a new approach to licensing road carriers and ensuring access procedures to the road transport market in accordance with existing European practices.
- Ensuring comprehensive innovative development of transport, including the implementation of a state strategy (targeted approach) for innovative development and investment projects in the transport sector.

- Creating conditions for the implementation of integrated information systems for passengers and cargo owners.
- Ensuring mobility and functioning of modern passenger transport. Developing multimodal passenger transportation and introducing a “single transport ticket.”
- Introducing strategic transport planning in cities, suburban areas, and regions as part of their strategic planning, including efficient and convenient suburban connections to transport facilities (airports, railway stations, seaports, bus terminals, etc.).
- Using new technologies and intelligent transport systems to improve the quality of transport services, service information systems, and implementing an electronic and integrated automated fare collection system.
- Promoting increased urban mobility and developing a network of parking areas and passenger terminals for transferring from individual transport to public urban transport.

SLOVAKIA

- Terminals for Krásna (Košice), Michalany, Pribeník, Streda nad Bodrogom, Slanec, Čelovce, Kuzmice, Kalša, Čerhov, Čierna nad Tisou (including P&R, train and bus).
- In order to reduce the share of individual car transport, possibilities should be created for introducing an exemption for buses at selected border crossing points with Hungary.
- Introduction of direct trains Miskolc / Szerencs – Satoraljaujhely – Trebišov, Uzhhorod / Mukachevo – Košice.

CROSS-BORDER AREA

- Public transport fleet renewal and decarbonization program.
- Development and upgrade of intermodal hubs (including P&R facilities).
- Development of dedicated bus / tram lines.
- Development of regional / county / oblast wide integrated public transport applications and platforms (transition to MaaS).
- Modernization / building of bus stations and local mobility hubs in rural areas.



8.1. MAIN CHALLENGES

The main road transport corridors in the cross-border region follow an east-west direction connecting Ukrainian regions to central Europe, the Baltic Sea, the Black Sea and Aegean Seas via Slovakia (Prešov – Košice and Uzhorod) or Hungary (Miskolc) but bypassing Romania. The Prešov – Košice urban system acts as a major road transport hub in the region, being crossed by 3 TEN-T corridors: Rhine-Danube, Baltic-Black-Aegean Sea and Baltic-Adriatic Sea). Other major cities in the region are not crossed by the main road TEN-T corridors. Only Nyíregyháza and Chernivtsi are also part of the TEN-T core network while the other main cities of the cross-border region (Satu Mare or Baia Mare) are only connected to the TEN-T comprehensive network. Meanwhile, Ivano-Frankivsk is not linked directly to the TEN-T network. While it is beneficial for the cross-border region to be connected to the main TEN-T corridors, the actual layout does not favour the flow of goods and passengers within the region.

The TEN-T network is transposed at local level by motorways, express roads or in some cases (where traffic is lower) national roads. There motorway and express road network of the cross-border region is still mostly under construction with only several segments finished, mostly along major transport routes such as: Zilina – Prešov – Košice – Miskolc or Budapest – Nyiregyhaza – Nyírmada. This intraregional network relies on two four major transport corridors, taking the shape of a parallelogram: 1. N-S Prešov – Košice – Miskolc, 2. N-S Ivano-Frankivsk – Baia Mare, 3. E-V Baia Mare – Satu Mare – Nyiregyhaza, 4.E-V Ivano-Frankivsk – Košice (with a slight detour at Stryi or Dolyna).

At the same time, in the southeast sector of the MOBI project area around the junction of Ivano-Frankivsk and Chernivtsi regions of Ukraine and Maramures and Suceava counties of Romania, there are only two roads in Romania, 17 and 18, that connect the counties through Borsha, Iacobeni, and Gura Pumorului. Railway lines from the border crossing point Dilove - Valea Viselului to Borsha and from the border crossing point Vadul Siret - Vikshany to Putna and Brodina (which before World War II reached Ruska and Selyatyn in Ukraine) have remained parallel to them. In the Ukrainian territory, Chernivtsi and Ivano-Frankivsk regions are connected in the border areas by interregional roads R 62 from Chernivtsi to Kryvorivnya, R 24 from Kryvorivnya to Tatariv and then by national road N-09 through Rakhiv and border crossing points in Dovhe and Solotvyno, and from Mukachevo to Chop and Uzhhorod. Parallel to these roads, there are railways from the border crossing point Vadul Siret through Hlyboka and Storozhynets to Berehomet and from Chernivtsi to Vyzhnytsia (which before World War II reached Tudylovo in Ivano-Frankivsk).

The main connectivity issues in the road network of the cross-border region are between Hungary / Slovakia and Romania/Ukraine where the capacity of the road network is reduced, and congestions is higher. Bottlenecks between Romania and Ukraine are caused by the difficult relief of the Carpathian Mountains which are hard (especially cost intensive) to cross with high-capacity roads. This is than doubled by the need to also cross the Tisa River which is separating the two countries.

Main bottlenecks in the cross-border road network are:

- *On N-S Prešov – Košice – Miskolc the main bottleneck remains the motorway bypass of Košice which is still under construction (link between D1 and R4),*

⁵EC. Proposal for the revision of the TEN-T network COM2021/812 – COM2022/384

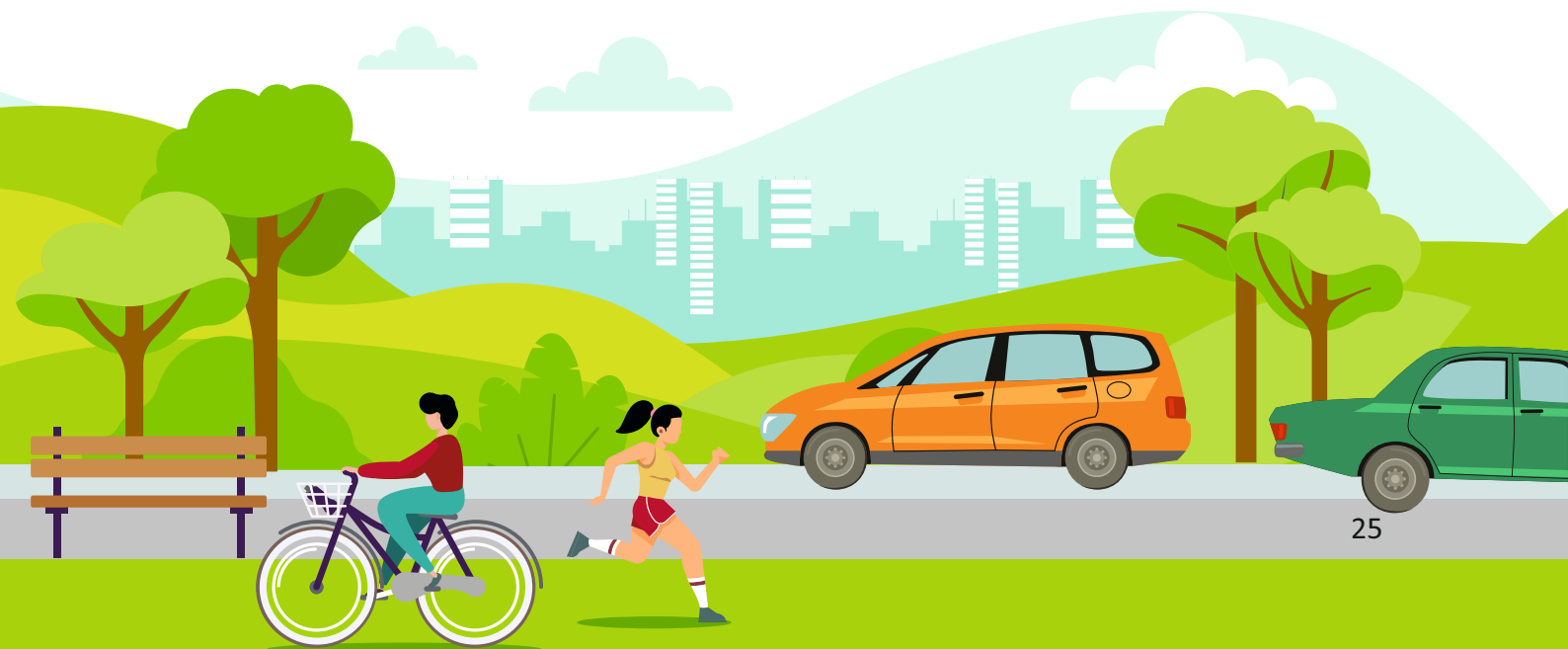
- *On E-V Baia Mare – Satu Mare – Nyíregyháza the motorway stops after Nyírmada (HU). There is not high-capacity road linking Satu Mare and Maramureş counties to Szabolcs-Szatmár-Bereg,*
- *On E-V Ivano-Frankivsk – Košice there are no motorways in place, only national roads with 1 lane per direction and multiple chicanes due to the relief.*

With large flows of goods towards Uzhhorod it is important to have alternative routes. One of these is Chop which at the moment only benefits of a direct connection to Hungary while only a 4-5 km missing link could also connect it directly to Slovakia following the state road 79. Similar missing links are also visible in the Romania-Ukraine border, between Teceu Mic and Tyachiv, Vişeu and Dilove while the only bridge passing the Tisza does not support freight. These dysfunctional or inexistent crossings greatly affect the performance of the north-south corridor from Baia Mare to Ivano-Frankivsk and Chernivtsi.

While the main road transport network is still being built, county /district / oblast roads still need upgrades and maintenance. This is especially valid in remote mountain areas such as the Carpathian Mountains between Romania and Ukraine where the roads have to pass difficult terrain and serve a low amount of people and businesses. A reduced connectivity seems to be an issue not just in remote areas but also along the border where multiple roads are not interconnected, especially between Ukraine and Romania and Romania and Hungary (ex. Csengerújfalú – Boghiş or Nagyhódos and Velyka Palad).

There also multiple cities in the cross-border region that don't have beltways and are crossed by intense flows of freight traffic, especially near the border. This greatly reduces road safety, generates congestion and increases pollution (especially GHG emissions) and thus significantly deteriorates the quality of living. This is particularly a problem in larger cities such as Baia Mare, Košice or Chernivtsi but also smaller cities like Carei, Sighetu Marmătiei, Şomcuta Mare, Kisvárda, Berehove or Nadvirna.

Most county / district / oblast roads lack adequate sidewalks or cycling infrastructure while road safety remains an important concern, especially in and around major cities and in relation to vulnerable traffic participants such as pedestrians and cyclists. This calls for a new approach to road design developed around the Vision Zero concept and with a focus on traffic calming (especially in vulnerable areas such as schools) and more attention dedicated towards pedestrian and cycling infrastructure.



8.2. MAIN PROJECTS

HUNGARY

- Construction of the M34 expressway, which will connect Vasarosnameny with Zahonny as a continuation of the M3 to Ukraine.
- Construction of the M49 motorway as a connection between M3 (Budapest – Nyíregyháza) and the Romanian border (Csenger – Vetiş).
- Upgrade of the 471 main road between Nyíregyháza and Debrecen.
- Reconstruction of side road 4923 – link between Csengerújfalú – Boghiş (including border crossing).
- Development of road link between settlements Nagyhódos and Velyka Palad (including a bridge and border crossing).
- Construction of south bypass road for Kisvárdá.

ROMANIA

- Construction of the Northern Motorway (Satu Mare – Baia Mare express road) with a possible extension to Petea (border crossing).
- Construction of the Satu Mare – Veliş - Csenger express road (including border crossing)
- Extension of DJ 183 road from Poienile de Sub Munte till the Ukraine border (including border crossing)
- Sighetu Marmăţiei beltway and new bridge over the Tisza River towards Bila in Ukraine (including border crossing)
- Construction of the Baia Mare – Jibou express road

UKRAINE

- Construction of a highway on the section from the state border with Slovakia (D1 Kosice – Uzhhorod) to highway M-06 Kyiv – Chop.
- Construction of a highway on the section from the state border with Hungary (M3 Nyiregyhaza – Dyida) to highway M-24 Mukachevo-Berehovo-Luzhanka.
- Construction of a highway on the section from the state border with Romania to highway H-09 Mukachevo-Rakhiv-Rohatyn-Lviv (Bila Tserkva village).
- Construction of a road section between Solomonovo (UA) and Čierna (SK) (including border crossing).
- Construction of a road from Verkhovyna in the Ivano-Frankivsk region to the Romanian border through the villages of Iltsi, Krasnyk, Topilche, Zelene and Yavirnyk, till the RO border (including border crossing).
- Development of road link between settlements Nagyhódos and Velyka Palad with bridge construction.

- Construction of roads to develop tourism and recreation between neighbouring territories of Zakarpattia, Lviv and Ivano-Frankivsk regions. Namely:
 - Slavske - Pylypets “Small Carpathian Circle” route.
 - Dolyna - Lopukhiv/Ust-Chorna route.
 - Uzhok - Yasinya (with the construction of the road section Lopukhiv - Chorna Tysa to facilitate the Poland - Romania direction).
 - Construction of a highway from the state border with Romania to the Valya-Vechouluj - Dilove road (including the construction of a border crossing point).
 - Restoration of the bridge in Khmeliv village (Dilovetska railway station).
- Improving the efficiency of internal logistic operations of freight transport by eliminating existing barriers in its integration with the international and Trans-European Transport Network (TEN-T).
- Reforming the road management system, transferring the management of 120,000 km of highways to regional authorities, and assigning responsibility for their condition to local authorities.
- Defining key performance indicators for road management and implementing a monitoring system to track their achievement.
- Regulating at the legislative level the creation of a simplified mechanism for expropriation and purchase of land plots for transport infrastructure development, concession of land for road construction, and granting land plots to transportation companies and organizations.
- Planning, designing, and constructing roadways and infrastructure with the need to reduce the negative impact of motor vehicles and road infrastructure on the environment.

SLOVAKIA

- Construction of the D1 motorway between Košice and Uzhhorod.
- Construction of the R4 motorway between Prešov and Vyšný Komárnik.
- Construction of the R4 motorway – Košice beltway.
- Construction of the R2 motorway between Košice and Lučenec.
- Rest area with parking lot on road I/19 Vyšné Nemecké.

CROSS-BORDER AREA

- Design guidelines for “complete” roads
- Regional programme for upgrading of county / district / oblast roads.
- Regional programme for building beltways along cities crossed by heavy traffic (Carei, Negrești-Oaş, Arduş, Livada, Nadvirna, Ulmeni, Berehove, Kiszvárd, Şomcuta Mare etc.).
- Regional programme for improving roads safety (focus on main roads and “black points”)

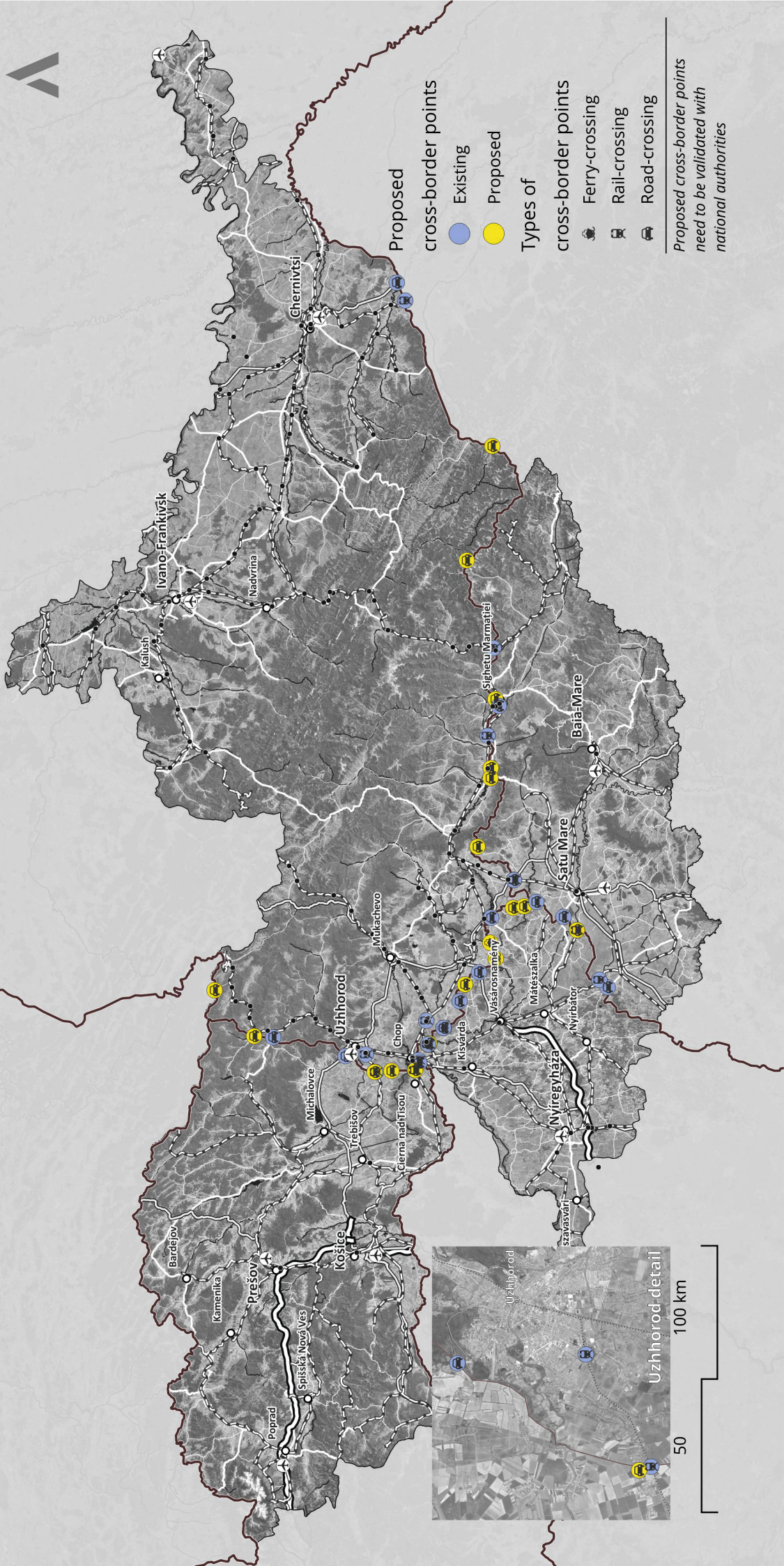


This set of recommendations is primarily addressed to the State Agency of Automobile Roads of Ukraine (Ukravtodor) Motor Roads and should be incorporated into state policy documents at the legislative and regulatory levels. However, local self-government bodies within their powers can also influence this area, as there are cases where national or international highways pass through populated areas.

1. Include provisions in urban planning documentation to allocate space for the installation of high-power electric vehicle charging stations (50 kW and above) and charging hubs, and incorporate relevant requirements and provisions into urban planning documentation. Such locations should be planned in close proximity to international and national highways, on adjacent plots of land.

2. When repairing or reconstructing a road or street that coincides with the highway corridor, include in the technical specifications and design requirements the laying of power cables of the corresponding capacity (or ducts for them) to the planned locations of EV charging stations or charging hubs.

3. When constructing new commercial facilities of mass gravity (shopping malls, supermarkets, gas stations, water parks, etc.), especially along highways and at city entrances, include in the technical specifications and design requirements provisions for the construction of EV charging stations and the laying of power cables of the corresponding capacity.



Proposed
cross-border points

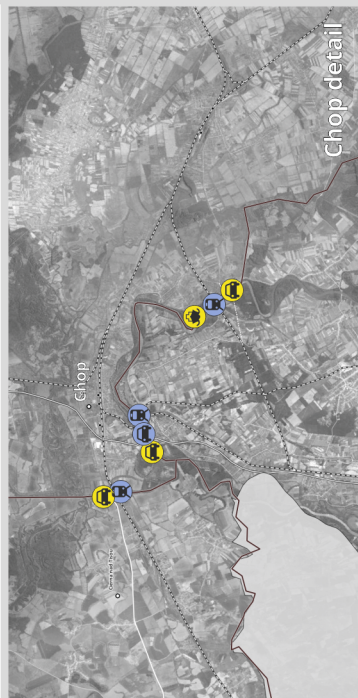
- Existing
- Proposed

Types of

cross-border points

- Ferry-crossing
- Rail-crossing
- Road-crossing

*Proposed cross-border points
need to be validated with
national authorities*



- National border
- Populated places
 - Main cities in the study area
- Waterways
 - Lakes
- Rivers
- Secondary roads
- Tertiary roads
- Transportation
 - Motorway
 - European road
 - Primary roads
- Railways
 - Railway stations
 - Airports

9.1. MAIN CHALLENGES

The inland waterways are one of the less developed transport networks in the cross-border region and therefore now rivers are part of the TEN-T (core or comprehensive) network. The Tisza and the Someş are the main rivers in the region but none of them are used for freight nowadays. Nevertheless, both have a tradition as being important arteries in waterborne transport: the Someş was used for transporting salt from the Dej mines towards Hungary while the Tisza, along the Romanian – Ukrainian border, has been used to transport wood harvested in the area. Due to climate change and longer periods of draught using the inland waterways for the transport of goods becomes more and more difficult. However, within the Danube strategy there are studies being prepared to analyse the opportunity to transform the Tisza River into a class IV waterway, this could activate several ports along the river (ex. the Zagon – Chop port).

Leisure seems to be the main transport related role of inland waterways in the region. For example, in Szabolcs-Szatmár-Bereg the Tisza river is used for canoe between "Vylok - Tiszabecs" while in the Prešov Region the Dunajec river includes two touristic ports: Červený Kláštor and Lesnica. The Someş river, in the Satu Mare area is also used quite often for kayak trips or classes.

While the Tisza River is an important barrier in the continuity of communication channels, there are no ferries border crossing points along it. Several options are being analysed for such services such as: Solovka-Tysasentmarton, Badalovo-Satmardzeke or Barievo-Tysakord.



9.2. MAIN PROJECTS

HUNGARY

- New ferry crossings, namely: Barievo – Tizsakorod, Badalovo- Szatmarcseke and Tizsaszentmarton – Solovka.

UKRAINE

- Creation of a national segment of the information exchange system for vessel traffic and activities of economic entities in the maritime shipping sector.
- Integration into the European information system.
- Acquisition of maritime search and rescue units and establishment of infrastructure for their base.
- Progressive liberalization of freight transport on inland waterways, opening of inland waterways for foreign vessels.
- Review of policies on the formation of river tariffs and fees to stimulate the development of inland water transport.
- Improvement of transportation (river) connection in the Upper Tisza River Basin, specifically in Ukraine, Hungary, and Slovakia.

ROMANIA

- Feasibility study to identify the navigation potential of the Someş river.

CROSS-BORDER AREA

- Development of touristic ports and leisure activities along the rivers in the cross-border region
Further development of ferry services to improve connectivity along rivers

10.1. MAIN CHALLENGES

The main airports in the cross-border area are Maramureş International Airport (Baia Mare), Satu Mare Airport (Satu Mare), Debrecen International Airport (Debrecen), Uzhhorod International Airport (Uzhhorod), Ivano-Frankivsk International Airport (Ivano-Frankivsk), Košice Airport (Košice) and Poprad-Tatry Airport (Poprad). Unfortunately, there are no flights between cities in the cross-border region, as they only have connections to other major cities/transport hubs in Europe. The need for air transport is generally supported by the long journey times caused by the still incomplete motorway network in the region and the congestion caused by border crossings.

The two airports located in Satu Mare and Maramureş counties, while slowly recovering after the Covid 19 Pandemic restrictions⁶ remain the smallest airports in terms of passengers transported (under 75.000 passengers / year per airport) in Romania. They both serve the north-western part of Romania while being only 65 km apart from each other. While the Satu Mare International Airport manages to also serve localities from Hungary the Maramureş International Airport (near Baia Mare) is mostly targeting tourists visiting the Maramureş touristic area. Both airports are in direct competition with larger airports in the region such as: Avram Iancu International Airport (Cluj-Napoca) and Debrecen International Airport in Hungary. These two airports are 2-3 hours away from most cities and offer a larger variety of international flights, including links to main European gateway airports. Currently, none of the two Romanian airports is connected to the main city via a public transport line.

Uzhhorod Airport has the opportunity to carry out the maintenance of aircraft. The location of Uzhhorod airport is very attractive for small aircraft as many small aircraft are planning the flights to the Balkans via Uzhhorod airport. The main obstacles to the intensive development of Uzhhorod airport are the close development to its territory, as well as the proximity to the border of Slovakia. This fact makes it possible to operate the landing and departure of aircraft only using the airspace of Slovakia. By 2016, a specific agreement was in force between Ukraine and the Slovak Republic, which made it possible to operate the necessary part of the airspace of the Slovak Republic for landing of aircraft. By 2016, Uzhhorod Airport could operate to 15,000 passengers annually. Now a new agreement is being formed between Ukraine and the Slovak Republic, which will allow the restoration of regular air traffic.

International Airport Ivano-Frankivsk operates in the regional centre with a capacity of 120 people/hour, which can receive all types of aircraft. The airport receives and dispatches aircraft (serves regular, charter, domestic, international passenger, and letter flights and performs the functions of a spare for Lviv airport), carry out their commercial, ground, and technical maintenance, services for passengers, baggage, mail, and cargo.

The potential of the Chernivtsi International Airport is also similar. The first plane landed on its territory in 1910. It was built in 1930-1936, and in 1939, the Polish military aviation was interned to Romania through it. Its international status was restored in 2002, and in 2021, at the Investment Forum "Ukraine - Invest 2030," the development of the Uzhhorod and Chernivtsi airports as international regional airports was announced.

⁶Helped by state aid number of passengers nearly doubled from 2021 to 2022.

The international airport Poprad – Tatry provides air connections to the Prešov region. After a complete reconstruction carried out in 1992, regular and irregular passenger and cargo transport, as well as sightseeing flights are carried out from it. Together with Košice Airport, Poprad-Tatry Airport belongs to the aggregate network of airports of the Trans-European Transport Network TEN-T Core. There are several airports of regional importance in the Prešov Region, which are mainly used for sport purposes. These are the airports in Svidník, Mlynica, Kamenica nad Cirochou and Ražňany.

10.2. MAIN PROJECTS

HUNGARY

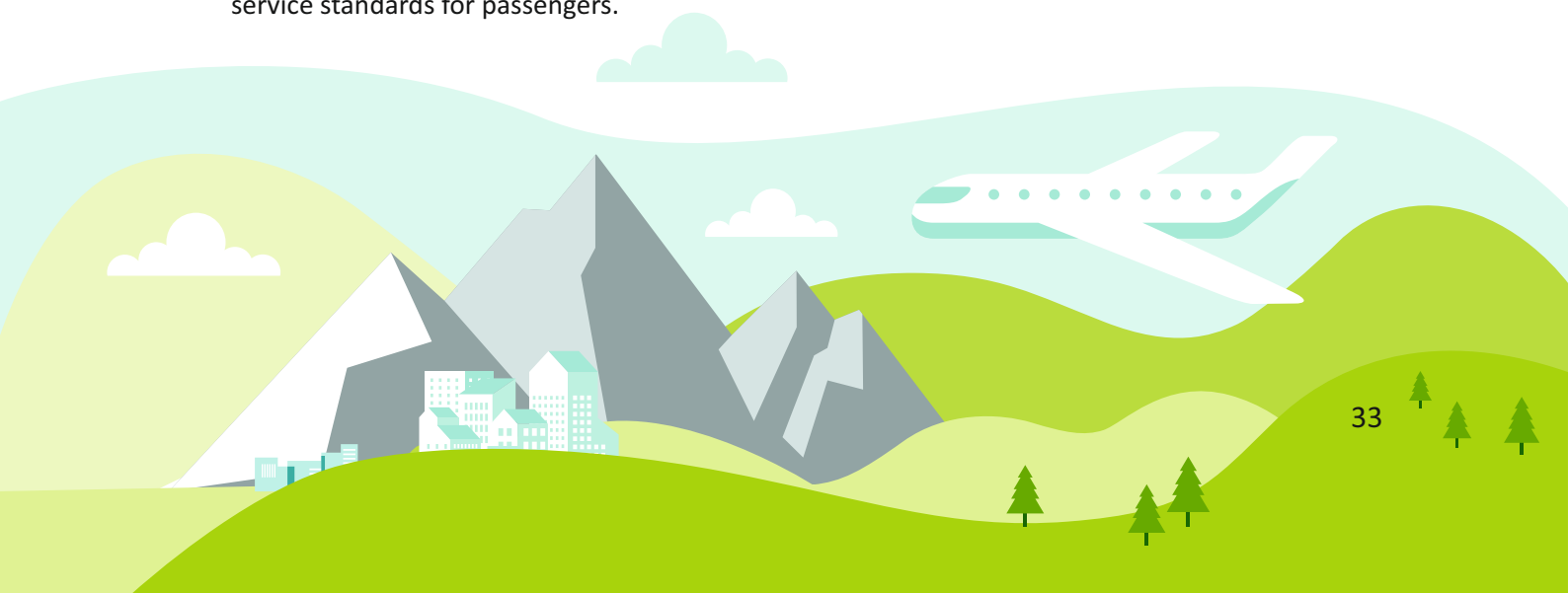
- Upgrade of the Nyiregyhaza airport – a new 1500 m runway

ROMANIA

- Upgrade the Maramureş International Airport
- Bus line to the Maramureş international airport
- Rail link (1 km) to the Maramureş international airport (long term)
- Construction of a new passenger and a cargo terminal and an airplane hangar for the Satu Mare International Airport

UKRAINE

- Development of a Ukraine – Slovakia agreement for restoration of regular air traffic on the Uzhhorod.
- Design and construction of an airport in the Zakarpattia region with a passenger capacity of 500,000 passengers per year (State Targeted Program for Airport Development).
- Modernisation works at airports (Uzhhorod, Ivano-Frankivsk and Chernivtsi)
- Construction of a network of airfields and runways in regional communities and important mountain tourist-recreational centers, ensuring sustainable connectivity with regional and international airports.
- Increase in the capacity of Ukraine's airspace through the introduction of Free Route Airspace (FRA) and navigation technologies based on GNSS.
- Development of terminal passenger and cargo complexes with multimodal technologies through the involvement of their owners and/or public-private partnerships, ensuring international quality service standards for passengers.



- Reconstruction of runways and comprehensive upgrading of equipment in regional airports to enable the operation of medium-haul aircraft and, if necessary, wide-body aircraft, in accordance with European legislation.
- Development of domestic aviation transportation, including the modernization of Ukraine's regional airports and aerodromes, with the involvement of international credit programs and grants to reduce costs and increase the accessibility of airport services.
- Creation of favorable conditions to attract more airlines for international and domestic air transportation, including low-cost carriers.
- Acquisition of aviation search and rescue units and establishment of infrastructure for their base.
- Deregulation of economic activities of regional airports with passenger traffic up to 5 million passengers, in accordance with relevant EU legislation.

SLOVAKIA

- Completion, modernization, lengthening and widening of the existing runway of the Košice International Airport,
- Construction of a freight transport centre with CARGO operation at the airport in Košice with special road and siding connections,
- Completion and equipment of the airport in Spišská Nová Ves as an airport of local importance.

11.1. MAIN CHALLENGES

A good distribution of cross-border check points is essential to ensure a decent flow of persons and goods within the cross-border region. Chop – Zahnoy, Csengerisma - Petea (close to 3 mil persons / year or 1 mil cars) and Uzhhorod - Vyshne Nemetske are the busiest checkpoints. At the moment, most border crossing points are concentrated between Hungary – Ukraine and Slovakia while between Romania and Ukraine there are more than 160 km of border without checkpoints, between Valea Vişeuului and Valea Siretului. Indeed, this area is crossed by the Carpathian Mountain range and is less inhabited. This low amount of border crossings creates a strong pressure on the Sighetu Marmăției border checkpoint, a bridge that needs urgent repairs and doesn't permit freight to pass at the moment. To improve cross-border mobility a beltway and a new bridge over the Tisza River is being build between Sighetu Marmăției and Bila Tserkva. The construction of the international border crossing point between Bila Tserkva (Ukraine) and Sighetu-Marmăției (Romania) is included in the Action Plan for the reconstruction and modernization of border crossing points. However, there is no intergovernmental agreement in place at the moment.

Problems with cross-border connectivity occur also along the border between Hungary and Romania, which is only served by 4 border crossing points (3 for cars and 1 for trains) while there are multiple rail and road missing links that could reduce the ques at main border checkpoints. This also applies to Prešov and Zakarpattia where line 196 stops a few kilometres away from the border.

There are no ferry border crossing points even if the Tisza forms a more than 50km long border between Romania and Ukraine and several 10-15 km border segments between Hungary and Ukraine or the main border between the Kosice region and Szabolcs-Szatmár-Bereg county.



⁷During the Covid 19 Pandemic 3 additional border crossing points (Bercu- Garbolc, Peleş – Zajta and Horea – Omboly) have been temporarily opened to reduce the pressure on the Petea border crossing point. These are now active only 1 day / week.

The reconstruction and modernization of border crossing points are key, but not the only factors for mobility development. The Program documents for the implementation of an integrated border management system include the following provisions:

Introduction of advanced technologies and information support for transportation, including the creation of a unified information system for technological interaction between different modes of transport, cargo owners, freight forwarders, customs, and state control authorities in transportation and at border crossing points.

Improvement of border management between Ukraine and EU member states, enhancing the functioning of border crossing procedures at border checkpoints, reducing passenger waiting times, and creating better conditions for movement. The analysis of existing interstate agreements that regulate the opening and functioning of border crossing points has shown that these documents need updating, as decisions at the national level are based on them, and there is currently a lack of consistency between visions of development at the regional level, targeted programs for the development of checkpoint infrastructure at the national level, and interstate agreements.

11.2. MAIN PROJECTS

This section includes both proposals provided at the regional level and planned measures included in national-level program documents. It is important to note that the projects for the development of border crossing points mentioned in this section should be present in the texts of interstate agreements, as well as in the relevant target programs and action plans.

HUNGARY / ROMANIA

- Veliş - Csenger road border crossing (related to the new motorway).
- Construction of a railway border crossing between Zajta and Peles or Csenger and Oar (including railway extension).
- Construction of a road border crossing between Garbolc and Bercu.
- Streamlining the surveillance and verification activity at the “Schengen Bus” border control points.
- Intermodal transport RO-LA Ukraine - Romania (Câmpulung Tisa / Valea Vişeuului - Berlibas) - pilot project.

UKRAINE / ROMANIA

- International checkpoint Bila Tserkva (Ukraine) - Sighetu Marmatiei (Romania).
- Checkpoint Tyachiv - Maly Tyachiv or Checkpoint Yablunivka-Remety.
- Khyzha-Tarna Mare checkpoint.

After the introduction of two new checkpoints this year - Dyakivtsi-Rakovets and Krasnoilsk-Vikovu-de-Sus in Chernivtsi region, reconstruction of the main border crossing points on the Ukrainian-Romanian border has begun: the Porubne-Siret automobile checkpoint and the Vadul-Siret-Vicşani railway checkpoint, as well as the construction of the aforementioned Ulma-Ruska and Shepit-Izvoarele Sucevei checkpoints.

- Poienile de Sub Munte -Szybeny.
- Upgrade of the Halmeu railway station and terminal and of the border crossing (2 entrances and 2 exits).
- Installing WIM systems in Romanian border crossing points: Halmeu, Petea and Urziceni.

The action plan for the reconstruction and modernization of border crossing points along the state border was developed to implement the national strategies adopted by Ukraine until 2023. **On the Ukrainian side of the Ukrainian-Romanian border section, the following projects are planned:**

Construction of the Dyakove border crossing point:

- Construction of the border crossing point, including video surveillance and weighing systems.
- Installation of a stationary scanning system for inspecting passenger vehicles.
- Installation of a stationary scanning system for inspecting commercial vehicles and containers.

Construction of the Bila Tserkva border crossing point:

- *Construction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*
- *Installation of a stationary scanning system for inspecting commercial vehicles and containers.*

Construction of the Ruska border crossing point:

- *Construction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*

Reconstruction of the Krasniyilsk border crossing point:

- *Reconstruction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*

Modernization and technical re-equipment of the Porubne border crossing point (passenger section):

- *Construction of canopies over customs control areas.*
- *Reconstruction of deep inspection booths.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*
- *Installation of an intelligent video surveillance system.*
- *Installation of weighbridges for weighing passenger vehicles (up to 5 tons) at entry and exit.*

Reconstruction of the Dyakivtsi border crossing point:

- *Reconstruction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*

HUNGARY / UKRAINE

- Ferry border crossings: Barievo-Tysakord or Badalovo-Satmardzeke
- Construction of the Diyda-Beregdarots checkpoint (linked to the M3 motorway)
- Preparation of new bridge across Tisza River at Lónya and between Záhony and Chop
- Solovka-Eperieske checkpoint (ferry / road)
- Construction of a road (bridge) crossing point Chop-Cherna-nad-Tisou
- Chop-Zahon crossing point (cycling and pedestrians)
- Modernisation of border crossing points: Uzhhorod and Chop

The action plan for the reconstruction and modernization of border crossing points along the state border was developed to implement the national strategies adopted by Ukraine until 2023.

On the Ukrainian side of the Ukrainian-Hungarian border section, the following projects are planned:

Modernization and technical re-equipment of the Chop international automobile border crossing point:

- *Major repairs of infrastructure facilities.*
- *Construction of a warehouse for confiscated goods.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*
- *Installation of an intelligent video surveillance system.*

Construction of the Dzvinkove border crossing point:

- *Construction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*

Construction of the Kosino border crossing point:

- *Construction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*

Construction of the Dyida border crossing point:

- *Construction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*
- *Installation of a stationary scanning system for inspecting commercial vehicles and containers.*

Reconstruction of the Luzhanka border crossing point:

- *Reconstruction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*
- *Installation of a stationary scanning system for inspecting commercial vehicles and containers.*

Reconstruction of the Vylok border crossing point:

- *Reconstruction of the border crossing point, including video surveillance and weighing systems.*
- *Installation of a stationary scanning system for inspecting passenger vehicles.*

SLOVAKIA / HUNGARY

- Upgrade of SK/HU border crossing points to ensure the crossing of busses (3.5t).
- Hostovce - Tornanádaska (H - also for freight transport up to 12 t with connection to R2).

SLOVAKIA / UKRAINE (POLAND)

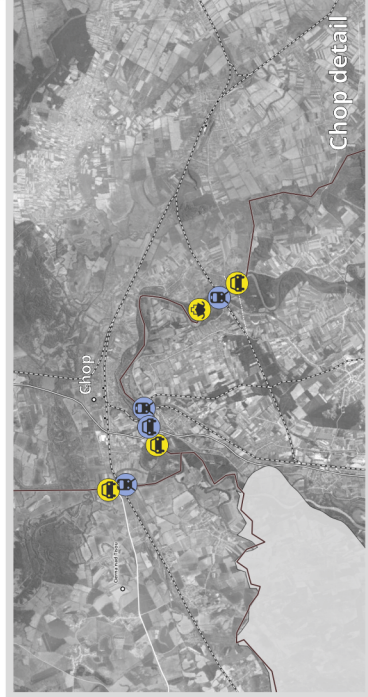
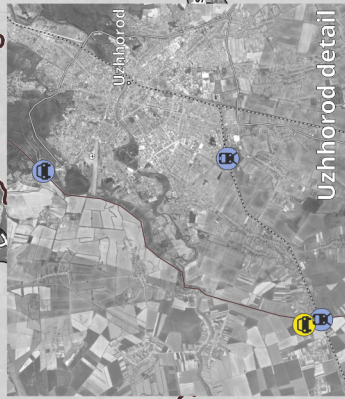
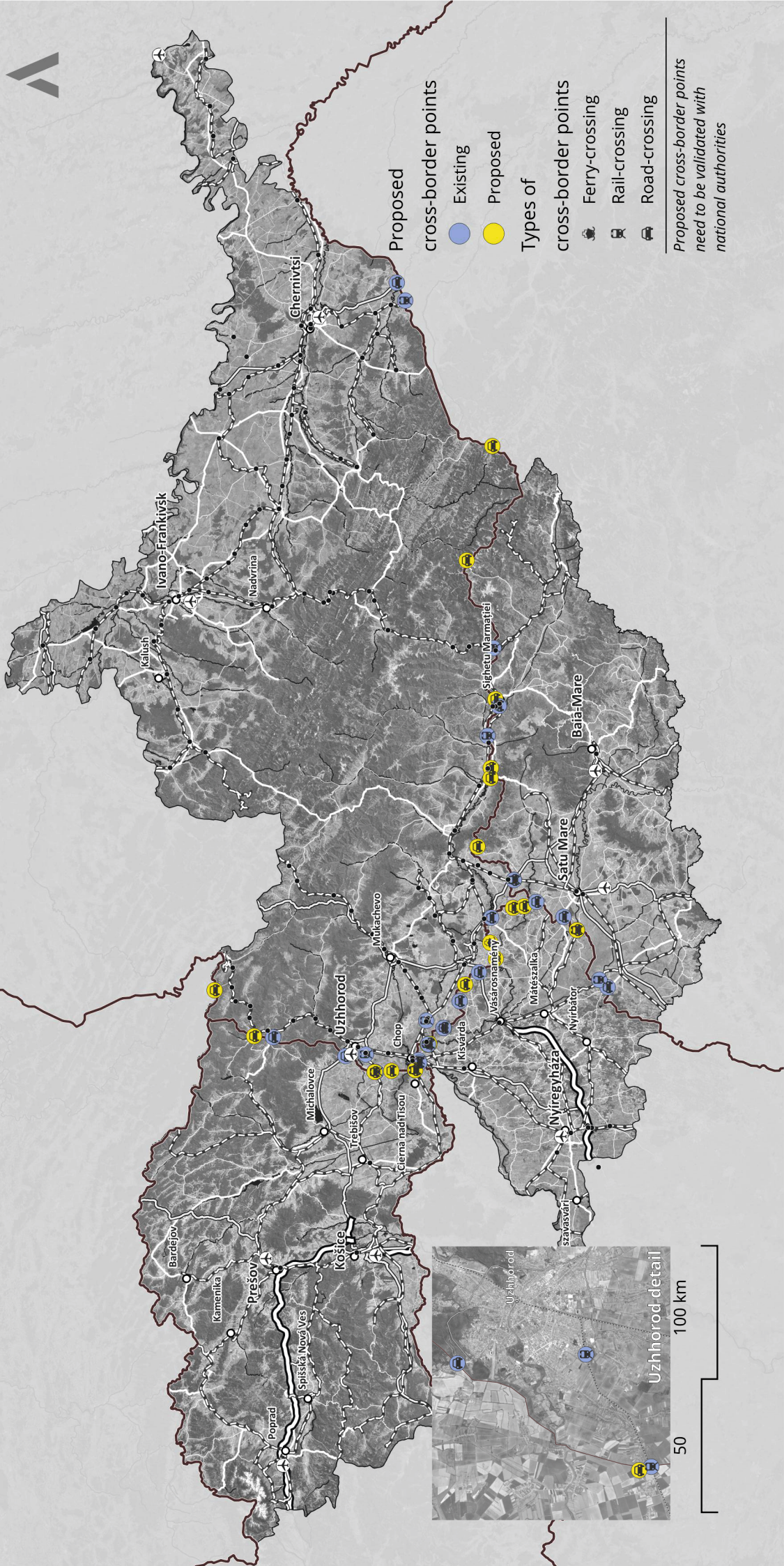
- Lubnya-Volosate checkpoint (and road) / Pavlovo-Mativske checkpoint (link to Uzhhorod).
- Vyšné Nemecké – Uzhhorod (pedestrians and cyclists).
- Čierna - Solomonovo (UA).
- Lekárovce - Botfalva (UA).

The action plan for the reconstruction and modernization of border crossing points on the Ukrainian-Slovak section of the state border has been developed in accordance with Ukraine's national strategies until 2023. **Specifically, the plan includes the following actions for the international automobile border crossing point in Uzhhorod:**

- *Reconstruction of the passenger area of the border crossing point, including the installation of video surveillance and weighing systems.*
- *Implementation of a stationary scanning system for inspecting passenger vehicles.*
- *Implementation of an intelligent video surveillance system for the cargo direction.*
- *Restoration of shelters on the cargo area.*
- *Construction of a warehouse for confiscated goods.*

The map is not very informative as it does not indicate the names of the border crossing points, and there is also no separate classification for pedestrian and cyclist crossing points, such as the existing one at the Ukrainian-Slovak border of Mali Selmentsi-Velke Slemence, and the projected one at the Ukrainian-Polish border of Lubnya-Volosate.





- National border
- Populated places**
 - Main cities in the study area
- Waterways**
 - Lakes
- Transportation**
 - Rivers
 - Motorway
 - European road
 - Primary roads
 - Secondary roads
 - Tertiary roads
 - Railways
 - Railway stations
 - Airports

12.1. MAIN CHALLENGES

The transition to alternative nonpolluting fuels is essential for the next 10 year to meet Paris Agreement and Green Deal targets and to counter climate change while combating the rapid degradation of air quality in major cities and the limited availability of petrol. In 2019 most of the cross-border region was beyond the EU average regarding the uptake of electric vehicles (no data on Ukraine). In 2020 Szabolcs-Szatmár-Bereg county (HU), Košice and Prešov regions (SK) already managed to provide 5-10 charging stations / 1000 inhabitants while Satu Mare and Maramureş had less than 1 charging station / 1000 inhabitants.

In the last years investments in the transition to alternative fuels consisted mostly of acquisition of electric busses (or CNG Hungary), installing of electric vehicle charging stations and subsidies, usually from the government, for the acquisition of a new electric vehicle. At the moment each larger city in the cross-border region has at least 20-30 electric vehicle charging stations and a national network of charging stations positioned along main roads. The existing network of charging stations may be enough for the existing number of electric vehicles but is undersized for future expected demand. Investments are needed especially in Romanian and Ukrainian counties / oblasts where the main road network is not well covered with electric vehicle charging stations thus making it difficult for drivers to drive a longer distance with their electric vehicle.

There are also various projects being planned for the uptake of hydrogen-based transport, especially in the Košice Region

⁸ICCT, 2021. *Beyond major cities: Analysis of electric passenger car uptake in European rural regions*



12.2. MAIN PROJECTS

• HUNGARY

• ROMANIA

Multiannual program for installing electric vehicle charging stations in Maramureş county (150 stations)

• UKRAINE

- Electrification of the 1520 mm railway track gauge from Uzhhorod (Kosice) through Teresva – Sighetu-Marmatiei - Rahiv - Kolomyia to Chernivtsi and Ivano-Frankivsk after the restoration of freight and passenger traffic on the Teresva/Kimpulung la Tisa – Dilove/Valya Vyshneva section.
- Introduction of a “rail bus” for local cross-border connections in the Uzhhorod – Kosice – Mukachevo – Zahony – Satu Mare and Chernivtsi – Suceava zones, with temporary use of adjustable wheelsets (until transition to the standard 1435 mm gauge) and experimental application of electric battery and hydrogen propulsion capabilities.
- Implementation of economic incentives for the use of environmentally cleaner modes of transport, including electric vehicles, public electric transport such as metro, trams, trolleybuses, electric buses, as well as muscle-powered transport modes like bicycles (public bicycle rental systems), scooters, and their public rental systems.
- Increase the share of public transport usage to provide comfortable means of transportation for the population, including vulnerable groups, and reduce the negative impact on the environment, particularly greenhouse gas emissions.
- Gradual replacement of the municipal transport fleet with electric vehicles, regardless of ownership form, if necessary, with amendments to existing legislation, including efforts by local administrations.
- Progressive renewal of the public transport fleet and replacement of carbon-emitting vehicles, promotion of green transport modes, development of cycling infrastructure in cities, replacing the concept of minibuses with more flexible and environmentally friendly systems equipped for transporting people with disabilities.
- Introduce electric bus routes for local cross-border connections between border cities in Zakarpattia and neighboring EU countries (between cities with characteristics of passenger transport hubs). Promising directions include Uzhhorod-Michalovce, Mukachevo-Kosice, Berehove-Vasarosnameny, Mukachevo-Kisvarda-Nyiregyhaza, Tiachiv-Baia Mare (subject to the checkpoint in Bila Tserkva), Mukachevo-Vynohradiv-Satu Mare. Implementation methods: 1/ Replacement of the bus fleet with electric buses along existing international routes; 2/ Introduction of new routes along prospective directions.
- Increase the number of high-capacity fast charging stations along intercity highways in border areas (within a zone of 100 km from the border). The most optimal and expedient approach would be installing stations at existing petrol stations, which are characterized by high density of locations and access to power supply. Justification: all target countries tend to develop their infrastructure based on a “center-out” principle, considering border areas as peripheral. Therefore, infrastructure development lags behind compared to central and more densely populated regions of the countries.

SLOVAKIA

- Hydrogen Valley in Košice Region (part of the 23 EU hydrogen valleys).
- Research initiatives for the further integration of hydrogen in the transport system, especially aviation (memorandum with Innovation Center of the Košice Region) and shipment (memorandum with Moravian-Silesian Region) or metropolitan public transport (memorandum with Kosit a.s.).

CROSS-BORDER AREA

- Development of local charging stations (especially in urban areas and touristic destinations).
- Development of a network of highspeed charging stations along main transport routes.
- Development of subsidy scheme for the acquisition of non-polluting vehicles (including e-bikes, e-scooters, cargo bikes, small electric vehicles for elders etc.).
- Development of non-polluting car sharing and rental systems in larger cities.

The Hungary, Slovakia, Romania and Ukraine cross-border region, represented in this project (MOBI) by territorial administrative units: Szabolcs-Szatmár-Bereg county (HU), Košice and Prešov regions (SK), Maramureş and Satu Mare counties (RO) and Zakarpattia, Ivano-Frankivsk and Chernivtsi (UA) is in the midst of developing its transport infrastructure, while its cities have already begun the transition to sustainable and inclusive urban mobility. However, in the coming years, cross-border connections between the different territories of the region must be significantly improved. This aspect needs to be dealt with very carefully on three different levels:

- a. European Union level and a better connection to the TEN-T network – currently the region is almost bypassed by the main European transport corridors,
- b. national level and better harmonization with national transport policies – currently the main investments in transport infrastructure at the national level are outside the region (modernized or new railways, highways or border crossing points),
- c. local level and better correlation with sustainable urban mobility policies at the level of cities and metropolitan areas.

In this context, the territorial administrative units that form the cross-border region of Hungary, Slovakia, Romania and Ukraine must continue, even accelerate their approach to a sustainable, inclusive and intelligent transport system, relying on:

- the modernization and interconnection of the railway network, especially in the border area,
- increasing the attractiveness and optimization of county public transport,
- development of the network of cycle tourism and bicycle commuting routes,
- development and modernization of border crossing points,
- continuation of projects to modernize and expand county roads following the principles of “complete streets”,
- expanding the network of highways and express roads with an emphasis on their interconnection in the border area,
- setting up detours and routes for heavy traffic,
- expanding the network of electric vehicle charging stations and alternative fuel supply stations,
- optimizing and modernizing the network of airports in the region and connecting them as
- nearby urban centres through public transport services,
- capitalizing on the hydrographic network for ecological transport and leisure.

All these steps will be part of future cross-border cooperation projects.

Modern infrastructure, fair and open market competition, and the development and coordination of various modes of transport, along with the implementation of an effective regulatory and management system, provide the foundation for mobility development. Global trends in transportation systems indicate the need for rapid integration of transport technologies and regional mobility projects.

The growth in speed, cost-efficiency, and environmental friendliness of transportation vehicles is a key trend across all modes of transport, aligning with development strategies that emphasize energy efficiency, sustainability, safety, and consumer and environmental friendliness.

The countries of the Carpathian region have untapped potential in terms of shared historical, economic, social, and cultural connections, infrastructure, rapid digitization, and advantageous geographical location, which create conditions for progressive development.

Alongside this potential, there is a need for prompt response and rapid transformation in the face of global challenges. Climate change, wars, pandemics, population migration, and other challenges compel countries to act swiftly and collaboratively. That is why it is crucial to have a coordinated vision regarding the strategic direction of partner countries, taking into account challenges, global trends, and internal possibilities of border territories.

The development of the CBC Mobility Plan began with a comprehensive analysis of the border regions of the four countries in the Carpathian region. The results helped identify the completeness of inclusion of strategic directions affecting mobility development in planning and normative documents. The analysis also examined the current level of infrastructure in border territories and explored opportunities for future mobility development.

An analysis of existing interstate agreements regulating the opening and functioning of border crossing points revealed the need for updates. Currently, decisions are made at the national level based on these agreements, leading to inconsistencies between regional development visions, target infrastructure development programs at the national level, and interstate agreements.

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The Hungary-Slovakia-Romania-Ukraine ENI CBC Programme 2014-2020 provides EU funding for sustainable development along the border of Ukraine with Hungary, Slovakia and Romania, helps reducing differences in living standards and addressing common challenges across these border

The Member States of the European Union have decided to link together their know-how, resources and destinies. Together, they have built a zone of stability, democracy and sustainable development whilst maintaining cultural diversity, tolerance and individual freedoms.

The European Union is committed to sharing its achievements and its values with countries and peoples beyond its borders



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