Elaboration of Strategic Environmental Assessment of the Policy Objective 3 (PO 3) of the Interreg Programme for the programming period of 2021–2027, concerning the programming area of Hungary-Croatia

Environmental Report

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1 Introduction

Cross Border Cooperation (hereinafter: CBC) is a key element of the EU policy towards its neighbours. It helps reducing differences in living standards and addressing common challenges across the borders. It promotes cooperation between EU countries sharing a land border or sea crossing.

The Interreg VI-A Hungary – Croatia Programme 2021-2027 (hereinafter: Hungary-Croatia Programme) is a cross-border programme between two EU Member State countries in the middle of Europe, along the north-eastern border of Croatia and the south-western border of Hungary. The Programme area (hereinafter: CBC area) covers a territory of 31 085 km^2, including 11 counties (Zala, Baranya and Somogy in Hungary and Međimurska, Varaždinska, Koprivničko-križevačka, Bjelovarsko-bilogorska, Požeško-slavonska, Osječko-baranjska, Virovitičko-podravska, and Vukovarsko-srijemska in Croatia) with a population of over 1.79 million residents (according to the estimation for 2023).

Figure 1. The analysed territory of the VI-A Hungary-Croatia Programme 2021-2027
Source: *Hungary-Croatia Cross-border Co-operation Programme (huhr-cbc.com)*

The Hungary-Croatia Programme was successfully implemented in two programming periods 2007-2013 and 2014-2020 under management of the Hungarian Ministry of Foreign Affairs and Trade, while the Croatian Ministry of Regional Development and EU Funds was Croatian National Authority.

The preparation of the Hungary-Croatia Programme for the programming period 2021-2027 started in 2019 with the preparation of the programme documents. The draft of the Hungary-Croatia Programme was prepared in period 2021-2022 and included four priorities: *Competitive border region*; *Greener and low-carbon border region*; *Inclusive border region* and *Cooperating border region* with accompanying selected Policy objectives (PO) / Interreg specific objectives (ISO) and specific objectives (SO). Strategic environmental assessment (hereinafter: SEA) was carried out based on the document *Elaboration of Strategic Environmental Assessment of the Interreg Programme for the programming period of 2021–2027, concerning the programming area of Hungary-Croatia (Environmental report)* prepared by EX ANTE Consulting Ltd. Final version of the Environmental report (February 2023) was approved in the 6th written procedure of the Programming Committee.

In November 2023 there have been changes in Hungary-Croatia Programme management. The Croatian Ministry of Regional Development and EU Funds took over the Managing Authority role of the Hungary-Croatia Programme from the Hungarian Ministry of Foreign Affairs and Trade.

The previously prepared Draft of the Hungary-Croatia Programme was extended with a new priority (3) *Connected border region* under policy objective 3 (*A more connected Europe*) with accompanying specific objective SO (ii) *developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility* (hereinafter: PO3).

Three operations of strategic importance (hereinafter: strategic projects) were listed within Appendix 3 of the Hungary-Croatia Programme under the PO 3 (ii):

- preparation of project documentation and construction of missing road link Sárok - Kneževo,
- preparation of project documentation and construction of missing road link Zákány – Gotalovo and
- preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge).

Draft of the Hungary-Croatia Programme extended with the PO 3 (ii) was prepared and submitted to the European Commission on 8 December 2023. Due to the additional PO 3 (ii) objective it was necessary to conduct a new SEA, which was carried out based on the document *Elaboration of Strategic Environmental Assessment of the Interreg Programme for the programming period of 2021–2027, concerning the programming area of Hungary-Croatia (Environmental report)* prepared by EX ANTE Consulting Ltd & EKONERG Ltd.

Final draft of the Hungary-Croatia Programme and Final version of the Environmental report (February 2024) were submitted to the European Commission for approval on 15 March 2024. The Hungary-Croatia Programme was approved on 21 March 2024 with condition that

Appropriate assessment of the PO 3 should be conducted before any formal activities under policy objective PO 3 could be launched.

The Croatian Ministry of Regional Development and EU Funds launched in January 2025 preparation of the Appropriate assessment of the Policy Objective 3 and thereby update of the Environmental report for PO 3.

2 Determining the Environmental report content (scoping process)

2.1 Previous scoping processes and public consultations

As part of the SEA of the Hungary-Croatia Programme, scoping process for the 2021-2027 programming period was conducted for first time in the period 6 April 2022 - 6 May 2022 with Hungarian competent authorities and in the period 5 April 2022 - 20 May 2022 with Croatian competent authorities in order to identify issues that are likely to be of most importance in SEA and to define content and structure of the Environmental report. Public consultation on the Draft of the Hungary-Croatia Programme (prepared in 2022) and Draft of the Environmental report was conducted in the period 1 June 2022 - 1 July 2022 with Hungarian competent authorities and public and in the period 1 June 2022 - 18 July 2022 with Croatian competent authorities and public.

Upon revision of the Hungary-Croatia Programme i.e. by extension with a priority (3) *Connected border region* within policy objective PO 3 and specific objective SO (ii), new SEA was carried out. Second scoping process was conducted in the period 22 December 2023 – 22 January 2024. It included Croatian competent authorities and public and Hungarian contact point to the UNECE Kiev (SEA) Protocol was informed as well. Hungarian contact point requested and summarised Hungarian relevant national authorities' opinions in the period 16 January 2024 - 31 January 2024. Public consultation on the Draft of the (extended) Hungary-Croatia Programme and Draft of the Environmental report was conducted in the period 29 January 2024 - 28 February 2024.

2.2 Scoping process of the Elaboration of strategic environmental assessment of policy objective (PO 3) of the Hungary-Croatia Programme

Scoping process for SEA of PO3 of the Hungary-Croatia Programme was conducted in the period 28 October – 29 November 2024 to identify issues that are likely to be of most importance in SEA and to define content and structure of the Environmental report. Scoping process included the public, Croatian and Hungarian competent authorities.

In line with opinions received in scoping process, relevant legislation, European Commission condition for the Hungary-Croatia Programme and Decision of the Croatian Ministry of Environmental Protection and Green Transition from the preliminary assessment on Natura 2000,

part of this Environmental report is the Appropriate assessment of policy objective (PO) 3 of the Hungary-Croatia Programme, which is given as its Annex (1).

Hungary	Baranya County Government Office Department-General for Environmental Protection, and Waste-Management Department for Public Health of the Public Health Department-General Department of Agriculture of the Department-General for Forestry and Agriculture Plant and Soil Protection Department State Chief Architect's Office Somogy County Government Office Department-General for Environmental Protection, and Waste-Management Department for Public Health of the Public Health Department-General Department of Agriculture of the Department-General for Forestry and Agriculture Plant and Soil Protection Department State Chief Architect's Office Zala County Government Office Department-General for Environmental Protection, and Waste-Management Department for Public Health of the Public Health Department-General Department of Agriculture of the Department-General for Forestry and Agriculture Plant and Soil Protection Department State Chief Architect's Office Balaton Uplands National Park Directorate Danube-Drava National Park Directorate Őrség National Park Directorate Budapest Capital Government Office Ministry of Construction and Transport, State Secretariat for Architectural Strategy, Deputy State Secretariat for Heritage Preservation
Croatia	Ministry of Environmental Protection and Green Transition: Directorate for Nature Protection Directorate for climate transition Directorate for Water Management and Marine Protection Directorate for Environmental Impact Assessment and Sustainable Waste Management Ministry of the Sea, Transport and Infrastructure Directorate for Road Transport, Road Infrastructure and Inspection Osječko-baranjska county

	Directorate for spatial planning, construction and environmental protection Koprivničko-križevačka county Directorate for spatial planning, construction, environmental protection and nature protection Međimurska county Directorate for spatial planning, construction and environmental protection

Table 2. Competent authorities included in scoping process.

During preparation of Environmental report, a number of major international, EU and national level sources (legislation, development strategies, etc.) and databases were used, such as:

List of relevant legislative acts and documents	
Hungary	Hungary's River Basin Management Plan 2021; National Transport Infrastructure Development Strategy of Hungary; National Energy and Climate Plan of Hungary; National Clean Development Strategy of Hungary (2020-2050); National Development 2030 - National Development and Territorial Development Concept of Hungary; National Spatial Planning Plan (OTrT) and Decree No 9/2019. (VI. 14.) of the Minister in charge of the Prime Minister's Office; National Forest Strategy (2016-2030); National Waste Management Plan (2021-2027);Municipal Decree No. 11/2023 (II.14.) of the General Assembly of Somogy County on the Spatial Planning Plan of Somogy County; National Tourism Development Strategy 2030 - Tourism 2.0; National Water Strategy (Kvassay Jenő Plan) of Hungary; "Healthy Hungary 2021–2027" – Health Sector Strategy (2021-2027); Second National Climate Change Strategy (2018-2030); National Framework Strategy on Sustainable Development of Hungary (2012-2024); National Nature Protection Plan V. (until 2026); National Strategy for the Conservation of Biodiversity (until 2030); National Landscape Strategy of Hungary (2017-2026); Integrated territorial development programme of Baranya County 2021-2027 ; Territorial development concept and programme of Baranya County 2030; Integrated territorial development programme of Somogy County 2021-2027; Territorial development concept and programme of Somogy County 2030; Integrated territorial development programme of Zala County 2021-2027 ; Territorial development concept and programme of Zala County 2030
Croatia	National development strategy of the Republic of Croatia until 2030; Spatial development strategy of the Republic of Croatia; Strategy and Action plan for nature protection of the Republic of Croatia for period 2017-2025; Climate change adaptation strategy of the Republic of Croatia for the period up to 2040 with a view to 2070; Low carbon development strategy of the Republic of Croatia until 2030 with a view to 2050; Agriculture strategy until 2030; Water management strategy; River Basin Management till 2027; Air pollution control programme for the period from 2020 to 2029; Waste management plan of the Republic of Croatia for period 2023-2028; Integrated National Energy and Climate Plan for the Republic of Croatia for the period from 2021 to 2030; Energy development strategy of the Republic of Croatia until 2030 with a view to 2050; Transport Development Strategy of the Republic of Croatia for the period from 2017 to 2030; Railway Development Strategy of the Republic of Croatia until 2032; National Railway Infrastructure Development Plan for the period until 2030; Plan for the development of the geothermal potential

	of the Republic of Croatia until 2030; Sustainable tourism development strategy until 2030, National plan for sustainable tourism until 2027 and an Action plan for the implementation of the National plan for sustainable tourism until 2025; relevant counties development plans and spatial plans
Other	United Nations 2030 Agenda for Sustainable Development (A/RES/70/1); United Nations Framework Convention on Climate Change (UNFCCC, 1992); European Convention on the Protection of the Archaeological Heritage 1992 (Revised); Paris Agreement (2015); The European Commission's orientation paper on INTERREG NEXT Programmes and its Annex III; Joint paper on Interreg NEXT Strategic Programming 2021-2027; Annex 2 to the Regulation of the European Parliament and of the Council on the ERDF and CF (proposal); Indicator Fiches of additional common output and result indicators for the ERDF for Interreg; EU Green Deal; European Climate Law; EU Strategy on Adaptation to Climate Change; "Fit for 55" package; EU Water Framework Directive; Directive 2007/60/EC on the assessment and management of flood risks; EU Biodiversity Strategy for 2030 – Bringing nature back into our lives biodiversity Strategy (until 2030); European Landscape Convention; European Union Strategy for the Danube Region; EU Invasive Alien Species (IAS) Regulation
List of data resources	
Hungary	Hungarian Central Statistical Office (ksh.hu); TEIR – Official database of the Hungarian Central Statistical Office (TeIR); Official website of the Hungarian Water Management Directorate (https://www.vizugy.hu/index.php?module=vizstrat&programelemid=145); https://geoportal.vizugy.hu/vizkeszletvedelem/index.html; https://vizeink.hu/vizgyujto-gazdalkodasi-terv-2019-2021/vgt3-elfogadott/#up01; Hungarian official road map: https://utszamkereso.kozut.hu/
Croatia	Croatian Bureau of Statistics (https://dzs.gov.hr/); Croatian environmental protection information system and nature protection information system (http://www.haop.hr/hr, https://envi.azo.hr/ and https://bioportal.hr/), Hrvatske vode (Register of water bodies, Register of water protected areas, Flood hazard and risk maps and https://www.voda.hr/hr/geoportal), the Croatian Ministry of Environmental Protection and Green Transition for site specific conservation objectives and conservation measures of Natura 2000 sites
Other	Eurostat (ec.europa.eu/eurostat)

3 Observation of potential alternatives

Priority (3) *Connected border region* of the Hungary-Croatia Programme addresses policy objective PO 3: a *more connected Europe* and specific objective SO (ii): *developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility.* Three strategic projects were listed within Appendix 3 of the Hungary-Croatia Programme under PO 3 (ii), all related to road crossing the Hungary-Croatia border:

- preparation of project documentation and construction of missing road link Sárok - Kneževo,
- preparation of project documentation and construction of missing road link Zákány – Gotalovo and
- preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge)

In relation to the PO 3 of the Hungary-Croatia Programme following alternatives are observed for all three roads:

A. "do nothing" scenario
B. sustainable mobility solutions and
C. implementation of strategic projects listed under PO 3 (ii).

3.1 Sárok – Kneževo road link

Scenario A: No Project Implementation

Settlements Sarok and Kneževo are at aerial distance of about 2 km, but current road infrastructure demands travel of 33 km with average time travel of 32 minutes from one settlement to another. In the "no project scenario", no action is taken to improve the existing infrastructure, leaving the current situation unchanged. Residents continue to face long travel times of 33 minutes by car between the two towns, while public transportation remains impractical. The lack of investment in infrastructure perpetuates inefficiencies that hinder economic growth. Businesses struggle with high transportation costs, limiting their ability to access markets and reducing their competitiveness. This stagnation discourages potential investors from considering the region as a viable location for development, further exacerbating economic challenges.

Socially, the absence of improved connectivity leaves residents isolated from further employment opportunities and markets. Vulnerable groups, including the elderly and those without private vehicles, are particularly affected by these limitations. The lack of convenient transportation options also prevents meaningful cultural exchange and collaboration between the two communities, weakening social cohesion.

From an environmental perspective, maintaining the status quo results in continued inefficiencies in traffic flow. Outdated roads contribute to higher fuel consumption and increased greenhouse gas emissions and pollutants emissions. Over time, the absence of proactive maintenance accelerates road degradation, leading to greater environmental costs when repairs inevitably become necessary.

Scenario B: Sustainable mobility solution

Through Sárok – Kneževo area passes the international railway (Croatian line M301) between Osijek – Beli Manastir - state border - Magyarbóly –continued on Hungarian state line 65 towards Villány - Pécs. Travel between Sárok and Kneževo via railway demands road transport as well, as it is necessary to travel from Kneževo to railway station Beli Manastir with road vehicles for 10.5 km and from Sárok to railway station Magyarbóly for 11.0 km. The necessity of using road vehicles alongside trains makes train travel in Sárok – Kneževo area mainly impractical for everyday life and daily travels. The railway line is not electrified between Osijek and Pécs, using fossil fuel for traction. According to the Croatian National Railway Infrastructure Development Plan for the period until 2030 (OG 156/22), electrification of railway M301 is not planned in mid-term period till 2030. The electrification of the railway line 65 on Hungarian side is not a short-term priority either, as the relevant railway line is not enlisted in the latest electrification concept of MÁV Ltd (Operator of the Hungarian railway lines). The electrification of the line is only a mid- or long-term plan – similar to the Croatian approach. The organisation of transnational passenger transport requires the bilateral cooperation of the respective ministries from both countries.

Due to the above, railway development is unrealistic in this sustainable alternative. While a bike path offers certain advantages, it falls short of addressing the broader transportation needs of the Sárok – Kneževo and its gravitational area. Cycling presents a mode of transport suitable for individual travel over shorter distances during good weather conditions and when freight transport is not needed. The age median of locals set a trend for an aging society with lower fertility rates and migration. Considering the above, bicycle transport can be used only as an additional mode of transport, having a tourist and leisure aspect, as it saves fuel consumption and households costs. Lacking the potential for freight transport and all year-round usability it is not considered as a potentially sustainable alternative to communal road transport. Local producers and traders still face logistical challenges that hinder their ability to expand into cross-border markets. Additionally, it does not provide solutions for emergency services or winter commuting when cycling may not be practical. This impact is limited in scope because the bike path does not reduce overall traffic volume or address emissions from road vehicles that continue to use outdated roads.

Scenario C: Road Renovation and Construction

Construction of the missing road link Sárok - Kneževo will improve connectivity and reduce travel time in not just between Sárok – Kneževo, but also in a larger area, having potential to provide a link between M6 Hungarian highway and DC7 Croatian state road.

This scenario involves building a new 1461 m road segment in Croatia while upgrading existing 995 meters infrastructure between Sárok and Kneževo. It represents a comprehensive solution that balances economic growth, social inclusion, and environmental sustainability.

Shortening travel time has a positive impact on the environment, which is most easily visible in reduction of fuel consumption and related GHG and air pollutants emissions.

At example of shortening travel of about 60 km per one round trip of passenger road vehicle between Sárok – Kneževo means a 94% reduction in fuel consumption (based on usual fuel consumption (gasoline, diesel) of 7-8 litre / 100 km) i.e. avoided CO_2 emission from 11.36 kg to 0.69 kg in case of gasoline and from 13.09 kg to 0.79 kg in case of diesel run passenger road vehicle (2006 IPCC Guidelines for National Greenhouse Gas Inventories, default values for CO_2 emission factors) and avoided NOx emission from 14.73 g to 0.89 g in case of gasoline and from 48.36 g to 2.93 g in case of diesel run passenger road vehicle (EMEP/EEA Air Pollutant Emission Inventory Guidebook 2023 – Update 2024, default values for NOx emission factors).

Road renovation offers immediate benefits by facilitating faster and more reliable transportation for goods and people. The improved connectivity reduces logistical costs for businesses and enables local producers to access cross-border markets more efficiently. The enhanced infrastructure also increases property values near the renovated roads, attracting investments in sectors such as logistics hubs or agro-processing facilities. Unlike other options, road construction supports both small-scale local commerce and larger regional trade networks.

Road renovation addresses critical mobility challenges faced by all demographics. It ensures safer and faster travel for drivers while enabling public transport services that benefit residents without private vehicles. Emergency services can respond more effectively with improved road access, while schools and healthcare facilities become more accessible for everyone in the community. The shorter travel times foster stronger connections between the two communities encouraging cultural exchange and strengthening social ties across borders.

Conclusion

Criteria	Scenario A	Scenario B	Scenario C
Positive Economic Impact	1	4	4
Positive Social Impact	1	2	5
Positive Environmental Impact	2	5	4
Total Score	**4**	**11**	**13**

The alternative analysis demonstrates that Scenario C (road renovation and reconstruction) is the most viable option for improving connectivity between Sárok and Kneževo. It delivers immediate economic returns by boosting trade and tourism while addressing social needs through improved mobility and accessibility. Environmentally, it achieves measurable reductions in emissions while incorporating sustainable design practices during construction.

Scenario B, although environmentally friendly and affordable, fails to provide comprehensive solutions for freight transport or inclusive mobility needs. While it could serve as complementary alongside road improvements in the future, it cannot replace the necessity of road infrastructure. The planned strategic projects all contain the facilitation of bicycle traffic.

Scenario A leads to stagnation in both economic development and social integration while exacerbating environmental degradation over time. In contrast, Scenario C balances cost-effectiveness with tangible benefits across all key areas—economic growth, social inclusion, and environmental sustainability—making it the optimal choice for fostering sustainable development in border regions.

Considering all the above, the conclusion is that construction of missing road link between Sarok - Kneževo represents the most realistic way to improve connectivity in this part of CBC area.

3.2 Zákány – Gotalovo

Scenario A: No Project Implementation

Settlements Zákány and Gotalovo are at aerial distance of about 3.5 km, but current road infrastructure demands travel of 37 km with average time travel of 38 minutes from one settlement to another.

In this scenario, no action is taken to improve the existing infrastructure. The current situation remains unchanged, with impractical long travel time between the two towns by car and no convenient public transportation options. Without any intervention, the high transportation costs associated with inefficient routes persist. Businesses face challenges in accessing markets, limiting trade opportunities and economic growth in the region. The lack of improved infrastructure discourages potential investors who might otherwise see the region as a viable location for development. Additionally, local producers, such as farmers or small manufacturers, remain constrained by logistical inefficiencies, reducing their competitiveness.

The absence of infrastructure improvements perpetuates social isolation between the two communities. Residents continue to face difficulties in accessing essential services and employment opportunities. This isolation particularly affects vulnerable groups, such as those without private vehicles or elderly individuals who rely on public transportation. Furthermore, limited connectivity hinders cultural exchange and cross-border collaboration that could strengthen community ties.

From an environmental perspective, maintaining the status quo means no reduction in vehicle emissions or energy consumption. The outdated roads continue to cause traffic inefficiencies, increasing fuel consumption and contributing to air pollution. Additionally, the lack of proactive maintenance accelerates road degradation, leading to higher long-term environmental costs when eventual repairs become unavoidable.

Scenario B: Sustainable mobility solution

Through Zákány – Gotalovo area passes the electrified international railway (via Croatian line M201) Dugo Selo – Koprivnica – Botovo - state border - Gyékényes, through the Hungarian state line 41 towards Dombóvár. As M201 line is part of TEN-T corridor V/b, for several years now its reconstruction and construction of a new railway track are underway. Recently, works on section state border - Botovo - Koprivnica were completed. Passenger railway travel from Gotalovo to Zákány demands transport from Gotalovo to railway station Koprivnica with road vehicles for 19.5 km and afterwords travel with train over 3 hours from Koprivnica to Zákány as there is no direct passenger train (it is necessary to travel from Koprivnica to Nagykanizsa in Hungary and then to transfer back to Zákány) making this railway travel more than impractical for everyday life and travels.

The railway development requires a substantial upfront investment and an implementation timeline of 3–5 years. The organisation of transnational passenger transport requires the bilateral cooperation of the respective ministries from both countries. Although railways can enhance regional trade and tourism by providing efficient cross-border connections, the high costs may outweigh the benefits in a low-density area where passenger demand is uncertain and low. Moreover, operational costs remain high, which could further limit the project's economic viability. There are long-term plans to connect line No. 30 with M201 in Croatia through the establishment of a delta line from lane No. 41 through Zákány, but without the establishment of a railway station in either Zákány nor Gotalovo.

Railway development improves mobility for passengers traveling longer distances between regions or countries. However, without additional feeder networks (e.g., bus services), many local residents may find it difficult to access railway stations conveniently. This limits the railway's effectiveness in addressing local mobility challenges. While it fosters cultural exchange and labour movement on a regional scale, its impact on immediate community-level needs is less pronounced compared to road improvements.

Railways have a smaller environmental footprint per passenger-kilometer compared to cars or buses. However, the construction phase of railway projects can disrupt ecosystems and require extensive land use changes. Additionally, achieving these environmental benefits depends on the availability of renewable energy sources for electrification.

Another sustainable mobility option would be the bicycle path. While a bike path offers certain advantages, it falls short of addressing the broader transportation needs of the Zákány-Gotalovo and its gravitational area. Cycling presents a mode of transport suitable for individual travel over shorter distances during good weather conditions and when freight transport is not needed. The age median of locals set a trend for an aging society with lower fertility rates and migration. Considering the above, bicycle transport can be used only as an additional mode of transport, having a tourist and leisure aspect, as it saves fuel consumption and households costs. Lacking the potential for freight transport and all year-round usability it is not considered as a potentially sustainable alternative to communal road transport. Local producers and traders still face logistical challenges that hinder their ability to expand into cross-border markets. Additionally, it does not provide solutions for emergency services or winter commuting when cycling may not be practical. This impact is limited in scope because the bike path does not reduce overall traffic volume or address emissions from road vehicles that continue to use outdated roads.

Scenario C: Road Renovation and Construction

Construction of missing road link between Zákány and Gotalovo involves construction of relatively short roads, part of which overlap with existing paved and unpaved roads (see chapter 4 Introduction of the planned developments within Policy objective 3 (PO 3) of the Hungary-Croatia Programme and part of which, namely Croatian section will be built on area with present nature vegetation and agricultural surfaces. Shortening travel time has a positive impact on the environment, which is most easily visible in reduction of fuel consumption and related GHG and air pollutants emissions as already presented in analysis of road link road link Sárok - Kneževo.

Scenario C involves constructing a new road segment and renovating existing roads to improve connectivity between Zákány and Gotalovo. It is identified as the most practical and beneficial solution for addressing immediate challenges while supporting long-term sustainability.

The improved road network facilitates faster and more reliable transportation for goods and people, boosting local trade and tourism. For example, farmers can more easily transport their products to markets across the border, while businesses benefit from reduced logistical costs. Additionally, better connectivity increases property values near the renovated roads, attracting investments and fostering economic growth in both towns.

Improved roads significantly enhance mobility for residents by reducing travel times and providing safer transportation options. This allows easier access to further employment opportunities and markets in neighbouring towns or regions. The shorter travel times also strengthen social cohesion by enabling more frequent interactions between communities on both sides of the border. Furthermore, road construction creates short-term employment opportunities during the building phase while delivering long-term benefits for local population.

While road construction typically raises concerns about increased vehicle emissions due to higher traffic volumes, these impacts can be mitigated through proper planning and design. For instance: Smoother traffic flow on upgraded roads reduces fuel consumption per trip.

Conclusion

Criteria	Scenario A	Scenario B	Scenario C
Positive Economic Impact	1	2	5
Positive Social Impact	1	3	5
Positive Environmental Impact	2	5	4
Total Score	**4**	**10**	**14**

The analysis demonstrates that Scenario C (construction of missing road links) is the most viable choice for improving connectivity between the two communities. It offers rapid implementation at a low cost while delivering substantial economic benefits through enhanced trade, tourism, and property values. Socially, it addresses pressing mobility challenges faced by residents while fostering stronger community ties across borders. Environmentally, it achieves meaningful improvements in traffic efficiency with minimal disruption compared to railway development contrast to scenario "A" leads to stagnation in both economic growth and social integration while exacerbating environmental degradation over time.

Scenario B, though environmentally sustainable in the long term, requires significant investment and time with limited benefits for local communities.

Ultimately, Scenario C balances cost-effectiveness with tangible economic, social, and environmental benefits, making it the most practical solution for fostering sustainable development in border regions.

Considering all of the above, the conclusion is that construction of missing road link Zákány - Gotalovo represents the most realistic way to improve connectivity in this part of CBC area.

3.3 Mura Bridge / MuKo Bridge

Scenario A: No Project Implementation

Mura Region suffers from insufficient transport connectivity. Settlements Murakeresztúr and Kotoriba are at aerial distance of about 5 km but current road infrastructure between settlements Murakeresztúr and Kotoriba demands travel of 45 km with travel time of 50 minutes. International railway line (Croatian M501) between Čakovec - Kotoriba – State border—continued on Hungarian state line 30 via (Murakeresztúr) towards Budapest (line No. 60 after Nagykanizsa) passes through subject area, but without direct rail connection for passenger transport. The existing railway bridge over the Mura River is closed to pedestrians and cycling. Lack of direct rail connection demands travel time of about 4 hours between settlements.

In this scenario, no action is taken to upgrade the existing infrastructure. The railway bridge remains outdated and non-electrified, while the absence of a road bridge forces traffic to rely on detours or inefficient routes.

The lack of investment perpetuates logistical bottlenecks, increasing transportation costs for businesses that rely on cross-border trade. The outdated railway bridge limits freight capacity and speed, reducing competitiveness for industries dependent on rail transport. Meanwhile, the absence of a direct road connection forces commercial and passenger vehicles to take longer routes, raising fuel expenses and delivery times.

Residents face prolonged travel times for commuting or visiting family across the border. The railway's limited capacity and lack of electrification restrict passenger services, while the missing road bridge exacerbates isolation for communities reliant on road transport. Emergency services remain constrained by poor accessibility. The outdated railway bridge operates with diesel locomotives, contributing to higher greenhouse gas emissions compared to electric alternatives. Detours for road traffic increase fuel consumption and emissions, while the decaying infrastructure raises risks of pollution from potential structural failures.

Scenario B: Sustainable mobility solution

M501 is not electrified, meaning fossil fuel diesel is today used for traction. According to the Croatian National Railway Infrastructure Development Plan for the period until 2030 (OG 156/22), in mid-term period till 2030 it is only planned to assess the technical requirements to be met in terms of capacity and permitted speed, taking into account both economic and environmental aspects, all in accordance with the interoperability requirements for railway lines. The organisation of transnational passenger transport requires the bilateral cooperation of the respective ministries from both countries. As for the Hungarian side of the border line No. 30 (line No. 60 after Nagykanizsa) is electrified, but used only for freight transport without providing public transport service.

This scenario involves modernizing the existing railway bridge, reinforcing its structure, and electrifying the rail line to support electric trains. This would reduce long-term operational costs by transitioning from diesel to electric power, which is more efficient and less price volatile. The upgraded bridge increases freight capacity, benefiting industries like manufacturing and logistics. However, the project requires significant upfront investment and a multi-year timeline (3–5 years), delaying economic returns.

Electrified rail services improve passenger comfort and reliability, fostering cross-border mobility for commuters and tourists. The lengthy construction period could also disrupt existing rail operations temporarily. Electrification cuts carbon emissions by up to 70% compared to diesel trains, aligning with EU sustainability goals. Modernizing the bridge reduces risks of

environmental contamination from structural decay. However, the project's heavy reliance on steel and concrete during renovation contributes to a sizable carbon footprint.

Another sustainable mobility option would be the establishment of a bicycle path on the existing railway bridge. While a bike path offers certain advantages, it falls short of addressing the broader transportation needs of Murakeresztúr- Gotalovo and their gravitational area, and the safety of opening a bicycle path on the freight railway bridge is questionable. Considering the age medial of locals, bicycle transport can be used only as an additional mode of transport, having a tourist and leisure aspect, as it saves fuel consumption and households costs. Lacking the potential for freight transport and all year-round usability it is not considered as a potentially sustainable alternative to communal road transport. Local producers and traders still face logistical challenges that hinder their ability to expand into cross-border markets. Additionally, it does not provide solutions for emergency services or winter commuting when cycling may not be practical. This impact is limited in scope because the bike path does not reduce overall traffic volume or address emissions from road vehicles that continue to use outdated roads.

Scenario C – Planning and construction of a new road bridge besides the railway bridge

This scenario involves further planning and building a new road bridge next to the existing railway bridge to create a direct connection between the two regions, bypassing detours and congestion-prone routes.

The new bridge provides immediate economic benefits by slashing travel times for goods and passengers. Local businesses gain faster access to cross-border markets, while tourism and retail sectors benefit from increased visitor traffic. Construction costs are lower than railway electrification, and the project can be completed in 1–2 years. The road bridge drastically improves accessibility for all road users, including private vehicles, buses, and emergency services. Shorter commutes enhance quality of life, and the direct route strengthens social and cultural ties between communities. However, increased road traffic may raise safety concerns without proper signage or speed controls.

The new bridge reduces GHG emissions from detour-related fuel use, yet it also incentivizes higher road traffic volumes. Traffic management policies are to be implemented for the reduction of air pollution and noise level control.

Conclusion

Criteria	Scenario A	Scenario B	Scenario C
Positive Economic Impact	1	3	4
Positive Social Impact	1	3	5
Positive Environmental Impact	2	4	4
Total Score	**4**	**10**	**13**

Scenario C emerges as the optimal choice despite its environmental trade-offs. The project delivers rapid economic returns, enhances social connectivity, and addresses urgent mobility needs at a lower cost and shorter timeline than railway electrification.

While Scenario B offers long-term environmental benefits, its high upfront costs and prolonged implementation make it less practical for immediate regional development.

Scenario A locks the region into economic stagnation and environmental inefficiency. The road bridge, though not perfect, strikes a balance between progress and practicality, providing a foundation for future sustainable initiatives (e.g., electric vehicle incentives). For communities prioritizing immediate economic and social gains, Scenario C is the clear path forward.

4 Introduction of the planned developments within Policy objective 3 (PO 3) of the Hungary-Croatia Programme

The Hungary-Croatia CBC area lies within a triangle of three TEN-T network elements: corridor V/b (E71, A4–M7), corridor X (E70, A3) and corridor V/c (E73, A5–M6). Due to the peripheral situation of these axes, the middle of the CBC area is isolated and there is a lack of cross-border infrastructure. Average distance between road border crossings is 72 km, making the Hungary-Croatia border the least permeable one in both countries.

Creating necessary transport connections between regions plays vital role in ensuring economic prosperity and cohesion, aligning with the goals outlined in the Territorial Agenda 2030 of Just and Green Europe aiming to achieve balanced territorial development. In the pre-Schengen period, limited number of border crossing points presented significant obstacle to economic and social integration of CBC area. Distance between border crossing points contributed to prolongation of travel time, increase in transportation costs and traffic pollution. Croatia's access to Schengen on 1 January 2023 opened new opportunities in cross border transport.

With the aim of improving current situation, one of the Hungary-Croatia Programme priorities is the priority (3) Connected border region under policy objective 3 (a more connected Europe) with accompanying specific objective SO (ii) *developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-*

T and cross-border mobility. Three strategic projects were listed within Appendix 3 of the Hungary-Croatia Programme under PO 3 (ii):

- preparation of project documentation and construction of missing road link Sárok - Kneževo,
- preparation of project documentation and construction of missing road link Zákány – Gotalovo and
- preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge).

These road connections should provide linkages in isolated peripheral areas, in order to connect neighbouring communities, providing improved and quicker access to TEN-T and other major road/rail infrastructure, generating time savings.

4.1 Road link Sárok – Kneževo

The settlement of Sárok is located in Baranya County in Hungary, while the settlement of Kneževo is situated in Osječko-baranjska County in Croatia. Existing road network in the Sárok - Kneževo area in Hungary consists of 995 m newly built asphalt road in Hungary, designated with the number 57135 which will eventually provide connection to Kneževo. The other main road leading out of the Sárok is the road number 57118, connecting it with the future M6 highway, that is going to open for the public once the highway A5 on Croatian side is completed. A5 will provide connection of this part of the CBC area via Beli Monastir and Osijek to Bosnia and Herzegovina. Road 57118 connects Sárok to Ivándárda at a distance of 3 km. The closest larger settlement is Mohács to the north in a distance of approx. 33 km. Due to the current layout of the Hungarian road system, Mohács could be reached in a much shorter route (approx. 25 km) through Kneževo. In Croatia, main road in Kneževo area is state road DC7 Duboševica (state border Croatia / Hungary) - Beli Manastir - Osijek - Đakovo - GP Slavonski Šamac (state border Croatia / Bosnia & Herzegovina), which is part of the European route E73 i.e. corridor V/c. Kneževo is connected to the DC7 via county road ŽC4017 Kneževo (DC7 - DC7). Several county roads branch off from the DC7 in the Kneževo surrounding providing connections to mainly smaller settlements. First larger settlement from Kneževo is Beli Manastir at aerial distance of about 8 km, and regional centre Osijek is at aerial distance of about 33 km.

Certain works on the Hungarian section of road link Sárok - Kneževo in length of 995 m was completed in 2015 and it received the designation number 57135.

The Croatian section of road link Sárok - Kneževo is planned to be provided through construction of new two-way county road ŽC4302 in length of 1461 m. ŽC4302 will connect Hungary-Croatia border and existing county road ŽC4017 which will be reconstructed in length of about 700 m. Two-way bicycle line is planned on the sides of the road as well. ŽC4302 mainly overlaps with existing unpaved path. Location permit is issued and request for construction permit is recently submitted. The Conclusion of the Government of the Republic of Croatia from 7 June 2023

supports construction of the road Sárok – Kneževo. On the Hungarian side 995 m road (57135) connects to the Hungarian- Croatian border.

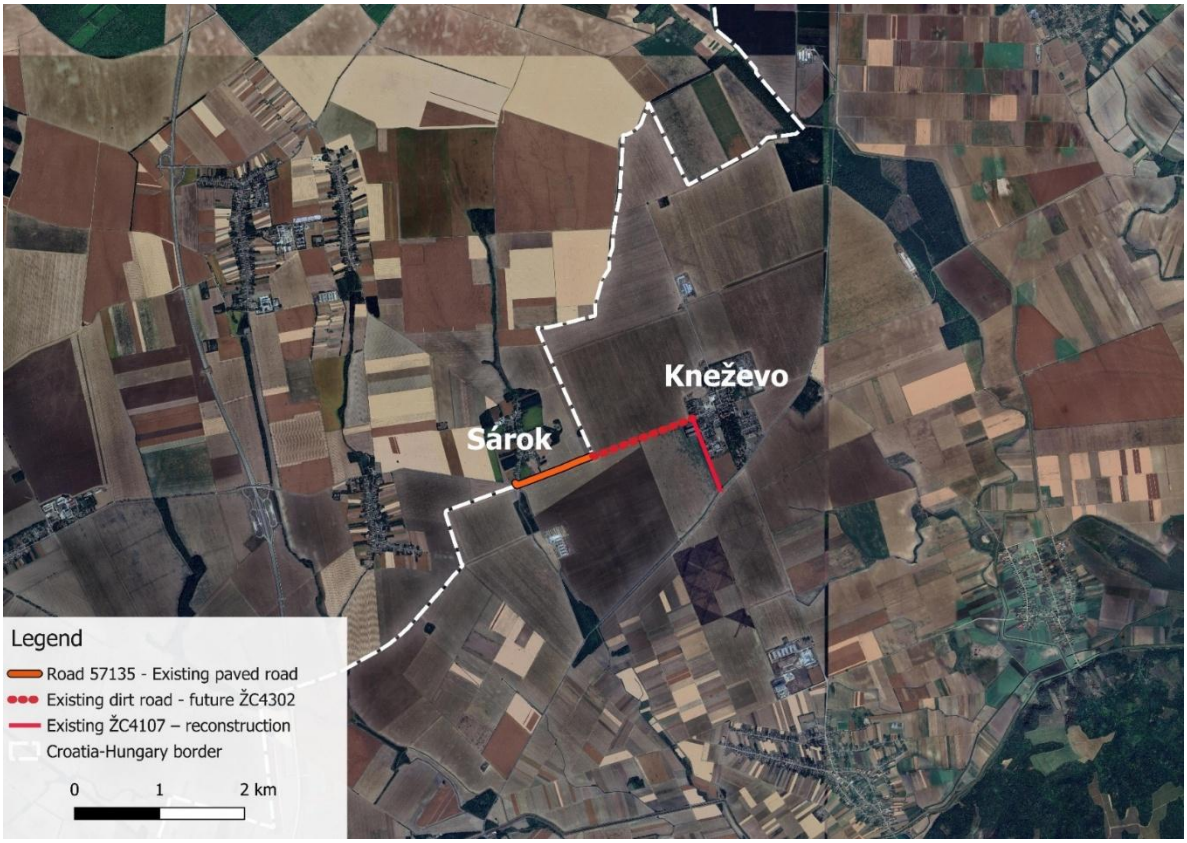

Figure 2. The Croatian section of the road link Sárok - Kneževo

Source: *Hrvatske ceste d.o.o. - Geoportal of public roads of the Republic of Croatia*

4.2 Road link Zákány - Gotalovo

Settlement Zákány is in Somogy County in Hungary located 20 km from Csurgó, 25 km from Nagykanizsa. Settlement Gotalovo is in Koprivničko-križevačka County in Croatia. In Croatia, main road in Gotalovo area is state road DC41 Gola (state border Croatia / Hungary) - Koprivnica - Križevci (DC22). Near Koprivnica, DC41 is connected to state road DC20 Pribislavec (DC3) - Sveti Križ - Donja Dubrava - Koprivnica (DC2) that provides connection to Varaždinska county and Međimurska county. Koprivnica is on state road DC2 Dubrava Križovljanska (state border Croatia / Slovenia) - Koprivnica - Virovitica (DC5) - Sveti Đurađ (DC5) - Našice - Osijek - Vukovar - Ilok (GP Ilok – state border Croatia / Serbia) which passes along the whole northern part of Croatia. The immediate road network of Zákány connects to small municipalities of similar size, however, road 6804 provides connection to the Hungarian city Nagykanizsa to the north (approx. 24 km) and Gyékényes 5 km to the southeast. Through Nagykanizsa passes highway M7 which is part of European routes E65 and E71.

Settlements Zákány and Gotalovo are at aerial distance of about 3.5 km but without direct road connection i.e. with current road infrastructure length of travel between Zákány and Gotalovo amounts to 37 km with travel time of 38 minutes. Construction of the missing road link Zákány - Gotalovo will improve connectivity and reduce travel time in the Zákány - Gotalovo area.

The Hungarian section of road link (809 m) is planned to use already existing and newly built road. The Hungarian section connects to Jókai Street within the inner area of Zákány. The connecting section of Jókai Street, which connects to state road 6804, which has been renovated and is in good condition. The route follows existing streets within Zákány until it reaches railway line no. 60 and crosses it in level. Total length of the pavement to be constructed/reconstructed on the Hungarian side is 809 m.

The Croatian section of road link is planned to be provided through construction of new two-way county road ŽC2268 in length of 290 m, connecting Hungary - Croatia border and existing state road DC41 where reconstruction is planned to construct T-intersection for connection of ŽC2268. On one side of ŽC2268 walking and bicycle lane are planned. ŽC2268 is planned to be constructed in parallel with the existing international railway line M201 (Gyékényes) – State border – Botovo - Koprivnica – Dugo Selo.

The Conclusion of the Government of the Republic of Croatia from 7 June 2023 supports construction of the road Zákány – Gotalovo.

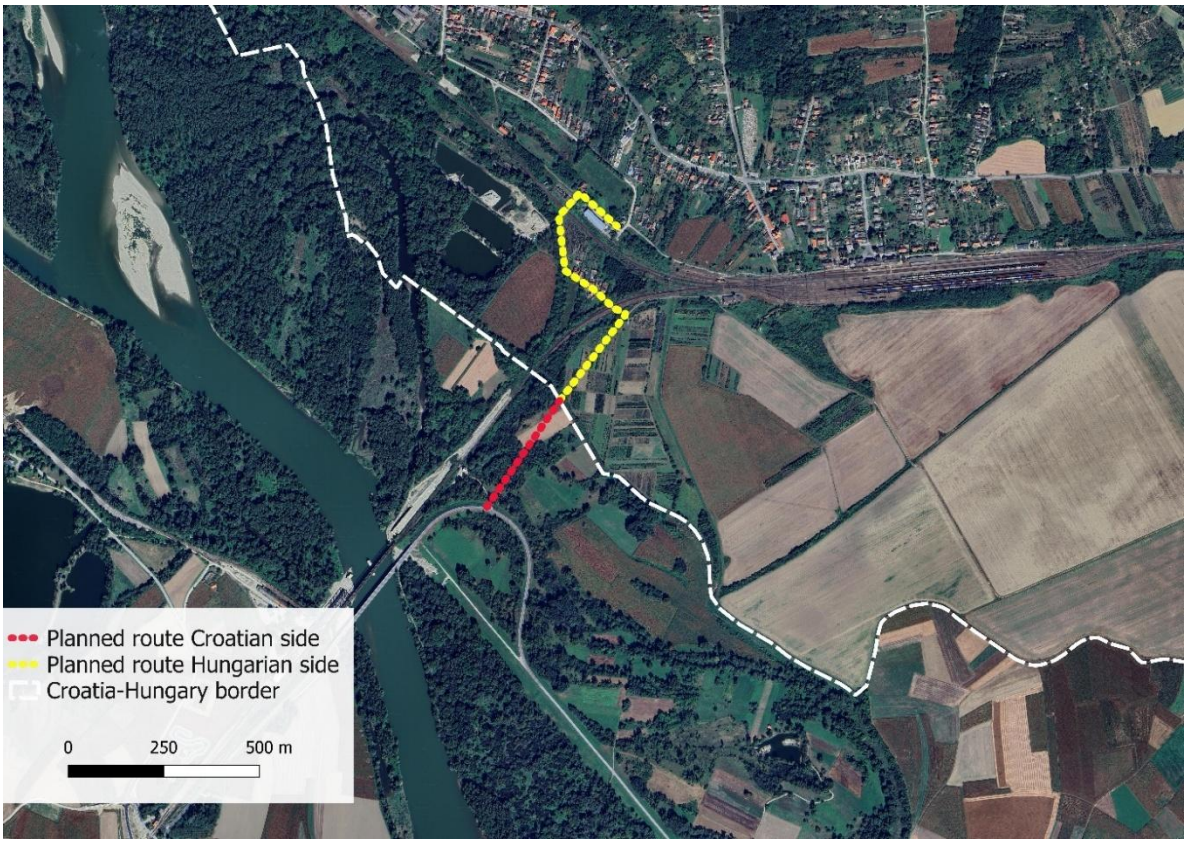

Figure 3. Road link Zákány – Gotalovo (small scale)

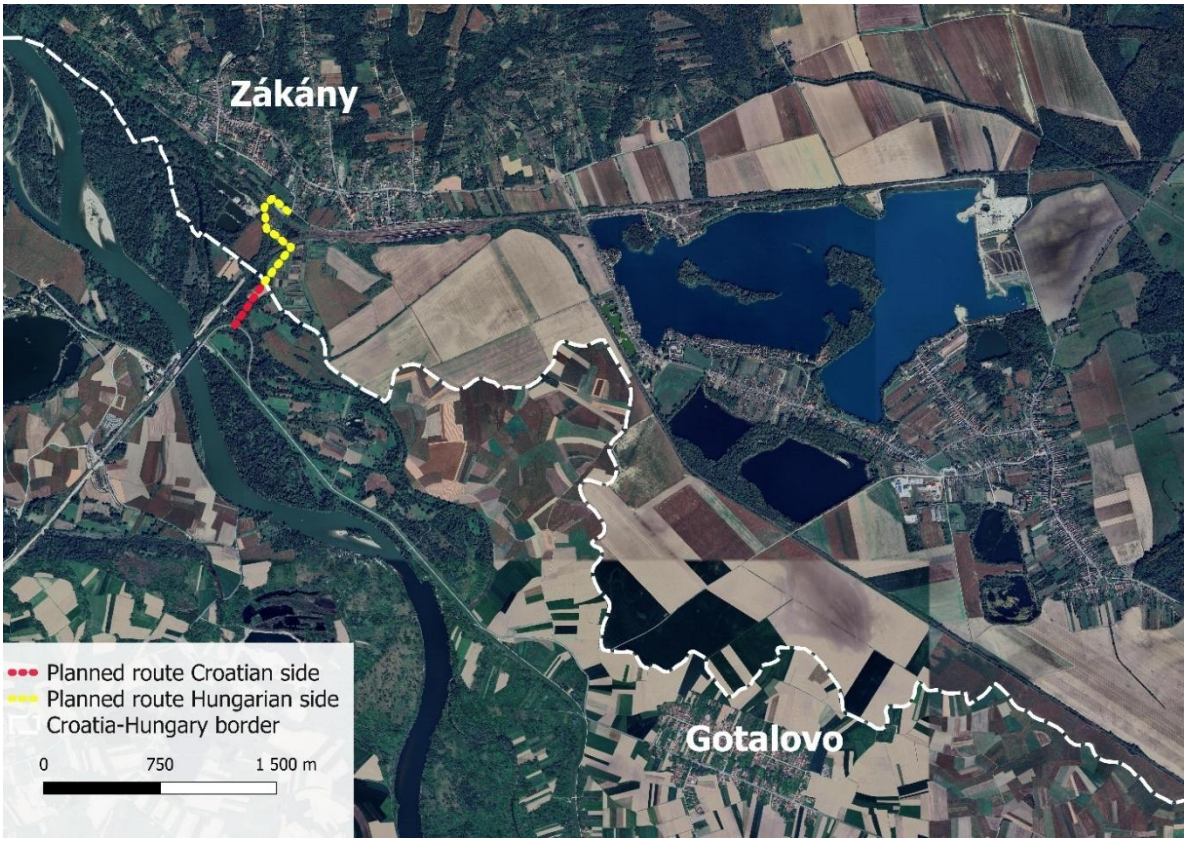

Figure 4. Road link Zákány – Gotalovo (large scale)

4.3 Murakeresztúr - Kotoriba bridge project

Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge) is project that has been a long-standing desire of the local communities on both sides of the Hungary-Croatia border i.e. EGTC Mura Region. Settlements Murakeresztúr and Kotoriba are at aerial distance of about 5 km but current road infrastructure between settlements Murakeresztúr and Kotoriba demands travel of 45 km with travel time of 50 minutes. A few versions of feasibility studies have been done in the past for the Mura Bridge / MuKo Bridge project. The leading idea of Mura Bridge / MuKo Bridge project now is road connecting settlement Kotoriba in Koprivničko-križevačka County in Croatia and Murakeresztúr in Zala County in Hungary, with bridge over the Mura River. The bridge over the Mura River is in general planned to avoid construction of a pillar in the riverbed. This should be confirmed through field investigation on site, as part of the preparation of the Mura Bridge / MuKo Bridge project documentation. Environmental impact assessment including Natura 2000 impact assessment needs to be completed on project level according Croatian and Hungarian national regulation before issuing the location permit for the construction.

The road route starts in Kotoriba on the existing unclassified road in 3. travnja street and ends on the regional road 6835 in Hungary. The Croatian section is planned to have length of 1665 m and it mainly follow existing international railway line M501 (Središče) – State border– Čakovec – Kotoriba – State border - (Murakeresztúr).

Reconstruction of approximately 200 m of the existing road and 2 T-intersections of the existing 3. travnja street in Kotoriba is required as well as construction / reconstruction of approximately 200 m of the road - connection to the newly planned roundabout on Hungarian section. New road is planned as two-way road, but due to spatial constraints in Kotoriba, traffic of heavy-duty vehicles via new road will not be possible.

The Hungarian section is planned to be built on the territories of Molnári and Murakeresztúr municipalities and have the length of approx. 1700 m. The road is planned to connect to regional road 6835 with a roundabout. From the roundabout the road is planned to be mostly built along the lines of already existing dirt roads going towards the nearby railway to the north-west. Upon reaching the railway, the road will follow the railway's path up to the bridge, where it will connect to the Croatian section.

Part of establishing a road connection is the construction of a new bridge, which is planned in the vicinity of the existing railway bridge over the Mura River. The aerial distance between the new bridge and the existing Goričan border crossing is 12 km and between new bridge and existing Gola border crossing 26 km, so Mura Bridge / MuKo Bridge project improves density of border crossings and contributes to better connectivity of the settlements within the EGTC Mura Region, facilitating interactions between minorities in CBC area and their motherland, including on the Hungarian side settlements with the largest Croatian population in Hungary.

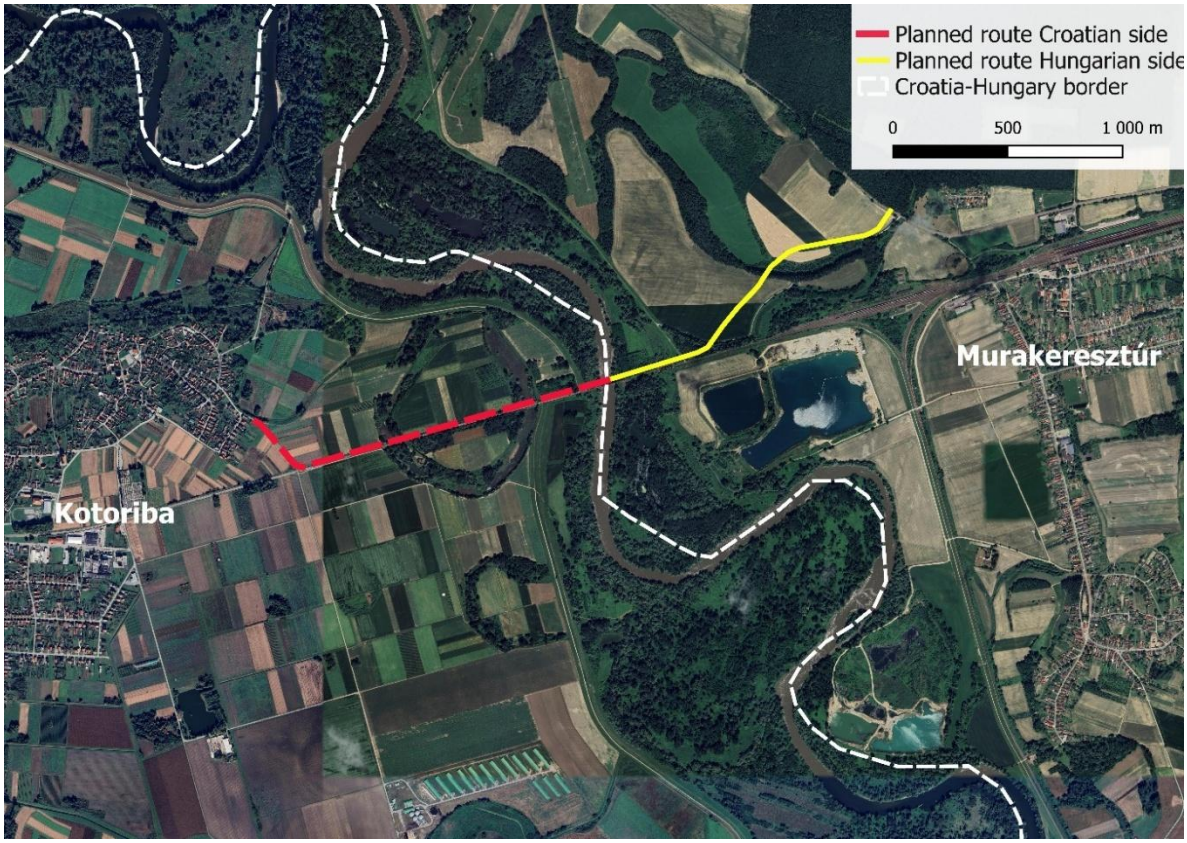

Figure 5. Murakeresztúr - Kotoriba area

Source: Google Earth

5 Cohesion with relevant strategies, plans and programmes

This chapter presents relationship of the Priority 3 (Connected border region) of the Hungary-Croatia Programme under Policy objective 3 (PO3) with relevant international contracts and agreements, respective EU directives, strategies as well as with national and regional level legislations and strategies of the Partner countries involved in the Hungary-Croatia Programme, by introducing the way how PO3 is in line with the respective international, national and regional strategical documents' objectives and environmental considerations.

5.1 Relevant International and European Union documents

Name of the relevant document, strategy	Cohesion
The SEA Directive (2001/42/EC)	The SEA Directive aims to ensure a high level of environmental protection and to support the integration of environmental considerations into the development and adoption of public plans and programmes. Its overarching goal is to promote sustainable development by requiring an environmental assessment for those plans and programmes likely to have significant environmental effects. The Directive applies to a wide range of sectors, including land use, transport, energy, waste management, and agriculture—especially when these plans lead to specific projects, including those co-financed by the European Union. By systematically evaluating different planning options, the SEA process contributes to more sustainable and resource-efficient development. The Strategical Environmental Assessment of PO3 (ii) of the Hungary-Croatia Programme is carried out based on Art. 3 (2a) of the SEA Directive.
Habitats Directive (92/43/EEC) & Birds Directive (79/409/EEC)	The Birds and Habitats Directives form the cornerstones of EU biodiversity policy. They provide a strong legislative framework for all EU countries to protect the most valuable and threatened biodiversity. Together, those two directives have also created the Natura 2000 network As some of strategic projects planned within PO 3 (ii) of the Hungary-Croatia Programme partly overlaps with Natura 200 sites, appropriate assessment has been carried out according to Art. 6 (3) of the Habitats directive.
United Nations 2030 Agenda for Sustainable Development (A/RES/70/1)	The Agenda is an action plan that aims to strengthen universal peace freeing the human race from the tyranny of poverty as well as healing and securing our planet, while not being afraid of taking bold and transformative steps. The UN urges all countries and all stakeholders to implement this plan, and to act in partnership collaboratively along the Sustainable Development Goals. Policy objective 3 (PO3) of the Hungary-Croatia Programme supports all Goals of the UN Agenda in general,

Name of the relevant document, strategy	Cohesion
	besides having a great deal of Goals that show a close alignment with the Programme's PO3: Goal 4. ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all accompanied by Goal 9. aimed at building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation is well supported by PO 3 (ii) of the Hungary-Croatia Programme.
Paris Agreement (2015)	The Agreement enhances the implementation of the UN Convention on Climate Change, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty. The main objectives of the Agreement are the following: holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change; increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and; making finance flows consistent with a pathway towards low; greenhouse gas emissions and climate-resilient development. Transportation is one of key factors when it comes to climate change. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region. Road traffic is a significant source of greenhouse gases as result of fuel combustion in road vehicles engines. But result of PO 3 (ii) will be shortening of travel time between Hungary and Croatia. Shorter travel time results in reducing fuel consumption whereas reduction of greenhouse gas emissions. Also, PO 3 (ii) promotes sustainable and climate resilient mobility also contributing to Agreement objectives.
United Nations Framework Convention on Climate Change (UNFCCC, 1992)	The objective of the Convention is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Convention suggests that a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. Lately this has been extended by and reviewed in the Paris Agreement (2015) and the United Nations 2030 Agenda for Sustainable Development, which have strong connections with the Hungary-Croatia Programme as previously examined.
The European Green Deal	The European Green Deal is the response of the Community to the current climate and environmental-related challenges. It is a new growth strategy that aims to transform the EU into a resource-efficient and competitive

Name of the relevant document, strategy	Cohesion
	economy. It also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. PO3 (ii) of the Hungary-Croatia Programme contributes to the realisation of the European Green Deal through shorter travel times, whereas the reduction of greenhouse gas emission.
European Climate Law	PO3 (ii) of the Hungary-Croatia Programme aligns with the European Climate Law by addressing regional transport-related emissions through the development of sustainable and climate-resilient infrastructure. PO3 (ii) promotes improved connectivity in peripheral areas along the Hungary-Croatia border by developing intelligent, intermodal and low-emission transport solutions. These improvements help reduce CO_2 emissions, improve energy efficiency in regional mobility and support more sustainable patterns of cross-border movement, thereby supporting the Climate Law's objective of reaching climate neutrality by 2050. By aligning regional development with climate targets, PO3 contributes to translating high-level decarbonisation goals into practical infrastructure investment that fosters environmental sustainability, accessibility and territorial cohesion.
EU Strategy on Adaptation to Climate Change	The EU Strategy on Adaptation to Climate Change promotes smarter, more systemic and faster adaptation across all sectors, including infrastructure, to increase resilience to climate-related risks. PO3 (ii) of the Hungary–Croatia Programme builds synergy with the Strategy by integrating climate resilience into the planning and development of transport infrastructure. PO3 (ii) supports the construction of cross-border road links and mobility solutions that are designed to withstand changing climate conditions. By improving access and connectivity in peripheral areas, the programme reduces the vulnerability of isolated communities and enhances their capacity to respond to extreme weather events. The inclusion of sustainable design elements, such as cycling infrastructure and modernised road systems, contributes to building adaptive capacity in transport networks. Moreover, the interventions of PO3 (ii) facilitate resilience and sustainability in the cross-border regions, reinforcing the EU's broader goal of creating a climate-resilient Europe.
"Fit for 55" package	The European Commission adopted in 2021 the "Fit for 55" package which represents changes to climate energy legislation. Among other things, its implementation is expected to increase the share of road vehicles with zero and low emissions. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region. Road traffic is significant source of greenhouse gasses and is source of air pollutant as result of fuel combustion in road vehicles

Name of the relevant document, strategy	Cohesion
	engines. But result of PO 3 (ii) will be shortening of travel time between Hungary and Croatia. Shorter travel time results in reducing of fuel consumption i.e. in reducing of greenhouse gas and air pollutant emissions. Implementation of "Fit for 55" package will have an additional positive effect in reducing of greenhouse gas and air pollutant emissions.
EU Water Framework Directive	In line with the objectives of the Water Framework Directive (Article 1 of the Directive 2000/60/EC), For international river basin districts the Member States concerned shall together ensure this coordination and may, for this purpose, use existing structures stemming from international agreements." Hungary-Croatia Programme by its shear existence provides an alternate basis for cooperation in water management issues. PO3 (ii) includes the further development of the existing plans for a future bridge across the Mura River. Following the EU WFD water management and flood risk management issues whereas river basin management plans have been and must continue to be taken into consideration during the implementation of PO3.
Directive 2007/60/EC on the assessment and management of flood risks	According to the Directive floods have the potential to cause fatalities, displacement of people and damage to the environment, to severely compromise economic development and to undermine economic activities. EU Member States shall, for each river basin district, or certain coastal areas or individual river basins, or the portion of an international river basin district lying within their territory, undertake a preliminary flood risk assessment (Article 3(2)(b) and 4(1)). During the implementation of the strategic projects within PO3 of the Hungary-Croatia Programme flood risk management must be taken into consideration.
EU Biodiversity Strategy for 2030 – Bringing nature back into our lives	The Strategy linked to the European Green Deal aims to put Europe's biodiversity on a path to recovery for the benefit of people, the climate and the planet by 2030. In the post-COVID-19 context, the Strategy aims to increase the resilience of our societies to future threats, such as: the impacts of climate change; forest fires; food insecurity; disease outbreaks –including the protection of wildlife and fighting against illegal wildlife trade. Priority 3, of the Hungary–Croatia Programme (Connected border region) under policy objective 3 (A more connected Europe) contributes to the objectives of the EU Biodiversity Strategy for 2030 by integrating environmental safeguards and contributing to climate mitigation through low-emission infrastructure development. While PO3 (ii) primarily addresses cross-border mobility, it considers environmental protection and the reduction of greenhouse gas emissions, which are central to both biodiversity preservation and climate action.

Name of the relevant document, strategy	Cohesion
European Landscape Convention	The aims of the Convention are to promote landscape protection, management and planning, and to organise European co-operation on landscape issues. Article 9 of the Convention (Transfrontier landscapes) declares that the Parties shall encourage trans frontier co-operation on local and regional level and, wherever necessary, prepare and implement joint landscape programmes. By focusing on the development of sustainable and climate-resilient transport infrastructure in the CBC region, PO3 (ii) directly affects the visual and ecological characteristics of the landscape. The planning and implementation of such infrastructure must therefore take into account landscape quality objectives and ensure that interventions respect the natural, cultural and visual values of the areas concerned. Thus, the interventions of PO3 SO (ii) can contribute to the Convention's goals by enhancing accessibility and mobility while respecting the landscape character.
European Convention on the Protection of the Archaeological Heritage 1992 (Revised)	In line with the Convention, the Hungary-Croatia Programme recognizes archaeological heritage sites as being important for historical and scientific research. The revised text of the Convention is focused precisely on preserving archaeological heritage in the context of planning and implementation of development projects, which is adequately incorporated into the Hungary-Croatia Programme, since local, and regional spatial development documents and strategies have been considered during the programming process.
European Union Strategy for the Danube Region	PO3 (ii) of the Hungary–Croatia Programme contributes to the implementation of the EU Strategy for the Danube Region (EUSDR) by addressing key cross-border mobility challenges in a section of the Danube macro-region where physical and infrastructural disconnection has hindered territorial cooperation. Although the EUSDR does not offer direct funding, it relies on the alignment of existing programmes - such as VI-A Hungary–Croatia Programme - to support its objectives. PO3 (ii) of the Hungary–Croatia Programme aligns with several Priority Areas of the EU Strategy for the Danube Region (EUSDR), reflecting a cross-sectoral contribution to macro-regional development: - By enhancing cross-border transport infrastructure, PO3 facilitates better accessibility for both residents and visitors, directly supporting PA 3 (Culture & Tourism); - By reducing transport costs, travel times and enhancing market access for businesses operating in peripheral areas, it enhances PA 8 (Competitiveness of Enterprises);

Name of the relevant document, strategy	Cohesion
	- Through careful integration of environmental considerations, PO3 contributes to PA 6 (Biodiversity, Landscapes and Air & Soil Quality); - The contribution to PA 9 (People & Skills) lies in its potential to support labour mobility and the access to services; - Improved connectivity supports better institutional cooperation across borders and facilitates economic, social and environmental integration, relevant to Priority Area 10 (Institutional Capacity & Cooperation).
EU Invasive Alien Species (IAS) Regulation	The Regulation sets out rules to prevent, minimise and mitigate the adverse impact on biodiversity of the introduction and spread within the Union, both intentional and unintentional, of invasive alien species. IAS are animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment (biodiversity and related ecosystem services, other social and economic impact), which should be prevented. PO3 (ii) of the Hungary–Croatia Programme does not directly address invasive alien species (IAS).

5.2 Relevant Hungarian documents

Name of the relevant document, strategy	Cohesion
National Development and Territorial Development Concept of Hungary (until 2030)	The interventions planned under PO3 (ii) of the Hungary–Croatia Programme support the implementation of the National Development and Territorial Development Concept by promoting cross-border connectivity and territorial cooperation in the south-western part of the Carpathian Basin. This aligns with the Concept's specific territorial goal of strengthening Hungary's macro-regional role and enhancing inter-community and cross-border relations within the Carpathian Basin. Through the development of cross-border road infrastructure and enhancing connectivity, PO3 (ii) contributes to strategic objectives such as reducing regional isolation, fostering rural development, and supporting coordinated infrastructure development in border areas. These efforts promote functional integration and advance the Concept's spatial cohesion priorities, particularly in regions along the Hungarian–Croatian border, characterized by limited accessibility and demographic challenges.
National Spatial Planning Plan (OTrT) and Decree No 9/2019. (VI. 14.) of the	The National Spatial Planning Plan (OTrT) and the associated Decree No 9/2019. (VI.14.) of the Minister in charge of the Prime Minister's Office define spatial planning principles and designate the national network of transport corridors and infrastructure elements that are of strategic

Name of the relevant document, strategy	Cohesion
Minister in charge of the Prime Minister's Office	importance for Hungary's territorial development. These legal instruments guide land use, infrastructure planning and the functional integration of national and regional systems, including provisions for international connectivity. The planned interventions (OSIs) under PO3 (ii) of the Hungary–Croatia Programme are in line with the objectives of the OTrT and the above-mentioned Decree as they contribute to the improvement of cross-border accessibility and support the extension of Hungary's transport infrastructure towards the external Schengen border. The proposed road developments: Sárok–Kneževo, Zákány–Gotalovo, and the Murakeresztúr–Kotoriba bridge enhance access to national and European corridors, particularly to the TEN-T network, which is referenced in the OTrT as a strategic component of spatial integration. By strengthening connectivity in less accessible regions along the Hungarian–Croatian border, these interventions support the Decree's objective of developing secondary cross-border connections and ensuring spatial coherence across administrative boundaries. Moreover, the strategic projects respect the spatial planning framework by integrating into designated infrastructure corridors and aligning with national priorities for balanced regional development and international cooperation.
National Transport Infrastructure Development Strategy of Hungary (2014-2050)	Although the strategy does not explicitly mention Croatian-Hungarian cross-border plans, it is in line with PO 3 (ii) by emphasising the importance of the improvement of local mobility and reduction of territorial disparities by developing lesser developed regions to put an end to inland migration. These PO3 (ii) developments shall enhance access to regional centers and the TEN-T network, supporting the Strategy's aim of improving territorial cohesion and mobility in underdeveloped areas. In addition, by improving basic infrastructure in cross-border regions, the interventions may indirectly support objectives under PO4 (vi), particularly in the context of improving access to tourist attractions.
Second National Climate Change Strategy (2018-2030)	The second National Climate Change Strategy (NCCS) of Hungary is a comprehensive framework for climate policy, green economy development and social adaptation, reflecting climate protection goals in line with international and EU commitments, and directions for actions in both sectoral and territorial dimensions for policy and economic planning and for society as a whole. The strategy builds on the three pillars of tackling climate change, such as mitigation, adaptation and awareness-raising. The interventions planned under PO3 (ii) of the Hungary–Croatia Programme contribute to the Strategy's mitigation goals by promoting more efficient mobility and reducing greenhouse gas (GHG) emissions. The road links between Sárok–Kneževo, Zákány–Gotalovo, and the

Name of the relevant document, strategy	Cohesion
	Murakeresztúr–Kotoriba bridge aim to shorten travel distances and alleviate detours, which results in lower transport-related emissions in border areas. Moreover, the integration of environmental safeguards - through the AA and project planning processes - ensures that interventions avoid negative impacts on natural habitats and adapt to changing climate conditions.
National Tourism Development Strategy 2030 – Tourism 2.0	The interventions planned under PO3 (ii) of the Hungary–Croatia Programme are consistent with the objectives of the National Tourism Development Strategy 2030 – Tourism 2.0, which emphasizes improved accessibility, quality infrastructure and the development of lesser-known regions as key pillars of sustainable tourism development. The planned road infrastructure improvements will enhance access to rural and small-town destinations with untapped tourism potential. Moreover, improved cross-border accessibility supports cross-border tourism and joint destination development, particularly in regions where tourism is limited by insufficient transport infrastructure. These improvements facilitate the objectives of both PO3 and the National Tourism Development Strategy 2030.
National Energy and Climate Plan of Hungary	When launching the "Clean energy for all Europeans package", the European Commission required all Member States to prepare a National Energy and Climate Plan (NECP) in line with the EU decarbonisation goals. The interventions under PO3 (ii) of the Hungary–Croatia Programme support several objectives of Hungary's NECP, particularly in the fields of transport decarbonisation, territorial cohesion and climate adaptation. Although the planned actions focus on conventional road infrastructure, they contribute to the reduction of greenhouse gas emissions by shortening travel distances and improving route efficiency in border regions. These improvements are in line with the NECP's goals of increasing energy efficiency in the transport sector and lowering CO_2 emissions. In addition, the NECP recognises the importance of addressing regional inequalities and promoting infrastructure development in areas with weak connectivity. The PO3 interventions contribute to this by enhancing access in peripheral areas, thereby supporting sustainable regional development and cross-border cohesion.
Jenő Kvassay Plan – National Water Strategy of Hungary (2017-2030)	The interventions under PO3 (ii) of the Hungary–Croatia Programme are in synergy with the Jenő Kvassay Plan – National Water Strategy of Hungary, particularly in terms of integrating water-related considerations into infrastructure development and ensuring the long-term sustainability of water-dependent ecosystems.

Name of the relevant document, strategy	Cohesion
	The construction of the Murakeresztúr–Kotoriba bridge is especially relevant in this context, as it spans the Mura River, a transboundary water body with significant ecological and hydrological functions. The Kvassay Plan highlights the importance of protecting river corridors, preserving natural water retention areas, and mitigating flood risks through sustainable spatial planning. The bridge project contributes to these objectives by incorporating environmental safeguards and national permitting procedures, which ensure that the development does not adversely affect flood dynamics, aquatic habitats, or riparian ecosystems.
Hungary's River Basin Management Plan 2021	The interventions under PO3 (ii) of the Hungary–Croatia Programme, particularly the construction of the Murakeresztúr–Kotoriba bridge, align with the guiding principles of Hungary's River Basin Management Plan (2021), adopted by Government Decision No. 1242/2022. (IV.28.). This Plan aims to preserve the ecological status of surface waters and prevent further hydromorphological degradation. The third edition of the Plan builds on previous cycles and sets new water management targets for the 2022–2027 period, with particular emphasis on cross-border cooperation as outlined in Chapter 1.3.4. The Appropriate Assessment and compliance environmental permits, along with the principles of the Water Framework Directive and the "no deterioration" principle, will ensure that the planned infrastructure does not compromise the ecological status of the Mura River. Thereby, the project contributes to Hungary's broader water management goals and supports sustainable development in the region.
"Healthy Hungary 2021–2027" – Health Sector Strategy (2021-2027)	The Healthy Hungary 2021–2027 strategy aims to improve public health, enhance accessibility to healthcare services, and reduce regional health disparities, which aligns with the Programme's goals of fostering regional development and improving mobility. By reducing travel times and improving road quality, these interventions will facilitate more equitable access to health services for populations living in peripheral regions along the Hungary–Croatia border.
National Framework Strategy on Sustainable Development of Hungary (2012-2024)	The National Framework Strategy on Sustainable Development defines Hungary's long-term objectives for safeguarding natural resources, improving environmental quality, and promoting intergenerational responsibility. The infrastructure interventions to be implemented under PO3 (ii) of the Hungary-Croatia Programme will contribute to these goals by supporting more efficient regional mobility, reducing unnecessary detours and enabling sustainable ways of transport, which in turn can lower fuel use and emissions.
National Nature Protection Plan V. (until 2026)	The National Nature Protection Plan V emphasizes the importance of safeguarding Hungary's natural heritage, with a specific focus on preserving biodiversity, protecting natural habitats, and ensuring the

Name of the relevant document, strategy	Cohesion
	sustainable use of natural resources. The interventions under PO3 (ii), especially those near the Mura and Drava rivers, need to consider the potential effects on water-related ecosystems, riparian habitats, and other ecologically sensitive areas. As a result, the current environmental assessments, including the Appropriate Assessment procedures are completed on SEA level, to ensure compliance with nature protection regulations and to mitigate any adverse environmental impacts.
National Landscape Strategy of Hungary (2017-2026)	The National Landscape Strategy focuses on maintaining the character and visual integrity of landscapes, particularly in ecologically sensitive areas. The strategy encourages development that integrates landscape protection principles while allowing for functional improvements, such as transport infrastructure. By conducting the current environmental assessments, it is ensured that landscape protection and sustainable land use principles are incorporated into the design and implementation of the strategic projects implemented under PO3 (ii) of the Hungary-Croatia Programme. This approach contributes to the Strategy's goal of achieving sustainable, balanced landscape development, ensuring that infrastructure improvements do not come at the expense of Hungary's rich and diverse landscapes.
National Forest Strategy (2016-2030)	The National Forest Strategy prioritizes the conservation of forest ecosystems, the protection of biodiversity, and the sustainable management of forests. These principles will be considered in the design and execution of infrastructure projects, especially when they pass through or near forested areas to avoid unnecessary disruption of forest habitats, minimize deforestation and incorporate appropriate mitigation measures to protect forest ecosystems.
National Strategy for the Conservation of Biodiversity (until 2030)	PO3 (ii) of the Hungary-Croatia Programme aims to enhance mobility by developing sustainable, climate-resilient, intelligent, and intermodal transport solutions, while simultaneously improving access to the TEN-T network and fostering cross-border mobility. The interventions, such as the construction of missing road links (Sárok - Kneževo, Zákány - Gotalovo), and the development of the Murakeresztúr - Kotoriba bridge, all focus on improving connectivity between isolated regions, reducing travel times, and ensuring better access to key infrastructure. These initiatives align with the National Strategy for the Conservation of Biodiversity by reducing fragmentation and enhancing the movement of people and goods without significantly harming the local biodiversity. This includes measures such as integrating sustainable transport options, including bicycle lanes, and careful planning to minimise environmental impact.

Name of the relevant document, strategy	Cohesion
National Waste Management Plan (2021-2027)	Hungary's National Waste Management Plan (2021–2027) aims to reduce the environmental burden of waste generation through prevention, proper treatment, recycling, and compliance with environmental protection standards. The infrastructure developments to be realized under PO3 (ii) of the Hungary-Croatia Programme will generate various types of waste during both the construction and operation phases including hazardous, as well as non-hazardous waste. The implementation of the strategic projects, however, will comply with the national waste management regulations in Hungary and Croatia, ensuring the appropriate handling, storage, and disposal of waste in order to mitigate negative impacts on the environment.
National Clean Development Strategy of Hungary (2020-2050)	Hungary aims to achieve climate neutrality by 2050 with the adoption of Act no. XLIV of 2020 on Climate Protection. The National Clean Development Strategy (NCDS or Strategy) outlines a 30-year vision of socioeconomic and technological development pathways. One of the visions for 2050 described in the Strategy is about transportation namely making it mor sustainable, greener, safer and better connected which directly supports PO 3 (ii) of the Hungary-Croatia Programme which promotes better connected border region through development of sustainable, climate resilient, intelligent cross-border mobility. The infrastructure strategic projects to be realized under PO3 (ii) of the Hungary-Croatia Programme support this objective by improving transport efficiency and reducing travel distances in the border area. Shorter travel times and more direct routes are expected to contribute to lower fuel consumption and reduced greenhouse gas emissions. Moreover, planned cycling infrastructure alongside roads supports the shift towards more sustainable and low-emission modes of transport. Furthermore, compliance with environmental planning and permitting procedures ensures that climate considerations are taken into account during project preparation and implementation.
Integrated territorial development programme of Baranya County 2021-2027	The Integrated territorial development programme merges the objectives and priorities of two development programmes by linking Baranya County's Territorial development programme to Hungary's Territorial and settlement development OP (TOP Plusz). The Integrated territorial development programme aims to strengthen regional cohesion by improving accessibility, supporting local economic development, and reducing territorial disparities. The construction of the Sárok – Kneževo road link, implemented under PO3 (ii), directly contributes to these goals by establishing a direct connection between the settlement of Sárok in Baranya County, Hungary, and Kneževo in Osječko-baranjska County, Croatia, thereby improving cross-border mobility and regional connectivity.

Name of the relevant document, strategy	Cohesion
Territorial development concept and programme of Baranya County 2030	The Territorial Development Concept and Programme of Baranya County outlines strategic objectives to enhance regional development by improving infrastructure, fostering economic growth, and promoting social cohesion. The construction of the Sárok–Kneževo road link under PO3 (ii) of the Hungary-Croatia Programme aligns with these objectives by enhancing cross-border connectivity, facilitating trade, and improving access to services. This infrastructure development is expected to contribute to reducing regional disparities and supporting the county's long-term development goals. Moreover, among Baranya County's territorial objectives, there is an emphasis on the development of the South-Baranya Drava border region, which includes strengthening connections with Croatia and the Western Balkans. According to the regional development program, enhancing connections with Croatian territories is crucial for curbing negative economic and demographic trends. This enhancement is based on improving transportation conditions and ensuring flexible cross-border access.
Integrated territorial development programme of Somogy County 2021-2027	The Integrated territorial development programme merges the objectives and priorities of two development programmes by linking Somogy County's Territorial development programme to Hungary's Territorial and settlement development OP (TOP Plusz). Currently in its 5th iteration, the programme sets out strategic objectives aimed at enhancing the county's economic growth, infrastructure, and social well-being. The infrastructure strategic projects planned under PO3 (ii) of the Hungary-Croatia Programme, particularly the construction of the Zákány–Gotalovo road link, align with these objectives by improving cross-border connectivity and facilitating trade and mobility. This development is expected to contribute to reducing regional disparities and supporting the county's long-term development goals.
Municipal Decree No. 11/2023 (II.14.) General Assembly of Somogy County on the Spatial Planning Plan of Somogy County	The Spatial Development Plan of Somogy County, adopted by Municipal Decree No. 11/2023 (II.14.), outlines the spatial structure and long-term development priorities of the county, with a focus on improving accessibility, promoting balanced territorial development, and strengthening infrastructure connections. The construction of the Zákány–Gotalovo road link under PO3 (ii) of the Hungary-Croatia Programme, directly contributes to these objectives. By creating a new cross-border road connection in the southern part of the county, the project improves accessibility of peripheral areas, reduces detour distances, and enhances integration with the wider transport network.
Territorial development concept and programme of Somogy County 2030	The Territorial Development Concept and Programme of Somogy County 2030 outlines the strategic objectives to enhance the county's economic growth, infrastructure, and social well-being. The construction of the

Name of the relevant document, strategy	Cohesion
	Zákány–Gotalovo road link planned under PO3 (ii) of the Hungary-Croatia Programme 2021–2027 aligns with these objectives by improving cross-border connectivity and facilitating trade and mobility. This development is expected to contribute to reducing regional disparities and supporting the county's long-term development goals.
Integrated territorial development programme of Zala County 2021-2027	The Integrated territorial development programme merges the objectives and priorities of two development programmes by linking Zala County's Territorial development programme to Hungary's Territorial and settlement development OP (TOP Plusz). The Integrated Territorial Development Programme sets strategic objectives aimed at strengthening external connectivity, enhancing the role of border areas, and improving access to regional and international networks. The planned Murakeresztúr–Kotoriba bridge, to be implemented under PO3 (ii) of the Hungary-Croatia Programme, contributes to these goals by creating a new road connection over the Mura River between Zala County and northern Croatia. This project shall improve the permeability of the border, particularly in the EGTC Mura Region, where cross-border accessibility has long been limited. The improved link is expected to facilitate local economic interactions, support the mobility of residents, including national minorities, and create a more integrated functional area.
Territorial development concept and programme of Zala County 2030	The Territorial Development Concept and Programme of Zala County 2030 outlines strategic objectives to enhance the county's economic growth, infrastructure, and social well-being. The planned construction of the Murakeresztúr–Kotoriba bridge under PO3 (ii) aligns with these objectives by improving cross-border connectivity and facilitating trade and mobility. This development is expected to contribute to reducing regional disparities and supporting the county's long-term development goals.

5.3 Relevant Croatian documents

Name of the relevant document, strategy	Cohesion
National development strategy of the Republic of Croatia until 2030	National development strategy of the Republic of Croatia until 2030 (hereinafter: NDS) is a fundamental document and a comprehensive act of strategic planning which directs long-term development of society and economy in all important issues for the Republic of Croatia. Strategic framework includes vision of the Republic of Croatia in 2030, development directions (Sustainable economy and society, strengthening crisis resilience, Green and digital transition and Balanced regional development) and strategic goals defined within development directions

Name of the relevant document, strategy	Cohesion
	whose realisation will contribute to achieving the vision of the Republic of Croatia. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and contributes to the NDS development direction Sustainable economy and society, in particular to its strategic goal Global recognition and strengthening of the Republic of Croatia international position and role (bilateral relations and strengthening position of Croatian minorities and the unity of the homeland and diaspora Croatia) and to the NDS development direction Green and digital transition in particular to its strategic goal Sustainable mobility (transport connectivity is necessary for the quality of life and is an instrument of balanced development; transport infrastructure is an instrument of national and regional development and territorial cohesion).
Spatial development strategy of the Republic of Croatia	Spatial development strategy of the Republic of Croatia (hereinafter: SDS) is a fundamental document for guiding the spatial development of the Republic of Croatia. It determines general objectives of spatial development up to 2030: initial state, priorities, guidelines, and implementation framework. Development priorities of the SDS are Sustainability of spatial organisation, Preservation of the space identity, Traffic connection, Energy system development and Resilience to changes, within which directions are defined. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and contributes to the SDS in particular to its priorities Sustainability of spatial organisation (directions Reducing regional disparities and sustainable planning for development of specific areas and Improving accessibility of transport infrastructure) and Traffic connection (directions Developing a transport system and Joining the European transport network).
Strategy and Action plan for nature protection of the Republic of Croatia for period 2017-2025	The Strategy and Action plan for nature protection of the Republic of Croatia (hereinafter: SNP) is a fundamental document of nature protection. It determines goals and guidelines for conservation of biodiversity and geodiversity and its implementation framework. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). SNP states transport infrastructure construction and traffic as threat to nature (habitat fragmentation, increased noise and pollution, i.e. disturbance of animals and unfavourable living conditions in the surrounding habitats, spread of invasive species). Conditions for nature protection in necessary extent are determined at strategic environmental assessment level and/or at project level i.e.

Name of the relevant document, strategy	Cohesion
	environmental impact assessment / screening procedure and/or ecological network i.e. Natura 2000 acceptance assessment. Conditions for nature protection determined in necessary extant enable balanced development of transport infrastructure and traffic and nature conservation.
Climate change adaptation strategy in the Republic of Croatia for the period up to 2040 with a view to 2070	Climate change adaptation strategy in the Republic of Croatia for the period up to 2040 with a view to 2070 (hereinafter: CCAS) determines goals and priorities in climate change adaptation. It focusses on 8 key sectors (water resources, agriculture, forestry, fisheries, biodiversity, energy, tourism and health) and 2 cross-sectoral areas (spatial planning and management and risk management) for which CCAS determines climate change adaptation measures. According to Article 16 of the Climate Change and Ozone Layer Protection Act (OG 67/25) all development documents in Croatia have to be harmonised with the CCAS. CCAS does not determine climate change adaptation measures for transport sector. However, it should be noted, that in accordance with the Croatian regulations and for the purpose of financing the development of individual projects, climate proofing is carried out at the project level, which includes climate change mitigation and climate change adaptation analysis and if needed determination of climate change mitigation and/or climate change adaptation measures.
Low carbon development strategy of the Republic of Croatia until 2030 with a view to 2050	Low carbon development strategy of the Republic of Croatia until 2030 with a view to 2050 (hereinafter: LCDS) determines through guidelines and measures the path of the Republic of Croatia towards a competitive economy with low greenhouse gas emissions. The LCDS applies to all sectors of the economy and human activities and is particularly relevant to energy sector, industry, traffic, agriculture, forestry and waste management. According to Article 16 of the Climate Change and Ozone Layer Protection Act (OG 67/25) all development documents in Croatia have to be harmonised with the LCDS. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Road transport is significant source of greenhouse gasses (GHG) as result of fossil fuel combustion in road vehicles engines. But result of PO 3 (ii) will be shortening of travel time, and shorter travel time results in reducing of fuel consumption i.e. in reducing of GHG emissions.
Agriculture strategy until 2030	Agriculture strategy determines vision and plan of strategic transformation of agriculture and rural areas of the Republic of Croatia for the period until

Name of the relevant document, strategy	Cohesion
	2030. The vision is to produce more high-quality food at competitive prices, increase resilience of agricultural production to climate change with sustainable management of natural resources and contribute to improving quality of life and increasing employment in rural areas. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region Improved transport connections contribute to improvement of life in rural and agricultural areas and economic development.
Water management strategy	National water management strategy (hereinafter: WMS) is a long-term planning document that defines the vision, mission, goals and tasks of the state policy in water management. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). WMS recognizes road transport as one of diffuse pollution sources but states that share of total pollution load from it is small compared to other sources of pollution.
River basin management plan till 2027	National water management plan – River Basin Management Plan till 2027 (hereinafter RBMP) is a fundamental instrument for water management and flood risk management. RBMP determines measures to achieve water management and water protection goals and other specific goals defined by EU and national regulations. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). RBMP recognizes transport as one of diffuse pollution sources and determines measures for control of impact of transport on water management and water protection goals and other specific goals. For road transport one of concern is its possible impact on waters intended for human consumption, so special design of drainage is required in sanitary protection zones of sources of water for human consumption and in the area of strategic reserves of water intended for human consumption to avoid pollution from wastewater generated by rainfall runoff from roads. Locations of strategic projects planned within PO 3 (ii)are not in the area of water protection areas intended for human consumption.

Name of the relevant document, strategy	Cohesion
Air pollution control programme for the period from 2020 to 2029	Air pollution control programme for the period from 2020 to 2029 aims (1) to achieve air pollutant emission reduction commitments defined by international treaties and EU obligations for sulphur dioxide, nitrogen oxides, non-methane volatile organic compounds, ammonia and particulate matter ($PM_{2.5}$) for the period 2020-2029 and from 2030 onwards, (2) to contribute achieving the goals of limiting anthropogenic emissions of certain pollutants into the air and (3) to make progress in achieving air quality levels that do not lead to significant negative effects and risks to human health and environment. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Road transport is source of air pollution through emission of different substances produced by fuel combustion in road vehicles engines. But result of PO 3 (ii) will be shortening of travel time between Hungary and Croatia. Shorter travel time results in reducing of fuel consumption i.e. in reducing of air pollutant emission.
Waste management plan of the Republic of Croatia for period 2023-2028	Waste management plan of the Republic of Croatia for the period 2023-2028 (hereinafter: WMP) including Waste prevention plan determines waste management goals and measures and activities to achieve set goals. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). WMP does not determine waste management measures and activates related to road transport.
Integrated national energy and climate plan for the Republic of Croatia for the period 2021-2030	Integrated national energy and climate plan for the period 2021-2030 (hereinafter: NECP) is based on to the five key dimensions of the Energy Union: decarbonisation, energy efficiency, energy security, internal energy market and research, innovation and competitiveness. It sets out key targets for 2030 and for achieving of key targets measures in line with other national strategies are determined. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Road transport is significant source

Name of the relevant document, strategy	Cohesion
	of greenhouse gasses (GHG) as result of fossil fuel combustion in road vehicles engines. But result of PO 3 (ii) will be shortening of travel time, and shorter travel time results in reducing of fuel consumption i.e. in reducing of GHG emissions.
Energy development strategy of the Republic of Croatia until 2030 with a view to 2050	Energy development strategy of the Republic of Croatia until 2030, with a view to 2050 (hereinafter: EDS) presents a step towards achieving the vision of low-carbon energy production and ensures transition to a new period of energy policy. The EDS represents a wide range of energy policy initiatives, which will strengthen security of energy supply, gradually reduce energy losses and increase energy efficiency, reduce dependence on fossil fuels, increase domestic production of electricity and use of renewable energy sources. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Road transport is significant source of greenhouse gasses (GHG) as result of fossil fuel combustion in road vehicles engines. But result of PO 3 (ii) will be shortening of travel time, and shorter travel time results in reducing of fuel consumption i.e. in reducing of GHG emissions.
Transport development strategy of the Republic of Croatia for the period from 2017 to 2030	Transport development strategy of the Republic of Croatia for the period from 2017 to 2030 (hereinafter: TDS) determines general and specific goals for transport sectors and measures to achieve the set goals. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border i.e. development of cross-border transport infrastructure and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge) and contributes to more TDS goals of which in particular to specific (cross sectorial) goal Better harmonization of transport operations with neighbouring countries (BiH - Ploče Port and Slavonski Brod, road and rail connections BiH, Slovenia, Serbia, Italy, Montenegro and Hungary).
Railway development strategy of the Republic of Croatia until 2032	Railway development strategy of the Republic of Croatia until 2032 (hereinafter: RDS) represents a long-term vision and strategic framework for the transformation of the railway system of Croatia in order to achieve the common long-term objectives of the EU from the White Paper on Transport (European Commission, 2011).

Name of the relevant document, strategy	Cohesion
	PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). RDS is not related to development of road transport infrastructure but to railway infrastructure.
National railway infrastructure development plan for the period until 2030	National railway infrastructure development plan for the period until 2030 (hereinafter: NRIDP) is an act of strategic planning that determines mid-term development needs and priorities for investments in renovation, modernization, construction and maintenance of railway infrastructure in order to enable higher quality rail transport services, increase number of users, and thereby increase share of rail transport in total transport. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). NRIDP is not related to development of road transport infrastructure. Regarding railway infrastructure in the area of PO 3 (ii) road infrastructure strategic projects, following is planned by NRIDP until 2030 or done: (1) For international railway line M301 (Magyarboly) – state border – Beli Manastir – Osijek (Sárok - Kneževo area) is planned to assess technical requirements to be met in terms of capacity and permitted speed, taking into account both economic and environmental aspects, all in accordance with the interoperability requirements for railway lines. (2) Reconstruction and construction of second railway track of section State border - Botovo - Koprivnica on international railway M201 (Gyékényes) – State border – Botovo - Koprivnica – Dugo Selo (Zákány – Gotalovo area) is finished. (3) For international railway line M501 Središče) – State border– Čakovec – Kotoriba – State border - (Murakeresztúr) (Mura Bridge / MuKo Bridge area) is planned to assess technical requirements to be met in terms of capacity and permitted speed, taking into account both economic and environmental aspects, all in accordance with the interoperability requirements for railway lines.
Plan for the development of the geothermal potential of the Republic of Croatia until 2030	The purpose of the Plan for the development of the geothermal potential of the Republic of Croatia until 2030 (hereinafter: GPP) is to ensure the further development and use of geothermal energy as a domestic renewable potential that should be more used more in energy transformations to produce electricity, i.e. for heating and cooling. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and

Name of the relevant document, strategy	Cohesion
	construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). GPP is not related to development of road transport infrastructure.
Sustainable tourism development strategy until 2030	Sustainable tourism development strategy until 2030 (hereinafter: STDS) is a strategic planning act that serves to shape and implement development tourism policies. In line with development needs and potential, STDS determines strategic goals and priority areas within strategic goals. Strategic goals are year-round and more regionally balanced tourism; tourism with preserved environment, space and climate; competitive and innovative tourism; and sustainable tourism. STDS recognizes importance of transport for tourism development and states that Croatia has a high-quality network of motorways on TEN-T corridors but there is a disparity in the quality and density of road infrastructure between individual regions and at the local level and that such situation requires adequate management to ensure smooth passenger traffic. PO 3 (ii) of the Hungary-Croatia Programme includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge/ MuKo Bridge) with aim of better connected border region, including among other improved and quicker access to TEN-T and other major road/rail infrastructure.
National plan for sustainable tourism until 2027 and an Action plan for the implementation of the National plan for sustainable tourism until 2025	National plan for sustainable tourism until 2027 (hereinafter: NPST) defines the implementation of the Sustainable tourism development strategy strategic goals and National development strategy of the Republic of Croatia until 2030 strategic goals in the field of tourism. Based on strategic goals NPST determines ten specific goals and measures to achieve them. Action plan elaborates in detail NPST measures until year 2025. NPST recognizes the importance of improving traffic connections in order to create preconditions for year-round and regionally balanced arrival of guests by air, rail and road transport. It is also stated that improved transport connectivity is important for improving the quality of life of the local population. PO 3 (ii) of the Hungary-Croatia Programme includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge) with aim of better connected border region which will also have positive influence to quality of life of local communities on both side of Hungary-Croatia border.

Name of the relevant document, strategy	Cohesion
Development plan of Međimurska county till 2027	Development plan of Međimurska county till 2027 (hereinafter: DP) is the main document for Međimurska county sustainable development. It includes medium-term vision, public policy priorities with special goals, as well as measures to achieve them. Public policy priorities are: (1) Sustainable development, (2) Healthy, inclusive and resilient society and (3) Green and digital Međimurje. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Location of the Croatian section of the Mura Bridge / MuKo Bridge project is in the Međimurska county. PO 3 (ii) contributes to DP priority (3) Green and digital Međimurje in particular to its special goal Modern transport infrastructure. Project Mura Bridge / MuKo Bridge is highlighted in DP as route that will shorten travel to motorway and it is stated that Mura Bridge / MuKo Bridge is a project of strategic importance for Međimurska county, and for the Republic of Croatia for stronger development of tourism and attracting new investments to Lower Međimurje.
Spatial plan of Međimurska county	Spatial plan of Međimurska county (hereinafter: SP) elaborates the principles of spatial planning and determines organisation, protection, use and purpose of Međimurska county territory. Spatial development should be rational in order to preserve and protect the county area. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border i.e. development of cross-border road transport infrastructure. SP determines provisions for development of transport infrastructure.
Development plan of Koprivničko-križevačka county for the period 2021-2027	Development plan of Koprivničko-križevačka county for the period 2021-2027 (hereinafter: DP) is the main document for Koprivničko-križevačka county sustainable development. It includes medium-term vision, special goals with development priorities, as well as measures to achieve them. The DP goals are: (1) Better connected county with circular economy, (2) Socially sensitive county and (3) Smart and green county. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Location of the Croatian section of the missing road link Zákány – Gotalovo is in the Koprivničko-križevačka county. PO 3 (ii) contributes to achieving DP goal (1) Better connected

Name of the relevant document, strategy	Cohesion
	county with circular economy in particular to its development priority Transport infrastructure development.
Spatial plan of Koprivničko-križevačka county	Spatial plan of Koprivničko-križevačka county (hereinafter: SP) elaborates the principles of spatial planning and determines the organisation, protection, use and purpose of Koprivničko-križevačka county territory. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border i.e. development of cross-border transport infrastructure. SP determines provisions for the development of transport infrastructure.
Development plan of Osječko-baranjska county for the period 2021-2027	Development plan of Osječko-baranjska county for the period 2021-2027 (hereinafter: DP) is the main document for Osječko-baranjska county development. It includes medium-term vision, priority areas with special goals, as well as measures to achieve them. The DP priority areas are: (1) Strengthening and improving the social system and the quality of life of citizens (2) Quality, safe and preserved living space, (3) Regional visibility, competitiveness and innovation of the economy and (4) Effective and efficient management. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Location of the Croatian section of the missing road link Sárok - Kneževo is in the Osječko-baranjska county. PO 3 (ii) contribute to the DP priority (2) Quality, safe and preserved living space.
Spatial plan of Osječko-baranjska county	Spatial plan of Osiječko-baranjska county (hereinafter: SP) defines the spatial development of Osiječko-baranjska county territory. PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border i.e. development of cross-border transport infrastructure. SP determines provisions for the development of transport infrastructure.

6 Socio-economic and environmental characteristics of the CBC area

This Chapter briefly describes the current socio-economic and environmental situation of the Programme (hereinafter: CBC) area and its expected evolution without the implementation of Priority 3 (Connected border region) of the Hungary-Croatia Programme under the policy objective PO3. Following topics are described:

- Demography
- Spatial structure and built environment
- Economy and innovation
- Tourism
- Environment
- Infrastructural connectivity
- Social inclusion
- Cultural heritage and institutional cooperation
- Territorial governance

Crucial information related to strategic projects planned within PO 3 (ii) of the Hungary-Croatia Programme are provided as well.

6.1 Demography

Regarding the demography of the CBC area, most processes are relatively the same. There is serious demographic erosion which affects local infrastructure, economy and environment. Between 2016 and 2021 the rate of the population decreasing in Hungarian counties of CBC area were 2.6-3.6% while in the Croatian counties this data was higher, between 4.2-12.3%. The most severe population loss was in Vukovarsko-srijemska, Osječko-baranjska, Virovitičko-podravska and Požeško-slavonska county, which lost more than one tenth of their residents in six years.

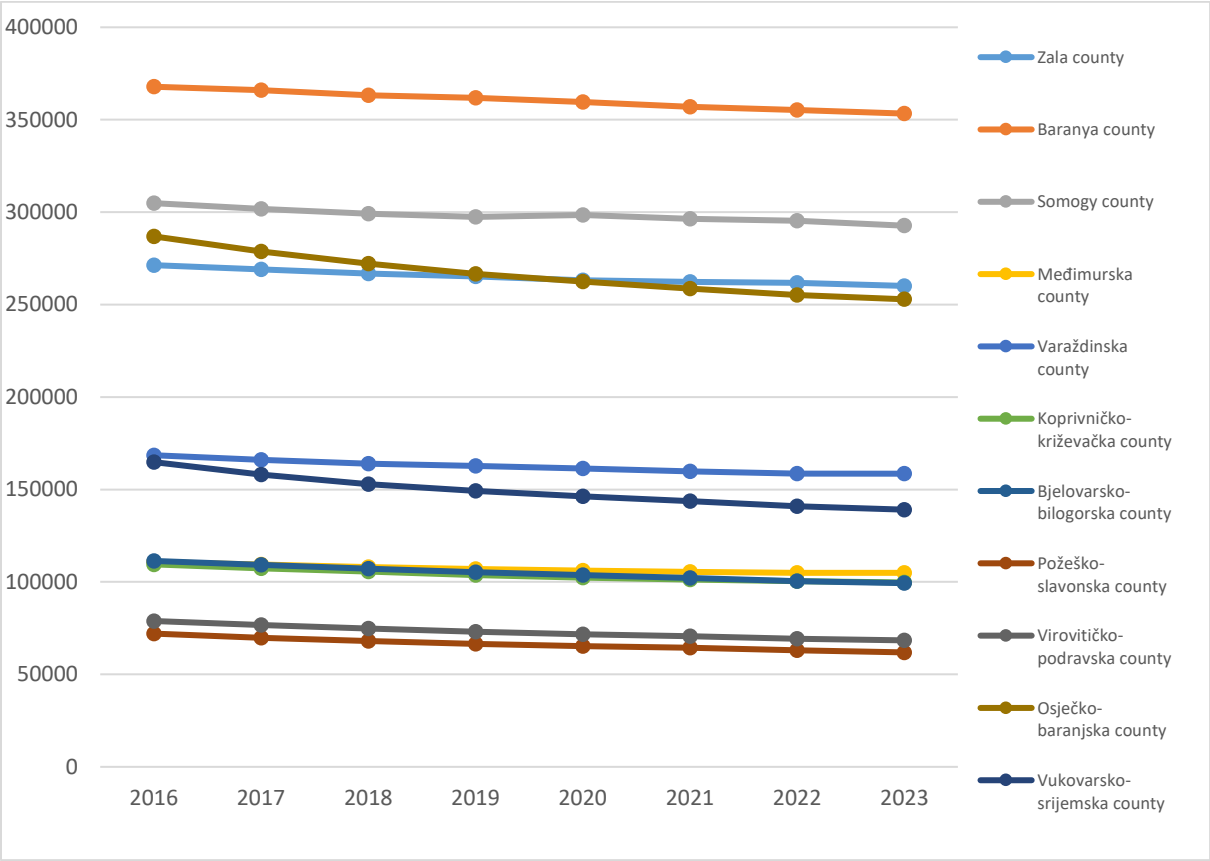

Figure 6: Population change of the CBC area, 2016-2023
Source: Eurostat

Rural areas are more affected by depopulation process, young and skilled population often migrates to cities within the country or abroad. Due to the demographic erosion, rate of the lower income or pensioner population may increase which leads to a significant loss in municipal budgets. This effect is limiting capabilities of municipalities in maintaining local infrastructure, healthcare and education.

One of the main causes of decreasing number of local residents is the low fertility rate of the population. The below indicator shows the average number of children which one woman has in a lifetime. For maintaining the population this number should be at least 2 but the fertility rate is below this figure in the whole CBC area.

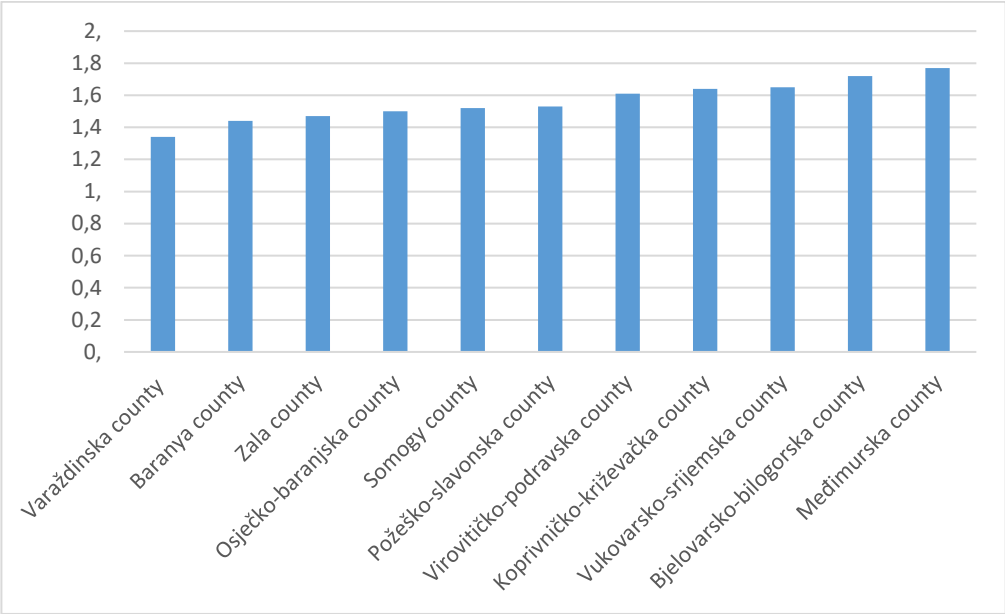

Figure 7: Total fertility rate of the CBC area, 2025

Source: Eurostat

With decreasing number of born children the median of CBC area ages. Without changing the counties fertility situation, only one factor could alleviate the rapid falling number of population, which is internal or external migration.

Ageing of population has various effects on the local economy:

- decreasing the amount of the skilled and available workforce, while the number of pensioners is increasing;
- changing the structure of the local economy with new consumption patterns (e.g., more frequent need for healthcare services, fewer investments in building industry);

All mentioned effects cause significant disadvantage in ability to attract foreign direct investment.

According to the Eurostat forecasts, entire CBC area will face a dramatic loss of population.

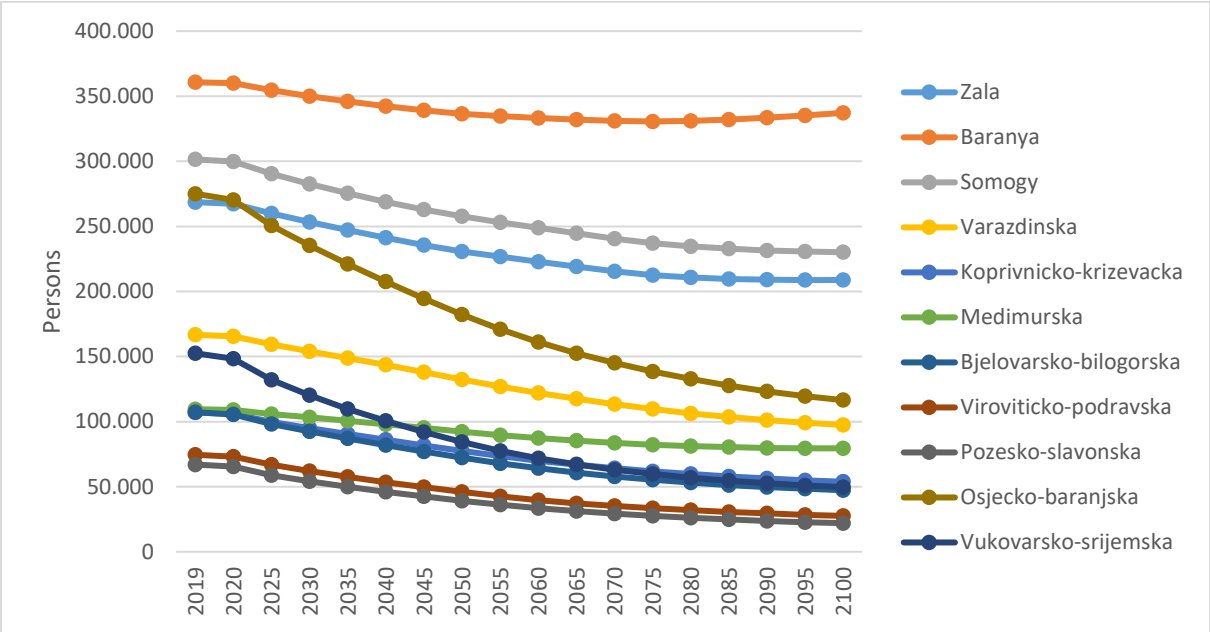

Figure 8: Population forecast of the CBC area, 2019-2100
Source: Eurostat

One of the key problematic areas which EU funds should target is changing or sustainably managing the depopulation process, whereas despite the decreasing number of population local economic performance and quality of life can be maintained.

6.2 Spatial structure and built environment

Regarding spatial structure, Hungary and Croatia have different physical geographical parameters. CBC area within the Carpathian basin has smaller difference in altitude, therefore settlement structure is denser. In Croatian counties more than third of population is living in settlements with population of less than 1000 residents. Largest cities in CBC area are Pécs in Hungarian part and Osijek in Croatia 4 out of 5 most populated cities in the CBC area are in the Hungarian part of the CBC area.

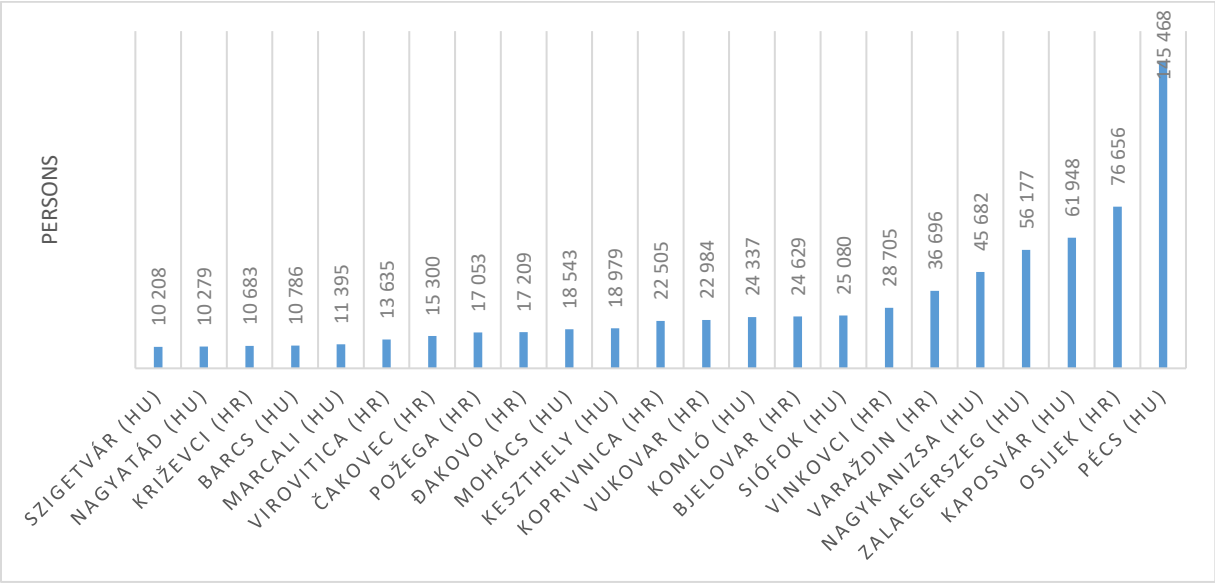

Figure 9: Cities by population in the CBC area, 2021
Source: dzs.hr and ksh.hu

Urbanisation has been a key spatial structure changing process since the 19th century. Cities are concentrating variety of services starting from commerce, healthcare, education, industrial activities, providing more opportunities compared to rural areas. There are special elements in the spatial development of the CBC area, one is the road network. CBA area lies within a triangle of three TEN-T network elements: corridor V/b (E71, A4–M7); corridor X (E70, A3) and corridor V/c (E73, A5–M6). The Hungarian counties are served by the M7 and M6 highways and the interconnecting road network. Highways on Croatian side of the CBC area are A4 and A5 and connection of Croatian counties is provided by state roads from which regional and local road network branch off. The main axis of the road freight and commerce is between Budapest-Zagreb and Budapest-Pécs-Osijek, which is an important factor for settling new businesses, and attracting foreign capital. For cities outside of the highway network have worse capabilities to connect the national commerce and business development.

Railway infrastructure in the CBC area consist of three international railway routes: (1) Croatian international railway M301 (Magyarbóly) – state border – Beli Manastir – Osijek and Hungarian state line 65 Magyarbóly - Villány - Pécs, (2) Croatian international railway M201 (Gyékényes) – State border – Botovo - Koprivnica – Dugo Selo and Hungarian state line 41 Dombóvár – Gyékényes and (3) the international railway M501 (Središče) – State border– Čakovec – Kotoriba – State border - (Murakeresztúr) and Hungarian state line 30 Budapest – Murakeresztúr. Railway lines M301, M501 and No. 65 are not electrified. M201 and Hungarian line No. 41 are both electrified.

During global COVID-19 pandemic, international passenger railway transport between Croatia and Hungary has been significantly reduced. Currently, on M201 / No. 41 only long-distance line

Zagreb (Croatia) – Budapest (Hungary) passes twice per day and during summer additional long-distance line Split (Croatia) – Zagreb (Croatia) – Budapest (Hungary), but there is no local direct local passenger railway transportation in that part of the CBC area. There are long-term plans at Hungarian Railways (MÁV Ltd.) to connect line No. 30 directly with M201 in Croatia through the establishment of a delta lane to branch off from line No. 41 through Zákány, but without the establishment of a railway station in either Zákány or Gotalovo.

There is no local direct passenger railway transportation in area M501 / No. 30 either. Currently direct local passenger railway transportation is in the area of M 301 / No. 65, where between Beli Manastir (Croatia) – Magyarbóly (Hungary) Hungarian owned trains travel several times a day. GYSEV Ltd. will be the operator responsible from June 2025 on this line according to information received from MÁV Ltd.

Situation in domestic railway passenger transportation is somewhat better. The most used railway lines in Croatian part of CBC area are between Varaždin, Osijek and Zagreb and between Zalaegerszeg - Székesfehérvár/Győr, Nagykanizsa - Székesfehérvár, Pécs – Budapest on the Hungarian side.

According to the Croatian National railway infrastructure development plan, for M301 and M501 the assessment of technical requirements to be met in terms of capacity and permitted speed is planned until 2030, taking both economic and environmental aspects into account, all in accordance with the interoperability requirements for railway lines. Spatial structures and infrastructure are highly dependent on natural environment. Main natural obstacle between the two countries' connectivity are rivers. The need and intention to improve transport connections between Croatia and Hungary was acknowledged by both parties in the *Declaration of Intent between the Republic of Croatia and Hungary with the aim to foster economic cooperation and the related transport connections between the border regions of the Republic of Croatia and Hungary* signed on 5 March 2020. In 2023 Croatia has joined the Schengen area which created a significant opportunity to reach this goal as crossing the border has become much more flexible both in terms of development and regulation and PO 3 (ii) was included in the Hungary-Croatia Programme with strategic projects that aim to develop better connectivity in the CBC area:

- preparation of project documentation and construction of missing road link Sárok - Kneževo
- preparation of project documentation and construction of missing road link Zákány - Gotalovo
- preparation of project documentation for Murakeresztúr - Kotoriba bridge.

6.3 Economy and innovation

The most common indicator for measuring economic performance of different regions is Gross Domestic Product (GDP). Regarding GDP two groups of counties can be observed within the CBC area. While the Hungarian counties Zala, Baranya and Somogy, along with the Croation counties of Osječko-baranjska and Varaždinska showed significant economic development between 2014-2023, the remaining 6 Croatian counties, Bjelovarsko-bilogorska, Virovitičko-podravska, Požeško-slavonska, Međimurska, Koprivničko-križevačka, and Vukovarsko-srijemska demonstrated more moderate growth patterns. These intra-regional disparities highlight the need for targeted support measures to foster balanced territorial development.

The trends also clearly reflect the effect of the COVID-19 pandemic. Notably, the economic downturn was more significant in counties with more dynamic GDP growth in the previous years, such as Baranya or Osječko-baranjska counties. Nevertheless, they were also more resilient in the recovery.

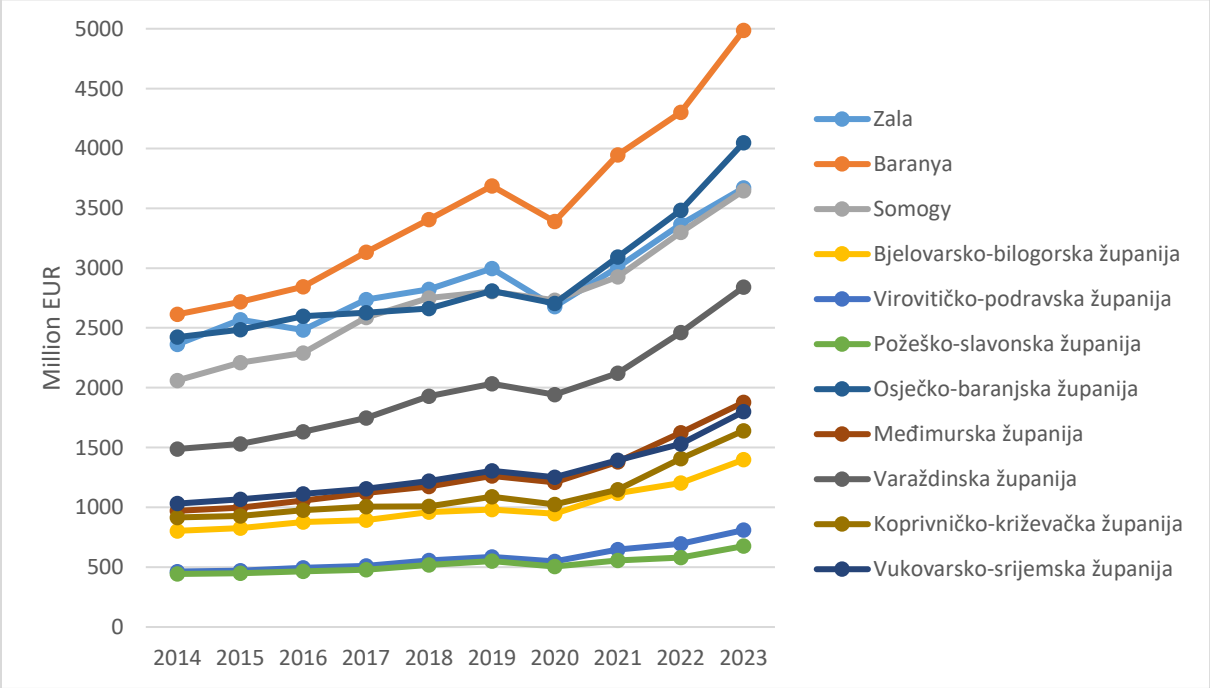

Figure 10: GDP values at current market prices of the CBC area, 2014-2023
Source: Eurostat

The counties in the CBC area are highly dependent on available financial support of the EU. As all CBC area is part of a cohesion region, counties are the main beneficiaries of the EU funds.

One of the other indicators of the economy's performance in the CBC area is the risk of poverty. According to Eurostat 2020 data, 18.3% of the population in continental Croatia and 19.5% in Hungary are at risk of poverty. The worsening poverty situation in the counties is in close

connection with the critical effects of the pandemic lockdown and the rising inflation – which were more severe in Hungary.

Regarding employment, all counties of the CBC area have relatively limited potential in creating jobs as quality workforce gravitates capitals and more developed countries. Osječko-baranjska county and Varaždinska county in Croatia have a relatively high share of the total number of persons in employment of the country compared to other counties in the CBC area. Notably, the county of Osječko-baranjska showed a moderate improvement in the share of the national labour force between 2014 and 2023, making it the only county in the CBC area with a positive trend. In contrast, all the other counties experienced a decline to varying degrees. The most notable drop occurred in Bjelovarsko-bilogorska County, where the share of the national labour force decreased by 1.08 percentage points over the period.

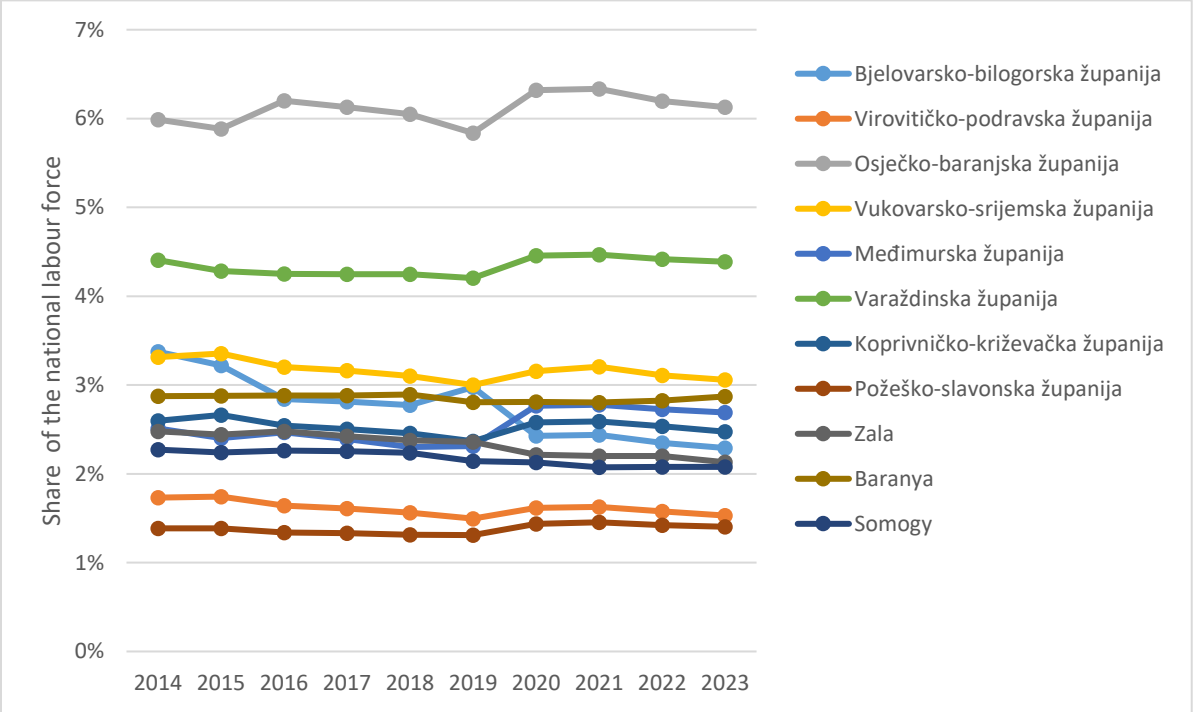

Figure 11: Distribution of workforce in the two countries, 2014-2023
Source: Eurostat

Regarding the economic and demographic challenges in the CBC area, EU funds should target the creation of high added value economic activities, jobs with which the decreasing local workforce could maintain the quality of life within the region.

6.4 Tourism

The CBC area is rich in natural waters such as the Balaton and thermal baths in Hungary. On the Croatian side, Osječko-baranjska and Varaždinska counties have the biggest accommodation capacities and Međimurska county is an emerging continental tourism destination, with high per capita overnight figures, which is followed by Varaždinska county. Domestic tourism dominates foreign visitors. Harkány, Hévíz and Zalakaros stand out as international tourism attractions. Thanks to several Natura 2000 sites and the EuroVelo network, green tourism provides excellent potential for joint product development in the CBC area.

6.5 Environment

Soil

There is considerable diversity in soils of the CBC area, which is also very significant in terms of its natural value. Large proportion of it is used for agriculture, the rest is mostly covered with forests.

The increasing number of drought days due to climate change, as well as the sudden heavy rainfall in mountainous and hilly areas is expected to increase soil degradation and soil destruction in the future. Improper agricultural practices (poor irrigation, excessive nutrient replenishment, ploughing in parallel with the slopes) significantly worsen the condition of valuable arable land, causing soil degradation and food safety problems. In terms of soil, the sites of the most significant soil pollution (at one point) in the area (Baranya County, Koprivničko-križevačka County) are still a threat to this day, and soil contamination from improper communal wastewater treatment is also a serious concern. Heavy metal pollution (Pb, Cd, Ni) of the soil is significant mainly in the former mining areas (Drava, Sava and, to a lesser extent, the Mecsek Mountains).

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). Road link Sárok - Kneževo area consist of meadow soils. Soils in the Zákány - Gotalovo road route area and Mura Bridge / MuKo Bridge project area are predominantly characterized by surface and near surface Holocene riverine sandy and muddy deposits.

Water

The protection of surface and groundwater bodies is a priority throughout the CBC area. Along the Lake Balaton, Kis-Balaton and Drava, as well as in several smaller areas, there are also areas with highly sensitive classification of water bodies (water source), so their more intensive utilisation in any form is not recommended as it is already unsustainable. In the case of Lake Balaton, the phenomenon of algal blooms is still a prominent problem, which causes a deterioration of water

quality in connection with the eutrophication of the lake. Another challenge is the recent growth of built-in areas along its shore with the elimination of former reed stands that clean the water and function as habitats for diverse flora and fauna.

Due to the increase in extreme weather events as an effect of climate change, both water supply depletion and floods have to be reckoned with periodically. Flood protection measures on the Danube, Drava, Sava, and Mura rivers are particularly important, in line with maintaining their functions as valuable habitats (according to the EU Water Framework Directive and the Habitats Directive). Large cities along the rivers can be potential sources of pollution due to inadequate wastewater treatment. In the region, the river sections of the Danube and the Drava River (further south of the Sava) can be navigated, so a larger increase in water transport means an increased load on the above-mentioned surface waters. However, the spring of 2022 faced an extremely low water level in the Drava, urging for the re-consideration of various water uses. In the case of the Drava, it is important to mention that hydropower plant system may have a detrimental effect on water dynamics of the groundwater system associated with a given body of water.

A significant reserve of the water for human consumption in Croatia part of CBC area are located in the Drava Valley (gravel-sand sediment layer), and their preservation in terms of quality and quantity is a strategic task. From the point of view of the public water supply, the preservation of the condition and quantity of groundwater reserves and spring waters is an important task. The sediment transport of the rivers should also be considered at this point, as the bigger sediments (gravels) are stopped by the hydropower plants (Austria, Slovenia, and Croatia in the case of the Drava; Slovakia in the case of the Danube) and this leads to silting up in some river sections while deepening riverbed in other branches. Silting up may block navigation during low-water periods, while deepening riverbed leads to deepening groundwater levels in the surrounding croplands and natural areas, threatening drinking water supply as well; and losing huge amounts of groundwater (flowing through artificial drainage canals into the rivers) from the water catchment area that constantly dries out this way. There is also a significant geothermal water supply in the CBC area, the protection of which is a priority.

In the course of agricultural activities, the cultivation of arable crops causes a significant burden due to the use of fertilizers and pesticides – these are still a problem in the area despite the EU regulations. It is expected that EU and national level regulation on water protection and biodiversity protection will lead to a significant decrease in the amount and toxicity of pesticides.

Within PO 3 (ii) of the Hungary-Croatia Programme following project were listed:

- preparation of project documentation and construction of missing road link Sárok - Kneževo

- preparation of project documentation and construction of missing road link Zákány - Gotalovo
- preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge).

The Croatian section of road link Sárok - Kneževo i.e. ŽC4302 is not located near surface water bodies. It is in the area of groundwater body CDGI-23 Istočna Slavonija – Sliv Drave i Dunav whose chemical status and quantitative status are good. It is not inside of protected areas of water intended for human consumption. The Hungarian section of road link Sárok - Kneževo is in the vicinity of the ALG098 Ivándárda groundwater body, which is not classified sensitive. Whole Danube basin in Croatia is classified as catchment of sensitive area (Dunavski sliv) including the ŽC4302 route. Road link Sárok – Kneževo is outside of the flood risk area in both countries. Road link Zákány - Gotalovo is close to Drava River which is in area of interest determined as surface water body CDR00002_199612 Drava (Croatia) whose status is moderate. Croatian section of road link Zákány - Gotalovo i.e. ŽC2268 is in the area of groundwater body CDGI-22 Novo Virje whose chemical status and quantitative status are good.

The Zákány – Gotalovo road link is not located within zones designated for the protection of water intended for human consumption in either country. The Hungarian section of the Zákány – Gotalovo road is approximately 5 km distance from the Gyékényes groundwater body ALG031 which is an operating sensitive groundwater source.

The entire Danube basin in Croatia, including the Zákány – Gotalovo road link (ŽC2268), is classified as a sensitive area catchment (Dunavski sliv). The Zákány – Gotalovo ŽC2268 road lies within the Natura 2000 network and a designated nature protection area and is therefore also considered part of water protection areas aimed at safeguarding habitats and species (RZP 521000014, RZP 525000014, RZP 51393049). Road link is in an area identified as having a moderate probability of flooding in both countries.

The Mura Bridge / MuKo Bridge area is hydrologically connected to the Mura River, which is classified as a surface water body under the designation CDR00006_000000 Mura (Croatia), currently holding a moderate status. On the Croatian side, the planned access road to the Mura Bridge / MuKo Bridge crosses two minor watercourses, CDR00365_000000 and CDR00542_000000, both of which are assessed to have a bad ecological status. The Croatian section is in the area of the CDGI-18 Međimurje groundwater body, which is classified as having both good chemical and quantitative status. This area is not located within zones designated for human consumption. The access road leading to the bridge on the Hungarian side crosses the AID553 Molnári-Mura water body intended for human consumption.

The entire Danube basin in Croatia, including the area of the Mura Bridge / MuKo Bridge, is designated as a sensitive catchment area (Dunavski sliv). Furthermore, the site falls within the Natura 2000 network and a designated nature protection area, which also qualifies as part of

protected water areas intended for the conservation of habitats and species (RZP 522000364, RZP 51377833, RZP 51393049).

Regarding flood risk, the Mura Bridge / MuKo Bridge area is predominantly located in a zone with a low probability of flooding, with only a narrow strip along the Mura River classified as having a moderate flood risk.

The areas of Murakeresztúr and Molnári are situated on a shallow porous water body within the Mura Valley from the perspective of subsurface water. The AID553 Molnári-Mura water body intended for human consumption, is marked as bank-filtered vulnerable water source with the capacity of 15-30.000 m3/day. The chemical quality of the water is good, but its overall quality (due to quantitative conditions) is weak. Murakeresztúr is situated in a sensitive area in terms of subsurface water. The proposed road route for crossing the Mura River is classified as highly sensitive area in terms of subsurface water. The planned route intersects with hydrogeological protection zones. When planning the Mura Bridge, it must be taken into consideration that the road passes through a heavily silted Mura oxbow lake characterized by closed reed vegetation, where surface water appears only periodically.

Air quality

Air quality in the CBC area is result of air pollutants emitted from transport, energy sector, industry, agriculture and households in the CBC area and of long-range transboundary air pollution.

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge), with aim of providing linkages in isolated peripheral parts of the CBC area, connecting neighbouring communities, improving and ensuring quicker access to TEN-T and other major road/rail infrastructure resulting in generating of travel time savings.

Road transport is a source of air pollution through emission of different substances produced by fuel combustion in road vehicles engines. The impact of road transport on air quality is mainly related to nitrogen oxide (NOx) emissions. But as expected result of PO 3 (ii) is shortening of travel time in the CBC area, reduction of fuel consumption in road transport is expected as well as of related air pollutant emissions.

Renewable energy sources, which are important for air protection, are not sufficiently present in the CBC area.

Biodiversity, flora, fauna

The CBC area has diverse, protected natural values and high biodiversity. The forests of the hills as well as on some alluvial areas along the big rivers are dense due to the favourable climate and ecological conditions, and their species composition is varied, but due to anthropogenic influences, part of the natural vegetation has been transformed into anthropogenic vegetation (pastures, groves, fields, orchards). However, in case of proper management, some of these semi-natural areas may sustain important habitats for birds, butterflies, reptiles, plants etc. The area is home to significant wildlife and bird populations. Most valuable areas with high biodiversity are part of Natura 2000 ecological network, nature protected areas and Mura-Drava-Danube Biosphere Reserve.

The discharge of wastewater from thermal baths into watercourses in the affected Carpathian Basin is problematic: they endanger local ecosystems in terms of both heat pollution and salt pollution. Another important problem in the CBC area is the algal bloom of Lake Balaton, for which, in addition to the increase in phosphorus concentration, the proliferation of partly invasive species may also be responsible. However, the phenomenon of algal blooms also adversely affects the local ecosystem of the lake. As a result of climate change, the chances of algal blooms and eutrophication increase in the Danube water systems and floodplains as the length of the dry periods increases.

In the valley of Drava lakes Varaždinsko and Dubrava also face serious ecosystem challenges in terms of eutrophication. The Drava River is one of the last really living big rivers in Europe, but the 22 hydropower plants in Austria, Slovenia and Croatia left only a short free-flowing section of it, located mostly in the joint Croatian–Hungarian section. This is why the Mura-Drava-Danube area (the only one with five participating countries in the world) was declared a Transboundary UNESCO Biosphere Reserve. Both Croatia and Hungary have high a responsibility in various uses of this river, including river regulation works or possible navigation, in order to maintain the diverse habitats, flora and fauna along the river.

Natura 2000

The CBC area encompasses a substantial number of Natura 2000 sites. The coverage of sites designated under the Birds Directive as Special Protection Areas (SPA) is extensive, reflecting their exceptional ornithological value. Similarly, the number of sites designated under the Habitats Directive as Sites of Community Importance (SCI) and Special Areas of Conservation (SAC) is also considerable. These areas support ecologically valuable biotopes and are home to numerous botanical and zoological rarities.

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány –

Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge).

Road link Sárok - Kneževo is not inside of Natura 2000. The nearest Natura 2000 site in Hungary is SAC HUDD20065 Töttösi Forest with distance of about 6 km at its closest point. The nearest Natura 2000 site in Croatia is SCI HR2001309 Dunav S od Kopačkog rita of a distance of about 4.5 km at its closest point.

The Croatian section of road link Zákány - Gotalovo is inside of Natura 2000 sites SCI HR5000014 Gornji tok Drave and SPA HR1000014 Gornji tok Drave. The nearest Natura 2000 site in Hungary are SPA HUDD10002 Nyugat - Dráva and SAC HUDD20054 Nyugat - Dráva which are about 25 m away at the road's closest point. To assess the potential effects on the affected Natura 2000 sites, Appropriate assessment (Annex 1) has been carried out for the planned road link.

The Mura Bridge project within PO 3 (ii) involves further planning of the future Mura Bridge / MuKo Bridge, crossing Natura 2000 sites SCI HR2000364 Mura in Croatia and SAC HUBF20043 Mura Riverside in Hungary. The planning phase having no potential threats on the environment, no Appropriate assessment must be carried out on programme level. However, as per request of respective authorities during the scoping phase of the SEA process, a preliminary assessment has been carried out for this location to support the preparation of the appropriate assessment conducted on project level in the future(Annex 1).

Climate

According to the IPCC Working Group I (WGI) Sixth Assessment Report and IPCC WGI Interactive Atlas, in the CBC area (as part of Western and Central Europe) upward trends in mean near-surface air temperature and extreme heat events are observed. Regardless of future levels of global warming i.e. under all greenhouse gas (hereinafter: GHG) emissions scenarios, it is projected that temperatures in all European areas, including the CBC area will rise at a rate exceeding global mean temperature changes. The frequency and intensity of hot extremes are projected to keep increasing regardless of GHG emission scenarios. Downward trend of cold spell is observed, and frequency of cold spells and frost days is expected to decrease under all GHG emission scenarios. There is low confidence in projections in direction of mean precipitation change.

Observed upward trends of heavy precipitation and pluvial flood are projected to increase with high confidence. River floods have upward trend in incidence and further increase is projected with high confidence. Observed upward trend of agricultural and ecological drought is projected to increase in future with medium confidence. Hydrological drought is expected to increase with medium confidence. Frequency of severe windstorms is expected to increase with medium confidence. Declines in snow cover extent and snow seasonal duration are observed and will continue in future.

Global warming will continue to increase, mainly because of increased cumulative GHG emissions and the CBC area, same as every region of the world, is expected to face further increase in climate hazards and increasing multiple risks to ecosystems and people.

The emitted GHG in the CBC area are predominantly CO_2, with only a minor proportion of CH_4 and NO_2. The most significant stationary sources of GHG emissions in the CBC area are energy sector and cement industry. Road transport as mobile source contributes significantly to total GHG emissions in the CBC area as well.

The potential of renewable energy source in the CBC area is favourable: solar energy, geothermal, wind energy, hydropower, but their sustainability depends significantly on the way how they are utilized.

It is necessary to highlight importance of Hungarian and Croatian strategic documents on climate change. In Hungary that is the Second National Climate Change Strategy (2018-2030) and in Croatia climate change mitigation is subject of the Low carbon development strategy of the Republic of Croatia until 2030 with a view to 2050, while climate change adaptation is subject of the Climate change adaptation strategy in the Republic of Croatia for the period up to 2040 with a view to 2070, which should be considered during the formulation of calls under PO 3 (ii) of the Hungary-Croatia Programme.

Low-carbon & green perspective

Croatia and Hungary as part of the EU are committed to climate neutrality and sustainable development goals. It means that each economy sector has to reach net-zero GHG emissions or compensate the emitted quantities with forestation or creating other artificial carbon sinks.

The European Green Deal from 2019 outlined main steps forward climate neutrality. Besides sectoral policies, it creates financial resources for the green transition. The European Green Deal is followed by the "Fit for 55" package i.e. set of laws aiming to reduce EU GHG emissions by at least 55% by 2030 and to put EU to the path to achieve climate neutrality by 2050. The goals and funds of the 2021-2027 programmes are highly connected with climate goals of the Community.

Financial support for promoting climate change mitigation, climate change adaptation and attitude changing is very important in the CBC area to overcome the climate change related issues. Climate change is proved to worsen the existing economic and social issues of the European countries with internal and external migration, shortage of natural resources etc. Therefore, without investing in green economy European countries will face an increasing disadvantage in competitiveness. Messages towards European citizens, including CBC area residents, should be highly different based on their financial possibilities.

6.6 Infrastructural connectivity

The CBC area lies within a triangle of three TEN-T network elements: corridor V/b (E71, A4–M7), corridor X (E70, A3) and corridor V/c (E73, A5–M6). Road transport network consists of highways, state / main roads, county / side roads and local / municipal roads. Three railway connections are available in the CBC area, but currently with limited possibilities of direct local passenger traffic within the CBC area as described in chapters 3. Observation of potential alternatives and 6.2. Spatial structure and built environment.

Due to the peripheral situation within the TEN-T network axes, the CBC area is isolated and there is a lack of cross-border infrastructure connecting local communities. Average distance between road border crossings is 72 km, making the Hungary-Croatia border the least permeable one in both countries.

Transportation is essential for balanced territorial development and quality of life. With Croatia's access to Schengen on 1 January 2023, new opportunities in cross border transportation have been opened. Using this opportunity, PO 3 (ii) of the Hungary-Croatia Programme emphasizes development of road connections which should support links between isolated peripheral areas, in order to connect neighbouring communities, to improve and to speed up access to TEN-T and other major road/rail infrastructure, generating time savings in cross-border mobility. Preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge) are highlighted in the Hungary-Croatia Programme.

Regarding aviation, smaller state or private owned airports and sports airports are operational in the CBC area, of which following can be mentioned: Pécs-Pogány Airport, Hévíz-Balaton Airport, Kaposvár-Kaposújlak Airport and Osijek Airport (international airport). They have minor role in international aviation, although they have the potential for cooperation within the CBC area.

The two largest rivers in the CBC area are Drava River, which is the borderline between the two countries, and Danube River. Water transport is relevant only on the eastern part of the CBC area, which has access to the Danube and some parts of the Drava River. The Danube is part of the TEN-T core network (corridor VII).

6.7 Social inclusion

Hungary and Croatia have long history of the cooperation with different cultures, all the CBC area once being part of the Austro-Hungarian Monarchy. After the world wars and the war in former Yugoslavia, the ethnic and religious situation of the two countries have become more homogeneous, ethnic groups have been continuously assimilated to the leading ethnics. Both countries have specific strategies and programmes for integrating of the increasing number of Roma population focusing on education and employment.

As Hungary and Croatia are part of EU they are obligated to follow social inclusion standards on all levels. Although new technologies and regulations are ensuring and developing the quality of life of people with disabilities, both countries still have significant obstacles in the built and online environment. With the financial support of the European Social Fund many of public places such as governmental buildings, public transportation has been reconstructed focusing on the needs of people with disabilities.

Hungary and Croatia are at the forefront of internal migration as they are the borderline of the EU. Waves of numerous refugees and migrants means great border surveillance, administrative and humanitarian burden for the national authorities and non-governmental organisations. Counties of the CBC area at the borderline have to face the economic, social and environmental impact of international migration.

6.8 Cultural heritage and natural values

Hungary and Croatia have long history with various influences from foreign culture, religion and economy. Marks of this history can be found in the CBC area, from the UNESCO Representative List of the Intangible Cultural Heritage of Humanity, although only one reached the level of the UNESCO Word Heritage: Early Christian Necropolis of Pécs (Sopianae) in Hungary.

Cultural heritage includes immovable cultural properties, movable cultural properties and intangible heritage. According to the Register of Cultural Properties of the Republic of Croatia, within the Croatian part of the CBC area there are in total 1388 immovable protected cultural properties. Most of them are protected as singular entities (1015), followed by archaeological heritage (325), cultural historical areas (46) and cultural landscapes (2). In addition to protected immovable cultural properties, preventive protected cultural properties and cultural properties recorded in spatial plans should be mentioned as well.

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge).

According to the data from the Geoportal of Cultural Property of the Republic of Croatia road infrastructure planned within PO 3 (ii) of the Hungary-Croatia Programme does not overlap with area of protected cultural properties.

Hungary has no such national cultural heritage register. With regards to national cultural heritage, Hungarian National Act LXIV of 2001 on the protection of cultural heritage must be taken into consideration.

In the CBC area there are a number of sites of natural values including Natura 2000 sites, protected areas of nature (such as the Danube–Drava National Park in Hungary or Mura-Drava Regional Park in Croatia) and the Mura-Drava-Danube Transboundary Biosphere Reserve (Austria, Croatia, Hungary, Serbia and Slovenia).

Besides these locations, numerous tourist destinations can be found in both countries, which could help maintaining local economy and preserving rural culture. Regarding road infrastructure planned within PO 3 (ii) of the Hungary-Croatia Programme, Croatian section of road link Zákány – Gotalovo is in the area of the Regional park Mura-Drava. Mura Bridge / MuKo Bridge area is in the area of Regional park "Mura-Drava" and Important landscape "Rijeka Mura na području Međimurske županije". Road link Sárok - Kneževo is not in the area of nature protected areas. Hungarian sections of planned road infrastructure strategic projects are not in nature protected areas.

Road link Zákány – Gotalovo and Mura Bridge / MuKo Bridge area are in the area of the Mura-Drava-Danube Transboundary UNESCO Biosphere Reserve.

6.9 Territorial governance

In Croatia levels of territorial governance were established in the Regional Development Act. In accordance with this document, the coordinating functions are set on a ministry level (Ministry of Regional Development and EU Funds), on a county level (NUTS 3) and on a regional level (regional development agencies).

In Hungary the Act nr. CII. of 2023 on Regional Development defines the basic framework of regional development. Whereas regional coordination is split among various ministries, cross-border cooperation programmes are managed by the Ministry of Foreign Affairs and Trade, yet the partner counties are responsible for the coordination of regional and rural development.

Counties in Hungary and in Croatia present NUTS 3 regions. Counties Baranya and Somogy in Hungarian part of CBC area are part of NUTS 2 South Transdanubia, while Zala county is part of NUTS 2 region Western Transdanubia. Međimurska, Varaždinska and Koprivničko-križevačka counties in Croatian part of CBC area are part of NUTS 2 region North Croatia and Bjelovarsko-bilogorska, Virovitičko-podravska, Požeško-slavonska, Osječko-baranjska and Vukovarsko-srijemska counties are part of NUTS 2 region Pannonian Croatia.

To enhance unity and boost the efficiency of regional and rural development strategies in the CBC area, it's essential to foster collaboration among different levels of territorial governance and collaboration with different stakeholders.

7 Likely evolution of the environment without implementation of the Policy objective 3 (PO 3) of the Hungary-Croatia Programme

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: the preparation of the project documentation and the construction of the missing road link between Sárok and Kneževo, the preparation of the project documentation and the construction of the missing road link between Zákány and Gotalovo, as well as the preparation of the project documentation for the Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). These interventions aim to connect isolated peripheral parts of the CBC area, connect neighbouring communities, improve and ensure quicker access to TEN-T and other major road/rail infrastructure, thereby enabling travel time savings.

Without the implementation of Priority 3 under PO 3 (ii), the problem of insufficient connectivity in certain parts of the CBC area would persist, demanding longer travel times, increased fuel consumption and thus higher financial burdens for residents and businesses in the isolated parts of the CBC area. Moreover, this would also limit the potential for demographic and economic development.

Although the interventions to be implemented within PO 3 (ii) will have a certain environmental impact, this may be counterbalanced with the potential to reduce travel time. This would lead to lower fossil fuel consumption and consequently a reduction in GHG emissions and air pollutants, contributing to climate change mitigation, improved air quality, and the protection of the environment in the cross-border area.

8 Relevant environmental conflicts and problems

This Chapter briefly describes relevant environmental conflicts and problems in the CBC area, with a particular focus on those with specific environmental importance, such as areas designated pursuant to EU Habitat and Bird directives.

Environmental conflicts and problems that are particularly threatening protected areas contribute to the loss of certain species and habitats and result in ecosystem degradation and weakening ecosystem resilience. The main environmental conflicts and problems are:

- Habitat change – including the loss, fragmentation and degradation – of natural and semi-natural habitats due to land-use change is a main pressure. The fragmentation of the rural landscape due to urban sprawl and linear infrastructure developments, the homogenisation and loss of habitats by the development of agriculture and land abandonment and intensively managed forests are the main causes of natural habitat degradation;
- Overexploitation of natural resources, in particular surface and groundwater bodies or soils;
- The accelerated spread of invasive alien species is not only an important driver of biodiversity loss, but it also causes significant economic damage.
- Some pollution pressures have decreased, such as the nutrient enrichment of European waters. However, the level of nitrogen still substantially exceeds ecosystem eutrophication limits in most of Europe and the eutrophication risk is predicted to remain unchanged in the coming decade. Air pollution (mainly from road traffic) has a significant impact not only on human health, but also on the health of ecosystems. The most harmful air pollutants in terms of damage to ecosystems are ozone, ammonia and nitrogen oxides.
- The increasing impacts of climate change are already affecting the distribution and interactions of species and habitats, expected to become an increasingly significant threat in the coming decades. Investigations done during past two decades show a northwards and upwards shift of the most widespread forest ecosystems in the CBC area and highlight that the renewal of beech and hornbeam stands goes on with other species, meaning that the seedlings of the native tree species cannot keep up with climate change. Climate change is exacerbating many other environmental threats.

9 Environmental protection objectives relevant to the Programme

At international, community or member state level, there are a number of strategies – and related objectives – that are relevant for the environment and the region and that have been taken into account during the preparation of the programme. In this Chapter and in addition to Chapter Error! Reference source not found. (Relevant International and European Union documents taken into account during preparation of the study), these – mainly community level – strategies will be described briefly.

The European Green Deal, published in 2019, endorsed the objective of achieving a climate-neutral EU, an economy with net-zero greenhouse gas emissions, by 2050. The implementation of the European Green Deal requires the renewal and updating of the most important policies and measures. All EU actions and policies must contribute to the objectives of the European Green Deal.

In the context of the European Green Deal, a number of strategies have been developed and renewed. The European Green Deal, addressing 8 key fields of intervention, as well as related strategies discusses the challenges and outlined solutions in each area, which are:

- Increasing the EU's climate ambition for 2030 and 2050 (2.1.1.) – *European Climate Law and EU Strategy on Adaptation to Climate Change*
- Supplying clean, affordable and secure energy (2.1.2.) – *EU Strategy for Energy System Integration*
- Mobilising industry for a clean and circular economy (2.1.3.) – *Circular Economy Action Plan*
- Building and renovating in an energy and resource efficient way (2.1.4.) – *Renovation Wave*
- Accelerating the shift to sustainable and smart mobility (2.1.5.) – *Smart and Sustainable Mobility Strategy*
- From 'Farm to Fork': designing a fair, healthy and environmentally friendly food system (2.1.6.) – *Farm to Fork Strategy*
- Preserving and restoring ecosystems and biodiversity (2.1.7.) – *EU Biodiversity Strategy for 2030*
- A zero-pollution ambition for a toxic-free environment (2.1.8.) – *Zero Pollution Action Plan*

Tackling climate change is an urgent challenge. The atmosphere is warming, and this is affecting our everyday life already now. Climate change is having an increasingly severe impact on our planet's ecosystems and biodiversity, in addition to our health and food systems.

The IPCC (Intergovernmental Panel on Climate Change) estimates that in order to address the challenges posed by climate change and limit temperature rises to 1.5 °C, global net zero CO_2 emissions by 2050 and the neutrality of all other greenhouse gases by the end of the century must be achieved.

Biodiversity is one of the crucial topics of modern European environmental strategies. This complex topic is influenced by many green issues, as it is also reflected in the EU Biodiversity Strategy for 2030. In the Strategy, several actions have been formulated to reverse biodiversity loss.

Most of the activities in the EU Biodiversity Strategy are also crucial for the whole Hungary-Croatia CBC area. Not only the management of the various environmental issues, but also the maintenance and preservation of the main ecological corridors and elements are a common task of the whole cross-border area. Most environmental issues are closely interlinked and require integrated solutions. Climate change is accelerating the destruction of nature through droughts, floods and fires, while the loss and unsustainable use of nature is a key driver of climate change. Two main aims of the Strategy, namely building a coherent Trans-Europe Nature Network and legally protecting a minimum of 30% of the EU's land areas will require the inclusion of the existing protected areas (mentioned earlier) and the creation of new ecological corridors in the whole Hungary-Croatia CBC area to interconnect them. Another aim is that 10% of EU land should be under strictly Protected Areas and as part of this strict Protected Areas network, it is highlighted the necessity of protecting the remaining primary and old-growth forests along the main rivers (Danube, Drava, Sava) and hilly or mountainous areas.

The aim of restoring freshwater ecosystems means that 25 000 km of free-flowing rivers must be restored in the EU, and the above-mentioned main rivers, as well as smaller watercourses, are of outstanding potential to achieve these aims within Croatia and Hungary.

Considering the aim of greening urban and peri-urban areas, some cities and towns have already elaborated their Urban Greening Planning or started a community planning of blue and green infrastructure. Riverine, aquatic, wetland, and terrestrial habitats of the Hungary - Croatia CBC area can create the main ridge of these networks.

Most of the agricultural areas in the Hungary-Croatia CBC area create the good potential to realize the aim of the reduction of the use of fertiliser by at least 20% by 2030 as well as the aim of the Zero Pollution Action plan for Air, Water and Soil because their environmental conditions are favourable for organic production.

Implementation of the EU Invasive Alien Species (IAS) Regulation will also affect these territories favourably because, among the natural and semi-natural habitats, the alluvial forests and other riverine ecosystems suffer from the greatest pressures of IAS.

10 Potential environmental effects of Programme implementation

In the main Chapter of the environmental assessment, the potential environmental impacts on environmental elements – such as soil; air; surface water and groundwaters; biodiversity, flora, and fauna; nature protected areas; climate; built environment, settlement surroundings, and cultural heritage; human health and lifestyle; environment consciousness; emerging environmental conflicts and potential problems, the escalation of existing problems; waste management; interrelationship and cumulative effect of threats to the above systems – are assessed and the assessment of potential – negative, neutral, contrary, positive – environmental impacts are highlighted. The impact on Natura 2000 areas is described in the Appropriate assessment, the Annex 1. of this current environmental report.

10.1 Potential effects on soil

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: the preparation of the project documentation and the construction of the missing road link between Sárok and Kneževo, the preparation of the project documentation and the construction of the missing road link between Zákány and Gotalovo, as well as the preparation of the project documentation for the Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge). These developments aim to connect isolated peripheral parts of the CBC area by linking neighboring communities, improving and ensuring quicker access to TEN-T and other major road/rail infrastructure, thereby generating travel time savings.

Certain works on the Hungarian section of the road connecting Sárok with Kneževo, in a length of 995 m were completed in 2015. The Croatian section of the road is planned to be provided through the construction of the new two-way county road ŽC4302 of a total length of 1461 m. This road will cross the Hungary-Croatia border and connect to the existing county road ŽC4017, which will be reconstructed over about 700 m. The ŽC4302 road will mainly overlap with existing unpaved paths.

The Hungarian section of the road linking Zákány with Gotalovo will be developed by upgrading existing streets in Zákány and construction of a new road that overlaps with an existing unpaved road with a total length of 809 m. The Croatian section of the road will be constructed as a new two-way county road, ŽC2268, with a length of 290 m, enabling crossing of the Hungary-Croatia border and connection to existing state road DC41. ŽC2268 will be constructed in the vicinity of and parallel to the international railway line M201. The alignment of the ŽC2268 route is currently a mix of green areas and agricultural lands.

The road connections of the Mura Bridge / MuKo Bridge project are planned to have a total length of 3130 m. The Croatian section will mainly follow alignment of the international railway line M501, while the Hungarian section will connect MuKo Bridge to road number 6835 in the vicinity of railway line 30. The construction of the bridge is planned to be situated over the Mura River, along with short sections of connecting roads in greenfield areas.

The above descriptions reflect clearly that the road infrastructures planned within PO 3 (ii) mainly overlap with existing unpaved paths/roads or are aligned with the corridor of existing railway infrastructure. As a result, only short greenfield sections are expected to be affected by the constructions, implying a limited loss of natural soils.

During the construction of the road infrastructure, a temporary occupation of space will occur due to the establishment of construction sites and the temporary storage of materials for construction and/or excavated materials. In order to minimize soil degradation caused by the construction works, including the movement of heavy machinery and storage, it is recommended that construction sites and manipulative areas are reduced to the minimum possible rational size required.

It is possible that on the construction sites there will be packages of lubricating oil, grease and fuel intended for construction machinery and tools. As these are hazardous substances, in case of leakage or spillage, soil and water pollution are possible. Therefore, all packages with hazardous substances are to be stored in a way that prevents free leakage into the environment (mobile protective tank or protective container) and there should be means nearby to absorb any spilled fuel, oil or lubricants to eliminate and/or localize consequences of accidental spillage.

The primary sources of soil pollution from road transport include particulate matter, heavy metals and polyaromatic hydrocarbons, which are generated through fossil fuel combustion in vehicles engines, as well as from the abrasion of brake discs and the wear of road vehicle tires. These pollutants tend to be deposited in soil, mostly in spatially limited areas along road infrastructure. Thanks to the shorter travel times expected from the road connections, and with the right precautions the overall effects of road traffic on soil are likely to be better.

10.2 Potential effects on air

Transport is a source of air pollutants which are produced by fossil fuel combustion in vehicles engines. Of road transport air pollutants, nitrogen oxides (NOx) emissions stand out. According to EEA Report 08/2024, road transport accounted for 35% of total NOx emissions in the EU27.

PO 3 (ii) of the Hungary-Croatia Programme promotes a better connected border region and includes the preparation of the project documentation and the construction of missing road links between Sárok and Kneževo, and Zákány and Gotalovo, as well as the elaboration of the project documentation for the planned bridge between Murakeresztúr and Kotoriba (Mura Bridge / MuKo Bridge).

These developments aim to connect isolated peripheral parts of the CBC area by linking neighboring communities, improving and ensuring quicker access to TEN-T and other major road/rail infrastructure, thereby generating travel time savings.

Temporary impact on air quality is expected during the road infrastructure construction works due to the dust emissions of the construction works, the movement of machinery and the temporary storage of materials. These impacts will only persist for a certain period of time, and by applying the standard construction site protection measures, they will even be spatially limited.

During the regular use of road infrastructure, a localized negative impact on air quality may occur in narrow strips along the road infrastructure routes due to road vehicles' emission. However, the cumulative effect of the PO 3 (ii) interventions is expected to be positive in the CBC area, primarily as a result of the reduced travel time in the isolated peripheral parts of the CBC area. Shorter travel time and travel distances lead to reduced fossil fuel consumption and thus, reduced emission of air pollutants.

For example the construction of the missing road link between Sárok and Kneževo will reduce the travel distance for road vehicles between those two settlements from the current 33 km to approximately 2 km. This reduction of about 60 km per round trip translates into a fuel saving of approximately 94 % (based on an average fuel consumption of 7-8 liters / 100 km (gasoline, diesel) for passenger vehicles). Accordingly, NOx emissions decrease from 14.73 g to 0.89 g for gasoline-powered vehicles, and from 48.36 g to 2.93 g in the case of diesel-powered passenger vehicles, based on default emission factors from the EMEP/EEA Air Pollutant Emission Inventory Guidebook 2023 – Update 2024.

The example of a single round trip between Sárok and Kneževo clearly illustrates the PO 3 (ii) interventions' potential for reducing emissions from road transport. Therefore, by shortening travel time and distances, the PO 3 (ii) contributes to the protection of air quality in the CBC area.

10.3 Potential effects on surface waters and groundwaters

PO 3 (ii) of the Hungary-Croatia Programme promotes better connected border region and includes: preparation of project documentation and construction of missing road link Sárok - Kneževo, preparation of project documentation and construction of missing road link Zákány – Gotalovo and preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge), with aim of providing linkages in isolated peripheral parts of CBC area, connecting neighboring communities, improving and ensuring quicker access to TEN-T and other major road/rail infrastructure resulting in generating of travel time savings.

During construction, it is possible that on construction sites there will be packages with lubricating oil and grease and fuel for construction machinery and tools. Fuel, oil and lubricants are hazardous substances. In the event of their leakage/spill, soil and water pollution is possible. Therefore, all packages with hazardous substances are stored in a way that prevents free leakage

into the environment (mobile protective tank or protective container) and there should be means nearby to absorb any spilled fuel, oil or lubricant, so the consequences are eliminated and/or quickly localized in case of spill.

Road transport is a source of heavy metals and polyaromatic hydrocarbons, which are produced by fossil fuel combustion in vehicles engines or due to the abrasion of brake discs and wear of road vehicle tires. Hydrocarbon emissions are possible in the event of accidents. Road transport primarily poses a threat to groundwater.

Road link Sárok – Kneževo and road link Zákány – Gotalovo will shorten travel time and will result in reducing fuel consumption and related pollutant emission. Road link Sárok – Kneževo and road link Zákány – Gotalovo are not located within the sanitary protection zones of sources of water intended for human consumption so treatment of rainfall runoff from those roads is not required. Due to the relatively short lengths of planned road links, which partly follow today's unpaved and paved roads and the extent of the groundwater bodies, impact of road link Sárok – Kneževo and road link Zákány – Gotalovo on groundwaters is expected to be negligible.

Mura Bridge / MuKo Bridge will shorten travel time and will result in reducing fuel consumption and related pollutant emissions as well. Murakeresztúr is situated in a sensitive area in terms of subsurface water. The proposed road route for crossing the Mura River is classified as highly sensitive area in terms of subsurface water. The planned route intersects with hydrogeological protection zones. In case of new road sections that are built upon the hydrogeological protection zone, the construction of a lined (impermeable) stormwater drainage ditch is required. Part of this project is a bridge over the Mura River. It is expected that it will have a closed drainage system for rainfall runoff, while connection roads will have an open system for rainfall runoff.

According to the recent feasibility studies of Mura Bridge / MuKo Bridge project, the bridge over the Mura River is in general planned in a way to avoid construction of a pillar in the riverbed, but this should be confirmed through field investigation on site, as part of the preparation of the Mura Bridge / MuKo Bridge project documentation. If planned construction of bridge will be confirmed that means negligible impact on hydromorphological features of Mura River. If during preparation of the Mura Bridge / MuKo bridge project documentation there will be a need to change the planned bridge structure, it is necessary in choosing new construction to take into consideration its possible impacts on water bodies and to try to find possible reasonable construction and foundation solutions which meet all technical requirements for such projects while also protecting water bodies.

Flood risks are commented in chapter 10.6. Climate and climate change.

10.4 Potential effects on biodiversity, flora, and fauna

PO 3 (ii) of the Hungary-Croatia Programme includes preparation of project documentation and construction of missing road links Sárok - Kneževo and Zákány – Gotalovo, while for the

Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge) only preparation of project documentation will be financed.

The planned routes within PO3 (ii) serve a better-connected CBC area, causing minor effects on biodiversity as a result of their remote locations mostly in arable lands. Sárok – Kneževo route is outside Natura 2000 areas. The Croatian section of the Zákány- Gotalovo route passes through Natura 2000 areas. The Hungarian section of the road is 25 m from the Natura 2000 sites at its closest point.

The direct impact of the planned roads, such as habitat destruction, disturbance and pollution primarily affect an approximately 20 m wide strip of the built roads. Fragmentation and isolation affect different groups of organisms to varying degrees. During operation and particularly in the event of accidents, pollutants can be washed off the road surface and infiltrate into the surrounding soil. Nevertheless, the new roads are expected to provide shorter travel routes, thereby attracting traffic from other, longer routes in the area. As a result, wildlife will be subject to lower amounts of traffic overall.

10.5 Potential effects on nature protected areas

PO 3 (ii) of the Hungary-Croatia Programme promotes a better-connected border region and includes the preparation of the project documentation and the construction of missing road links between Sárok and Kneževo, and Zákány and Gotalovo, as well as the elaboration of the project documentation for the planned bridge between Murakeresztúr and Kotoriba (Mura Bridge / MuKo Bridge).

Road link Sárok – Kneževo is not inside of the nature protected areas.

Croatian section of the Zákány – Gotalovo route and the Mura Bridge / MuKo Bridge project are in the area of the Regional park Mura -Drava (hereinafter: Regional park) which covers a significant area of 87 448.70 ha in total, along the entire course of the Mura and Drava rivers in Croatia. It includes areas of natural values, but also anthropogenic areas of smaller settlements and agricultural areas as well as routes of transport and other infrastructure. In line with the Croatian Nature protection act (OG 80/13, 15/18, 14/19, 127/19, 155/23) category of protection "regional park" allows economic and other activities and projects that do not endanger its essential features. Scope of interventions within PO 3 (ii) of the Hungary-Croatia Programme planned in the Regional park area is negligible in relation to it total spatial coverage and will not endanger its essential features.

MuRa Bridge / MuKo Bridge is planned in an area of the Important landscape "Rijeka Mura na području Međimurske županije" (hereinafter: Important landscape) which covers significant area of 14 437.52 ha along Mura River together with the belt from the Mura River to settlements in the hinterland of the Mura River. It is an area of rich ornithofauna and ichthyofauna, as well as other endangered and rare species. There is also a specific landscape complex that ranges from the

natural area along the rivers themselves to the cultural anthropogenic landscape in the peripheral areas with settlements. Mura Bridge / MuKo bridge project is planned in the area of the settlement Kotoriba and connection road from Kotoriba will mainly follow existing international railway line M501. The central part of the Mura Bridge / MuKo Bridge project is a new bridge over the Mura River, which is planned in the vicinity of the existing railway bridge over the Mura River. In line with the Croatian Nature protection act (OG 80/13, 15/18, 14/19, 127/19, 155/23) category of protection "important landscape" allows activities and projects that do not endanger its essential features. Planning of new road infrastructure in close vicinity of existing railway infrastructure is example of sustainable use of space and will not endanger essential features of the Important landscape.

Hungarian section of road link Zákány – Gotalovo road link is not in nature protected areas.

Road link Zákány – Gotalovo and Mura Bridge / MuKo Bridge area are in the area of the Mura-Drava-Danube Transboundary UNESCO Biosphere Reserve (hereinafter: Biosphere reserve). Biosphere reserve extends through 5 countries (Austria, Croatia, Hungary, Slovenia and Serbia) and was declared with the aim of preserving biodiversity and encouraging sustainable development in the area it covers. Both in Hungary and Croatia, areas rich in biodiversity are part of Natura 2000 ecological network. Impact of PO 3 (ii) on Natura 2000 is assessed in the Appropriate assessment, which is given in the Annex 1 of this document. In line with recognized impacts, mitigation measures are proposed in Appropriate assessment to minimize impacts on certain targets species in Natura 2000 sites of interest and in that way to protect biodiversity of the Biosphere reserve as well.

10.6 Climate and climate change

Transport is a significant source of greenhouse gases (GHG), resulting from the fossil fuel combustion of vehicle engines. According to EEA/PUBL/2024/046 (EU NIR 2024), the Transport sector (1A3) accounted for 24.5% of the CO_2 emissions, 0.04% of the CH_4, and 0.23% of the N_2O from all GHG emission sources (including indirect CO2, with LULUCF and international aviation) in the EU-KP (EU-27 + Island + UK). Between 1990 and 2019, GHG emissions from the Transport sector increased by 20% in the EU-KP. A temporary decline was recorded in 2020, due to the COVID-19 pandemic, but GHG emissions increased again in 2021 and 2022. Emissions from road transport (1A3b) represent the majority of GHG emissions within the Transport sector.

PO 3 (ii) of the Hungary-Croatia Programme promotes a better-connected border region and includes the preparation of the project documentation and the construction of missing road links between Sárok and Kneževo, and Zákány and Gotalovo, as well as the elaboration of the project documentation for the planned bridge between Murakeresztúr and Kotoriba (Mura Bridge / MuKo Bridge). These developments aim to connect isolated peripheral parts of the CBC area by linking neighboring communities, improving and ensuring quicker access to TEN-T and other major road/rail infrastructure, thereby generating travel time savings.

The reduction in travel distance and time results in lower fossil fuel consumption and thus a reduction of GHG emissions. For example, the construction of the missing road link between Sárok and Kneževo will reduce the travel distance for road vehicles between those two settlements from the current 33 km to approximately 2 km. This reduction of about 60 km per round trip translates into a fuel saving of approximately 94 % (based on an average fuel consumption of 7-8 liters / 100 km (gasoline, diesel) for passenger vehicles). Accordingly, CO_2 emission decreased from 11.36 kg to 0.69 kg for gasoline-powered vehicles and from 13.09 kg to 0.79 kg in the case of diesel-powered passenger vehicles, based on default values for CO_2 emission factors from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

The example of a single round trip between Sárok and Kneževo clearly demonstrates potential for the reduction of CO_2 emissions from road transport. Therefore, by shortening travel time in the CBC area, PO 3 (ii) contributes to climate change mitigation.

Because of its dark colour, asphalt contributes to the increase of surface temperature. However, in the case of the road infrastructure strategic projects planned within PO 3 (ii), these effects are expected to be negligible due to the small extent of the asphalt-covered sections. It should also be mentioned that asphalt surfaces are exposed to harsh sunlight, temperature changes and some other extreme weather events, which may cause damage and shorten the service life of pavements. Thus, it is recommended to follow up-to-date scientific and engineering approaches in the construction and maintenance of the road infrastructures to reduce the climate change-related impacts. This approach can minimise the frequency of necessary asphalt renewals and the related maintenance costs.

The planned road link between Sárok and Kneževo is located in an area with no identified flood risk. The road link between Zákány and Gotalovo, however, is situated within the Drava River basin. The Croatian section of this road link, namely ŽC2268, is located in an area with moderate probability of flooding. ŽC2268 is planned to be constructed on an embankment, elevated in relation to the surrounding terrain, similarly to the existing state road DC41 in the same area.

The Mura Bridge / MuKo Bridge is planned in the vicinity of the Mura River. The bridge and the connecting roads are to be predominantly located in a zone with a low probability of flooding, with only a narrow strip along the Mura River classified as having a moderate flood risk. The Hungarian settlement of Zákány is considered to be exposed to flood hazards, according to Hungarian legislation, which is why the roads connecting to the bridge should be elevated. The Hungarian section of the road is road connection to the bridge, which is partly planned to be built on the already existing embankment.

In accordance with the EU and national policies, due care, good engineering practice and EC, EIB and national guidelines for financing development of infrastructure, it is expected that Mura Bridge / MuKo Bridge project will be planned to be resistant to climate change and related hazards such as storms, flooding, coastal erosion and landslides.

10.7 Potential effects on built environment, settlement surroundings, cultural- and archaeological heritage

From a landscape protection perspective, the construction's impact is generally limited to only temporary changes. The construction of roads involves minor alterations to the terrain, such as the creation of cuttings and embankments, and temporary disruptions to the surface within the expropriation area. Moreover, the disturbances and land use associated with the modification of the terrain, the need for construction staging areas, and the disposal of waste materials can extend beyond the route itself.

The most significant alteration to the landscape during the road constructions is the visual presence of construction machinery, yet this impact is temporary and easily tolerable.

During the operation of the roads, the presence of the constructed road will result in an occupation of space, its aesthetic appearance, and its fragmenting effect on the landscape will shape the scenery. The planned strategic projects follow the routes of already existing paved or gravel roads. Without project implementation the deterioration of these roads would cause a negative visual effect, whereas the implementation of the strategic projects leads to an appealing structure, providing the opportunity for locals to explore nearby touristic sites via direct and shorter road connections.

Road infrastructure routes planned within PO 3 (ii) are not in collision with protected cultural properties. Nevertheless, during the preparation of the routes respective authorities must be consulted, and plans must be developed according to national legislation.

10.8 Potential effects on human health, and lifestyle

The primary noise sources during the construction phase are linked to the delivery of construction materials (transport vehicles and material handling machinery) and on-site construction activities (earthmoving machinery, compacting equipment, construction machinery, tools). Noise emissions from the machinery and equipment used during construction, as well as the overall environmental noise from construction, can only be estimated at this current planning phase-based data available in the literature. Moreover, it is advisable to request the organisational plan and the precise list of machinery from the future beneficiaries within the strategic Call. The permissible equivalent continuous noise level from construction works will remain within the regulatory limits. Construction activities are planned only during daylight hours; nighttime work is not expected.

The new roads do not have a direct impact on human health. However, thanks to the developments, it will be possible to reach neighboring towns using shorter routes, resulting in reduced emissions of pollutants and improved air quality. The shorter travel time will also contribute to an improvement in people's quality of life.

10.9 Potential effects on environment consciousness

Road infrastructure developments themselves do not directly contribute to promoting an environmentally conscious lifestyle. However, by reducing travel time between settlements, road improvements lead to a reduction in harmful emissions from transportation, which in turn has a positive impact on the environment.

10.10 Potential effects on emerging environmental conflicts and potential problems, and on the escalation of existing problems

The planned road infrastructure developments are expected to have an all in all positive economic and social impact. They will improve direct connections and accessibility between the two countries, and reduce internal migration rates, which is currently a significant social issue in certain border region communities.

10.11 Waste management

During the construction of the road infrastructure, common types of waste are expected to be generated, including non-hazardous and hazardous construction waste and packaging waste. Following completion, during the operational phase, waste will be generated associated with the periodic maintenance of the road infrastructures.

Both Hungary and Croatia have waste management regulations that define the proper way of waste handling, storage and disposal in order to minimise possible negative impacts on environmental elements such as soil, air, surface water and groundwaters, flora and fauna.

10.12 Potential effects of the Programme on the interrelationship and cumulative effect of threats to the above factors

Summary table of the potential effects on environmental and socio-economic factors of the CBC area

	PO 3 (ii) developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility
Effects on soil	-1
Effects on air	0
Effects on surface waters and groundwaters	-1
Effects on biodiversity, flora, and fauna	-1
Effects on climate	0
Effects on nature protected areas	-1
Effects on built environment, settlement surroundings, and cultural- and archaeological heritage	+1
Effects on human health and lifestyle	+1
Effects on environment consciousness	+1
Effects on emerging/escalating environmental conflicts and problems	+1
Waste management	0

Legend:	strong negative effect(s)	weak negative effect(s)	neutral or contrary effect(s)	weak positive effect(s)	strong positive effect(s)

The Hungary-Croatia Programme does not contain detailed measures but loosely identifies intervention areas and sets boundary conditions. In the previous subsections (10.1-10.11), the potential impacts of PO 3 (ii) of the Hungary-Croatia Programme were comprehensively analysed with respect to various environmental elements and categories.

PO 3 (ii) will have neutral effect on air and climate. Generally, it can be said that although road constructions might have weak negative effects on soil, water, biodiversity, and Natura 2000 territories, positive effects will contribute to the mitigation of climate change and its pressure on natural resources. The negative and positive effects will even each other out resulting in a neutral effect overall.

The presented table above is a summary of the evaluation. If the elements and categories of environmental impacts potentially affected by the selected areas of intervention are analysed by simple mathematical methods (substituting positive and negative impacts with +1 and +2 and -1 and -2, respectively, taking the mixed impacts as zero, and averaging across different categories), we can read informative aggregate results from the diversified correlation system of the multi-element environmental impact assessment it can be stated that the environmental elements gaining the most positive effects from the planned interventions are: effects on human health and lifestyle, effects on environment consciousness, effects on emerging/escalating environmental conflicts and problems and effects on built environment, settlement surroundings, and cultural- and archaeological heritage.

11 Protective measures

Within this section, our approach follows the focus of the SEA Directive as it is fully applicable for PO3 (ii) of the Hungary-Croatia Programme.

If there are any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse, unfavourable effects on the environment of implementing the three routes entailed in PO3 (ii) of the Hungary-Croatia Programme, those are listed below. The proposed protective measures are grouped under the observed key environmental elements.

Soil

To minimise soil degradation resulting from construction activities, including the movement of heavy machinery and the storage of construction and/or excavation materials, the construction sites of road infrastructure planned within PO 3 (ii) of the Hungary-Croatia Programme should be planned in a manner that limits the ecological footprint and the overall extent of the site and associated operational areas to the smallest feasible dimensions necessary for the effective execution of the works.

Moreover, all hazardous substances needed in the construction phase of the road infrastructures planned within PO 3 (ii) of the Hungary-Croatia Programme should be stored in a way that prevents free leakage into the environment (mobile protective tank or protective container) and there should be means nearby to absorb fuel, oil or lubricant in case of spill.

The reuse of excavated materials is also encouraged during the construction of the new road infrastructure.

Air

The Programme's Priority (3) Connected border region is promoted through the development of sustainable and climate resilient mobility including the construction and improvement of transport infrastructure, and in particular road connections. New road connections should support accessibility in isolated peripheral areas, in order to connect neighbouring communities, to improve and to speed up access to TEN-T and other major road/rail infrastructures, thereby generating time savings in cross-border mobility. The shortening of travel time in CBC area will result in a reduction in fossil fuel consumption and thus the reduction of air pollutants emission.

To reduce air pollution during construction phase in the vicinity of the road infrastructures planned within PO3 (ii) of the Hungary-Croatia Programme, protective measures (protective fences, water spraying) should be taken during the construction works to minimise dust emission and dispersion.

Furthermore, smart and sustainable transport solutions (cycling, e-mobility, public transport) should be continuously promoted in the CBC area. Further planning of the Mura Bridge / MuKo Bridge should ensure bicycle and pedestrian transport in addition to road transport.

Surface waters and groundwaters

All hazardous substances needed in the construction phase of the road infrastructures planned within PO 3 (ii) of the Hungary-Croatia Programme should be stored in a way that prevents free leakage into the environment (mobile protective tank or protective container) and there should be means nearby to absorb fuel, oil or lubricant in case of spill.

If during preparation of the Mura Bridge / MuKo bridge project documentation, there will be a need for changing the planned bridge structure, which is now generally planned in a way to avoid construction of a pillar in the riverbed, during the construction it is necessary to take into consideration its possible impacts on water bodies and to try to find possible reasonable construction and foundation solutions which meet all technical requirements for such projects while also protecting water bodies.

Biodiversity, flora, and fauna

During the preparation phase of the strategic projects within PO3 (ii), Natura 2000 sites SAC and nature protection areas have been taken into consideration when choosing between the possible locations for implementation. The occurrence of rare and highly protected plant and animal species have been examined, and the location of the actions has been chosen to ensure that the effects of construction, operation and maintenance shall cause the least damage to the environment. .

During the implementation of the planned road infrastructure strategic projects within PO3 (ii) of the Hungary-Croatia Programme, it is important to implement the respective mitigation measures listed within the Appropriate assessment to preserve biodiversity where the planned roads interfere with Natura 2000 areas. During the preparation and physical implementation of strategic projects, efforts must be made to keep construction activities close to the route, minimizing the area of disturbance.

Natura 2000 territories and other nature protected areas

Parts of the CBC area particularly rich in biodiversity are part of Natura 2000 ecological network. Impact of PO 3 (ii) on Natura 2000 is assessed in the Appropriate assessment, which is given in the Annex 1 of this document. In line with recognized impacts, mitigation measures are proposed in Appropriate assessment to minimize impacts on certain targets species in Natura 2000 sites of interest. Mitigation measures proposed in Appropriate assessment serve to protect biodiversity of the Mura-Drava-Danube Transboundary UNESCO Biosphere Reserve as well.

Climate and climate change

During planning, construction and/or implementation of project planned within PO 3 (ii) of the Hungary-Croatia Programme appropriate measures from national strategies related to climate change should be considered. It is recommended to use Technical guidance on the climate proofing of infrastructure in the period 2021-2027 (2021/C 373/01) and to follow up-to-date

scientific and engineering approaches in construction and maintaining of road infrastructure with aim to reduce climate change related impacts on asphalt and in that way to reduce frequency of necessary asphalt renewal and related costs.

Smart and sustainable transport solutions (cycling, e-mobility, public transport) should be continuously promoted in the CBC area.

12 Assessment of the monitoring system

For each priority of the Hungary-Croatia Programme, output indicators, measurement units, and final targets were listed. In case of result indicators, in addition to the measurement units, the baseline, the reference year, the final target value and the source of data were provided.

The output and result indicators listed for PO3 (ii) are selected from the common output and result indicators for the ERDF and the Cohesion Fund, listed in the annex of the ERDF Regulation.

For PO3 (ii) "Length of new or upgraded roads -non-TEN-T" have been set as an output indicator with a final target of 2 km for the whole priority. Output indicator Organisations cooperating across borders and result indicator Organisations cooperating across borders after project completion have also been set.

Output indicators represent the number of direct outputs of supported interventions (projects) during programme implementation.

Result indicators measure the effects of the interventions supported, with particular reference to the direct addressees, population targeted or users of infrastructure.

Time savings due to improved road infrastructure have been set as a result indicator for PO3 (ii). The final target is 2.070 man-days/year.

Planned reduction of the travelled distance per strategic project:

- At the Sárok - Kneževo location travelled distance will be reduced from 33 km to 3 km.
- At Zákány – Gotalovo route will change from the current 37 km to 3,5 km
- The establishment of the Mura Bridge is aimed to reduce travelled distance from 45 km to 5 km at a later phase, as current programme only entails further planning of the bridge. Physical implementation is to follow course.

As the routes connecting the neighbouring communities will reduce to a decimal of the former distance, time savings (set as result indictor) will be significant. Reduced travel time strongly corelates to reduced fuel consumption and reduced GHG emission.

Chapter 4 of the Hungary-Croatia Programme appoints the Monitoring Committee (MC) as main body in charge of monitoring and evaluation.

The Hungary-Croatia Programme will continue to use the previous electronic data exchange system between the beneficiaries and the Programme authorities in accordance with Annex XIV of the CPR. The INTERREG+ IT system will be used as the programmes' application, reporting and monitoring tool.

13 Non-technical summary

The planning of the Interreg Programme between Hungary and Croatia for the period 2021-2027 started in 2019. The Hungary-Croatia Programme had four priorities: *Competitive border region*; *Greener and low-carbon border region*; *Inclusive border region* and *Cooperating border region*.

Cooperating border region (PO3 (ii)) has been added to the Programme and approved by the European Commission at a later phase, in 2023 with condition that Appropriate assessment must be conducted before the launch of the entailed strategic projects:

- preparation of project documentation and construction of missing road link Sárok - Kneževo,
- preparation of project documentation and construction of missing road link Zákány – Gotalovo and
- preparation of project documentation for Murakeresztúr - Kotoriba bridge (Mura Bridge / MuKo Bridge).

The Croatian Ministry of Regional Development and EU Funds started the preparation of the Appropriate assessment of the Policy Objective 3 and thereby update of the Environmental report for PO 3 in January 2025.

The first step of the assessment is the description of the scoping process and observation of the potential alternatives for all three project locations including the following scenarios: A "no project scenario", B "sustainable mobility solution", C "road renovation, construction". At all three locations the conclusion of the alternative assessment is that C is the most viable option as the no project scenario would lead to economic stagnation and environmental degradation over time, whilst option B is not feasible due to high railway investment costs and much longer timeline, whereas bicycle transport can only serve as a complementary transport mode. Scenario C balances cost-effectiveness with tangible benefits at all three locations.

A summary has been provided on the relevant international, Hungarian and Croatian strategical documents providing the framework of project development and implementation.

The socio-economic and environmental characteristics of the PO3 (ii) strategic projects implementation area are described in chapter 6 with special attention to the environmental aspects and spatial structure as PO3 (ii) entails infrastructural developments.

For measuring the potential effects of the Hungary-Croatia Programme implementation, the social, economic and environmental state of the PO3 (ii) strategic projects implementation area is analysed. All the affected Hungarian and Croatian counties are facing rapid depopulation, ageing society, which are changing the structure of the local demography with increased need for social and infrastructural services.

Economic and infrastructural development is essential in the CBC area to turn the tide, stop internal migration from smaller settlements towards regional hubs and the capitols and facilitate regional economic growth. Regarding the local environment the CBC area has a geographical uniqueness, including Natura 2000 areas and other nature protected areas. The location of the three planned border crossing routes has been decided with the concern of financial and environmental sustainability, causing the least harm possible to the environment.

The potential effects of the Hungary-Croatia Programme are analysed focusing on different environmental elements. The effects of the implemented strategic projects of the PO3 (ii) priority of the Hungary-Croatia Programme could be far more beneficial for the counties in the CBC area, when the indicated negative environmental effects are considered and avoided. Implementation of the Hungary-Croatia Programme supports global efforts to combat climate change both in the context of mitigation and adaptation.

Besides the indication of the potential positive and negative effects on environment or on human health, protective measures and recommendations are outlined to facilitate sustainable programme implementation.

The annexed Appropriate assessment concludes that Road link Sárok - Kneževo is not inside of Natura 2000. The nearest Natura 2000 site in Hungary is SAC HUDD20065 Töttösi Forest with distance of about 6 km at its closest point. The nearest Natura 2000 site in Croatia is SCI HR2001309 Dunav S od Kopačkog rita at a distance of about 4.5 km at its closest point.

The Croatian section of road link Zákány - Gotalovo is inside of Natura 2000 sites SCI HR5000014 Gornji tok Drave and SPA HR1000014 Gornji tok Drave. The nearest Natura 2000 site in Hungary are SPA HUDD10002 Nyugat - Dráva and SAC HUDD20054 Nyugat - Dráva which are about 25 m away at the road's closest point. No target habitat types are present in the immediate impact area, thus excluding the likelihood of direct negative impacts during construction of road link Zákány - Gotalovo or its operation. Negligible parts of habitats favourable for some target species will be lost. Moderate, but acceptable negative impacts have been recognized for some target species due to permanent habitat loss along the planned route and due to disturbance of potentially present fauna during construction works. Mitigation measures are proposed to preserve surrounding habitats as much as possible, including recommendation to use existing access roads for machinery movement to the greatest possible extent. Impact on target spices and target habitat types of the SPA HUDD10002 Nyugat - Dráva and SAC HUDD20054 Nyugat - Dráva is not expected.

PO 3 (ii) of the Hungary-Croatia Programme involves further planning of the future Mura Bridge / MuKo Bridge. Its central object is bridge over the Mura River inside of Natura 2000 sites SCI HR2000364 Mura and SAC HUBF20043 Mura mente. As only preparation of project documentation will be financed, general impact assessment on Natura 2000 based at level of data available from feasibility studies is provided and mitigation measures are proposed to be followed

in future work on planning Mura Bridge / MuKo Bridge project. Mitigation measures are proposed to preserve habitats in the area of bridge as much as possible and to plan timeline of construction works in way to avoid critical period for fish (spawning and migration) and other certain target species. Final Natura 2000 impact assessment of Mura Bridge / MuKo Bridge will be provided on project level, during preparation of project documentation and before issuing location permit for its construction.

Annex 1. Appropriate Assessment