



TERRITORIAL STRATEGY

for the Danube Transnational Programme
2021-2027

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Mission Statement

“From a region of barriers to a region of flows”

Mission Statement of the Danube Transnational Programme

The Danube macro-region is a region of barriers, due to its highly fragmented status in political, socio-economic and administrative aspects as well. The effects of such fragmentation are decisive for the development of the whole region; therefore, the related border effects should be tackled and mitigated. The Danube macro-region has the highest number of countries – and at the same time the highest share of border regions – compared to other macro-regions or even parts of the world. The whole Danube space is suffering from its highly fragmented political and administrative character which is further complicated by the extreme economic diversity of its countries and regions. The European measures for a stronger cohesion along with the accession and neighbourhood policies create a new, unique historic situation for the better integration of the Danube space. Creating a better institutional platform and transnational cooperation environment for the territorial, economic and social integration should be the main mission of the new Danube Transnational Programme.

The main focus of the new programme should be along those thematic areas where the overall measures for better integration could be linked to those relevant and specific needs which can be effectively addressed by transnational projects. In this very heterogeneous and diverse region, a specific emphasis is to be given to ensure that the different needs of the countries (given their different political and economic status) are considered in a fairly balanced and well-integrated manner. Thus, measures supporting the overcoming of barrier effects by targeting territorially more integrated actions and more institutionalised cooperation are well advised instead of dot-like and temporal developments and connections.

There are **strong but unbalanced migration links** within the region mainly because of the huge inequalities in income levels; the mass outmigration from the eastern part to the western has to be taken into account just like temporal cross-border employment. **Ageing** is a severe issue across the region similarly to depopulating rural areas and growing major urban regions. The **integration of immigrants, national minorities and Roma people** has been problematic across the macro-region despite of the **outstanding cultural diversity** (only in Vojvodina, Serbia 6 official languages exist) of the Danube citizens and the potentials in heritage valorisation.

Despite of the catching-up processes which made the formerly strong east-west divide less vivid, huge inequalities in terms of economic development persist, creating manoeuvres for better integration. The macro-region's countries can be grouped into three categories: old Member States, new Member States, and non-Member States, all of which have different development paths, convergence potentials and links to European policies. However, in spite of the convergence of some national level economies, the spatial pattern became more fragmented owing to the growing gap between urban regions as engines of growth and rural regions as peripheries still lagging behind. The region consists of economies with **many common and complementary**



endowments (e.g. regarding RDI potentials, economic and employment structures) in several fields to be utilised jointly. Altogether, these economies are heavily based on strong manufacturing, trade and capital ties with Germany. Instead of high unemployment, the phenomena of **labour shortage** emerged across the macro-region. Apart from mostly Germany and Austria, the Danube Region is still considered as a **labour-intensive, technology-follower** area with dual economy. The Danube Region is still characterised by large gaps between the old and the new Member States as well as the associated countries in relation to economic competitiveness and social well-being (e.g. in relation to innovation ecosystem, income level). **Energy dependency**, still low utilisation level of renewables, lack of high energy safety and still missing interconnections characterise the macro-region. The majority of economies still heavily relies on uncertain fossil fuels from Russia (and by track Ukraine).

In the Danube Region, there are both internal and external borders in relation to Schengen Zone. The rate of border areas is 44.7% (these territories are closer than 30 km to at least one state border). Compared to Western Europe the density of border crossings in overall is low, and there are still **major bottlenecks and uncoordinated development in the field of infrastructure**, especially transport links which would create north-south connections. This is crucial since the macro-region could capitalise from acting as a **transit(ion) zone** and a region of interaction for trans-European business relations including trade, FDI and technology transfer etc. owing to its geographic position between western economies and eastern markets with many TEN-T and Pan-European corridors.

One of the basic joint features of the macro-region is that the Danube Region **includes the water system of the Danube** and its tributaries. There are shared water bodies and water catchment areas with transnational importance, and they connect the given upstream and downstream countries. The majority of the macro-region is predicted to be greatly **exposed to climate change**. The Continental and Mountain bio-geographical regions, which make up the most extensive areas of the Danube Region, both have to tackle increasing temperatures and population of invasive species, declining forests, water supplies, and energy demands. The large heterogeneity of distinct habitat types is in danger across the region because of **weak adaptation techniques** and fragmentation. For a more efficient management of the emerging transnational cooperation needs of the Danube Region inter-institutional relations need to be encouraged along with the *establishment of joint institutions and support for such long-term governance structures*.

To sum up, the future programme should take advantage of the outstanding heterogeneity of the macro-region. Strengthening cohesion to overcome the current fragmentations (region of barriers) towards a region of exchange and "unity in diversity" (region of flows) is what the whole programme should support.

Therefore, the Territorial Strategy of the next Danube Transnational Programme is conducted in order to serve as a guideline of vindicating the above aspects of territoriality during the programming process. Majority of the elements of this document are also directly applicable for the programme template.



Programme area and territoriality

The programme area with a territory of 1 083 945km² consists of a total number of fourteen countries making the macro-region with the highest number of participating countries out of all the transnational programmes of the European Union. The area covers regions of EU Member States (Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Romania, Slovakia and Slovenia), Accession Countries (Bosnia and Herzegovina, Montenegro and Serbia), as well as Neighbouring Countries (Moldova and Ukraine). Apart from Germany and Ukraine, all states are part of the programme area with their entire territory.

There are some special “Danubian” transnationally related territorial features that are major factors in the cohesion of the whole macro-region owing to being a macro-region of borders. Territorial, economic and social cohesion features create transboundary (functional) areas to be managed and developed jointly on macro-regional level. One of the most decisive is related to the Danube’s river system since the macro-region is based on the Danube River Basin. The internationally shared catchment areas of the Danube and its tributaries call for joint water, risk and habitat management within transnational river basins. The macro-region is a mosaic of transboundary ecological regions and habitats having similar negative effects due to climate change and unsatisfactory nature protection. Low share of renewables despite of energy dependency is a joint feature that unites the region. Along with high biodiversity, the outstanding cultural diversity with ethnic, religious and language groups build strong intercultural links and people-to-people bridges across nations and countries creating a shared “Danubian” space. The transnational cultural and natural heritage sites form tourist destinations to be managed jointly. The weak inclusiveness and social innovation of the macro-region causes socio-economic challenges on transnational level. The influencing zone of many cities of the region is truncated by the administrative borders creating transboundary functional urban areas and networks. Still high inequalities in relation to economic development, labour market and education in particular encourages the emergence of new territorialities, which go with intensifying transnational migration, and spatially different consequences of ageing, depopulation, brain-drain, poverty and economic transition with regard to capital city regions, western regions versus rural peripheries, border areas and eastern regions.



Summary of main joint challenges, taking into account economic, social and territorial disparities as well as inequalities, joint investment needs

In the Territorial Strategy the main joint challenges of economic, social and territorial cohesion as well as inequalities, disparities and joint investment needs have been taken into account, deriving from two main sources: Territorial Analysis of the Danube Region and the Stakeholders' Consultation.

The selected specific objectives are all covering very important and territorially relevant fields of joint challenges with the possibility of transnationally relevant cooperation and investment needs.

PO1: A smarter Europe

SO i. developing and enhancing research and innovation capacities and the uptake of advanced technologies

Concerning PO1 SO1, apart from Germany and Austria, the Danube Region is still considered as a labour-intensive, technology-follower area. More exactly, Danube Region is still characterised by large gaps between the old and the new Member States as well as the associated countries in relation to economic competitiveness, which is increasingly defined by the status of the regional innovation ecosystem. In this context, large social and professional categories have been left out from current flows of information and knowledge exchange: students, researchers, teachers, businessmen and other professionals with direct interest in being part of innovation cycles. Across Danube Region, there is a low share of technology and knowledge-intensive activities. The RDI activities are overly concentrated in the western regions and major urban hubs, including capital cities, university towns. Thus, joint transnational measures to support a more even territorial distribution of innovation capacities and the joint uptake of advanced technologies are of high relevance for this region.

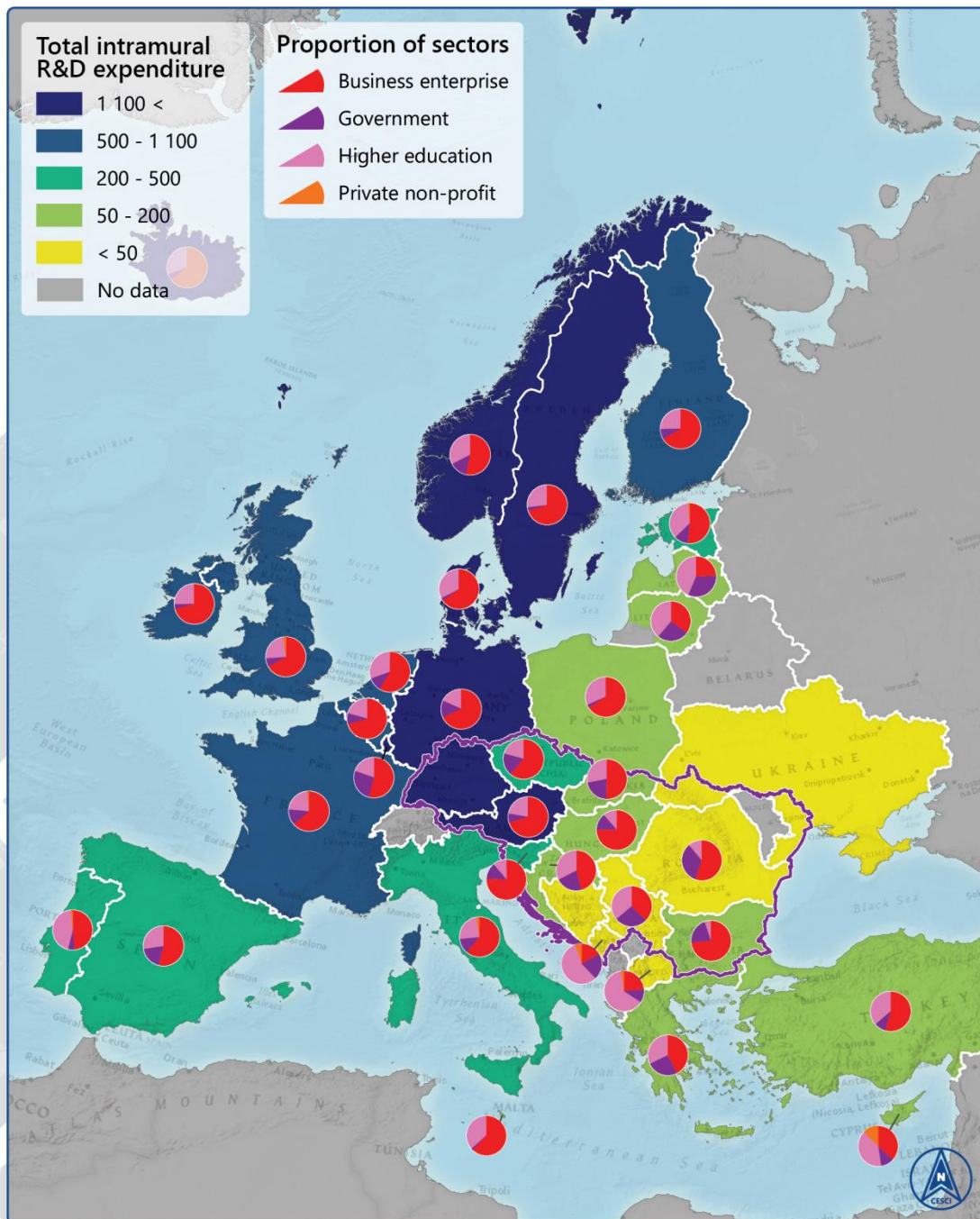
Another main challenge derives from the non-matching innovation profiles of the DR countries e.g. there are heavily unbalanced RDI expenditures and knowledge management capacities. Consequently, intensified network connections should be developed in order to create better synergies among stakeholders operating in quadruple helix environments. In order to reach higher levels within the economy of scale and to build a robust critical mass, support should be given to the elaboration of joint innovation policies, transnational knowledge production and management and knowledge transfer. It is worth mentioning that current scientific and technological cooperation on the international level are hindered by factors such as different levels of knowledge transfer and innovation capacities. This means that the ability to implement knowledge-based and technology-intensive activities is still weak in many parts of the Danube Region. In addition, the spatially and structurally fragmented human resources and financial expenditures for innovation



keep the transnational ecosystem badly functioning. Thus, the current system is still characterised by lack of joint and designated management, scientific research and valorisation environments. This highlights the need for strengthening the synergies and cross-relationships between quadruple innovation stakeholders in order to facilitate the uptake of innovative technologies across the region. Therefore, promoting RDI cooperation, experience exchanges and capacity building among innovation actors, hubs and RDI centres is of great significance for creating a well-functioning innovation ecosystem.



Intramural R&D expenditure (GERD) by sectors of performance in Europe, 2016



source: ESRI database, Eurostat, national statistical offices, data submitted by the members
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0 250 500 750 1 000 Km

In addition, the RDI sector, including its capacity to offer a functional environment for the valorisation and uptake of development technologies, is lagging behind in many states and regions. For example, the collaboration in technological uptake in many fields of the industry suffers from weak performance compared to the EU average, going from advanced materials to



artificial intelligence. Thus, within the Danube Region, it is of great significance to steer the RDI sector from the traditional research approach towards the up-take of innovative technologies.

Furthermore, considering the overall entrepreneurial sector and, in particular, the SME, it must be said that they are mostly performing on low innovation levels. Therefore, the share of innovative enterprises is below the EU average. Consequently, the added value generated is unsatisfactory e.g. product and technological development and advancement of SMEs is below expectations. Because of low innovativeness structural problems arise, especially from slow development of hi-technology economic sectors or the low share of ICT employment. The business ecosystem does not support the growth of innovative enterprises and, in this context, transnationally coordinated policy support for producing higher value-added products and services is needed, especially in the quest for intensifying the uptake process. Also, generating support for transnational cooperation and capacity building within supplier networks and cluster policies in order to integrate the SMEs into vertical and horizontal value chains can be seen important, especially in the process of adopting new/advanced technologies across the macro-region. Better cooperation among stakeholders must be boosted in order to facilitate the innovation uptake process across the macro-region by combining expertise, capacities and knowledge capital.

With less intensity other challenges related to PO1 SOi can be listed. One of them is the lack of competitive, environmentally friendly and low-carbon transport systems. As a reaction, joint actions in developing smart, sustainable and green transport technologies and networks, as well as e-mobility solutions can be foreseen. Transport can be one of the areas where the adoption of advanced technologies can benefit the region. The introduction of alternative fuels, next generation lithium-ion batteries, safer autonomous navigation systems or IoT (route planning, accident prevention) are just few examples which could contribute to the advancement of the region in terms of transport innovation. There is also a need for supporting smart regions/city solutions as well as advanced technologies regarding circular economy.

At last but not least, slow integration of innovative urban technologies in the planning, management and development of regions and cities, low level of innovation evenness across regions and cities can be mentioned. Therefore, there is space for supporting innovation partnerships and regional and urban platforms for regional research and technological development.

SO iv. developing skills for smart specialisation, [just transition], industrial transition and entrepreneurship

Considering PO1 SOiv developing skills for smart specialisation, [just transition], industrial transition and entrepreneurship, the Danube Region is made up of economies with many common and complementary endowments (e.g. regarding economic and employment structures). However, in other social and economic aspects e.g. competitiveness, DR is still characterised by large gaps between the old and the new Member States as well as the ENI and IPA countries. Put differently, the macro-region consists of various sub-regions of transnational importance in specific fields of actions such as agricultural (e.g. the Hungarian Great Plain, Wallachian Plain), industrial (e.g. Moravian-Silesian Region), service (e.g. Tyrol, Adriatic Croatia), and technology (e.g. Upper



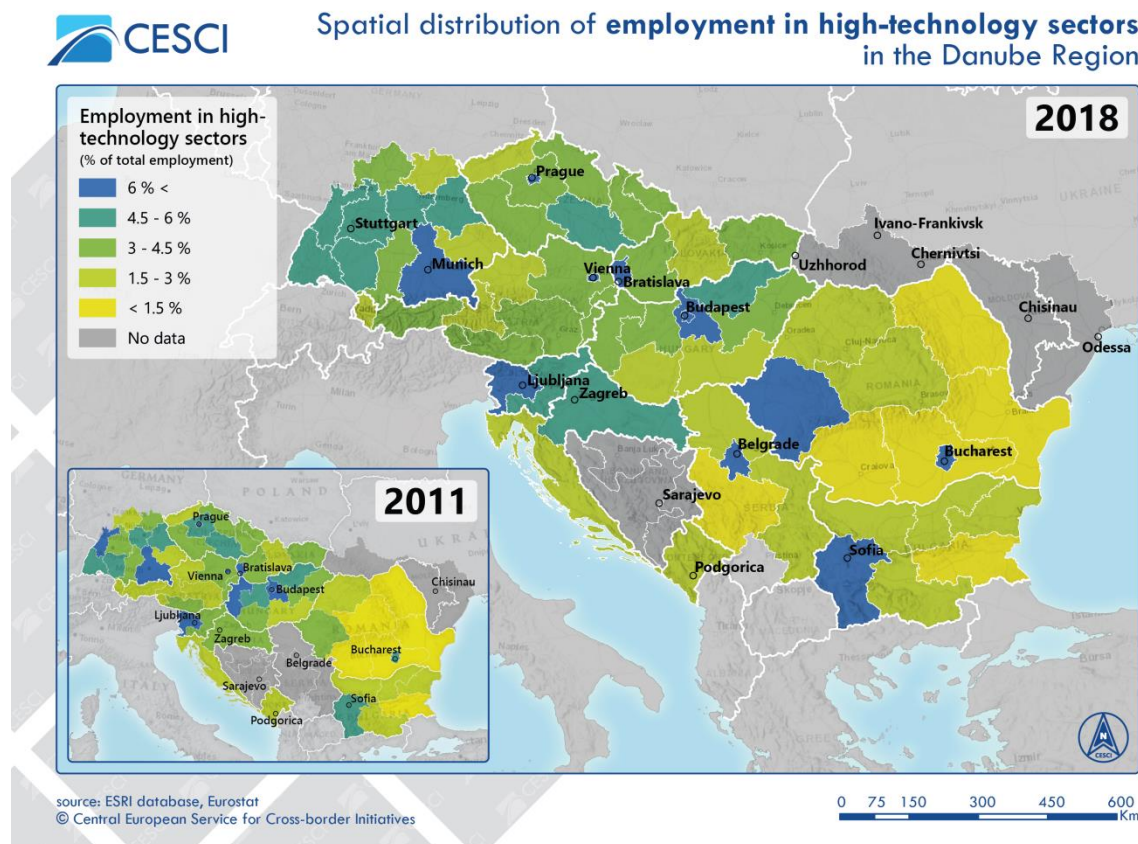
Bavaria). This is crucial also since the macro-region could capitalise from acting as a transit(ion) zone and a region of interaction for trans-European business relations including trade, FDI and technology transfer etc. owing to its economic geographical position between western economies and eastern markets. Comparative advantages can be jointly tapped in the framework of macro-regional cooperation. Despite of catching-up processes which made the formerly strong east-west divide less vivid, huge inequalities in terms of economic development persist, creating opportunities for better integration. The macro-region is characterised by countries with different development paths, convergence potentials and link to European economic and smart specialisation policies. However, in spite of the convergence of some national level economies, the spatial pattern became fragmented due to the growing gap between urban regions, as engines of growth, and rural regions, as peripheries still lagging behind. Therefore, the catching-up and better integration leading to a more successful cohesion process should be supported in the near future. In addition, the macro-region is affected as a whole by profound disruptive processes that require joint solutions. These can be delivered through digitization and digitalization, industry 4.0, smart specialisation strategies (S3) and policies.

It is a real challenge that there are still insufficient measures to capitalize from comparative advantages and economic peculiarities on a transnational level in order to support more robust catching-up policies. This calls for a tighter cooperation in smart specialisation areas with a special focus on the entrepreneurial sector (e.g SMEs). There are large differences in smart specialisation policies in terms of field of specialisation, sectors and territorial coverage. While some states have their own national plans as well as their regional economic administration, in some countries it is still considered as a new, emerging topic. Therefore the lack of related planning and management is quite common. Subsequently, support for transnational alignment of S3 strategies and policies is of great importance. Low added value of economic activities because of structural problems is a widespread problem across the macro-region. Thus, support for the exchange of best practices in relation to smart specialisation strategies and policies should be delivered by the proposed interventions. Such cooperation, coupled with a strong focus on policy learning and policy development, is a need for many regions and stakeholders.

The transition to a smarter economy is hindered by the current situation of the human capital. The employment in hi-tech sectors is very uneven across the Danube Region. The westernmost and the metropolis regions tend to stand out in having sufficient people with adequate skills to be employed in advanced technological fields. If entrepreneurship is understood as the capacity to manage business ventures with risks including entrepreneurial attitudes, entrepreneurial activity, and entrepreneurial aspiration, the performance of the Danube Region is rather weak. Based on the Data Dashboard for the Advanced Technologies for Industry of the European Union, compared to the EU27 (value of 39) only the Czech Republic (52) together with Germany (82) stand out. With regard to 'The Skills Composite' of advanced industrial technologies, that captures the share of professionals with advanced technology skills within EU, the share of STEM graduates and firms with ICT skills, the value can be considered low across the macro-region. The EU27 (46) average is above almost all Danube Region countries excluding Austria (51), Slovenia (55) and Germany (66). Romania (16) and Bulgaria (20) are the last ones among the Member States, but



Hungary (28) and Slovakia (29) also perform quite weakly in terms of skills for economic advancement.

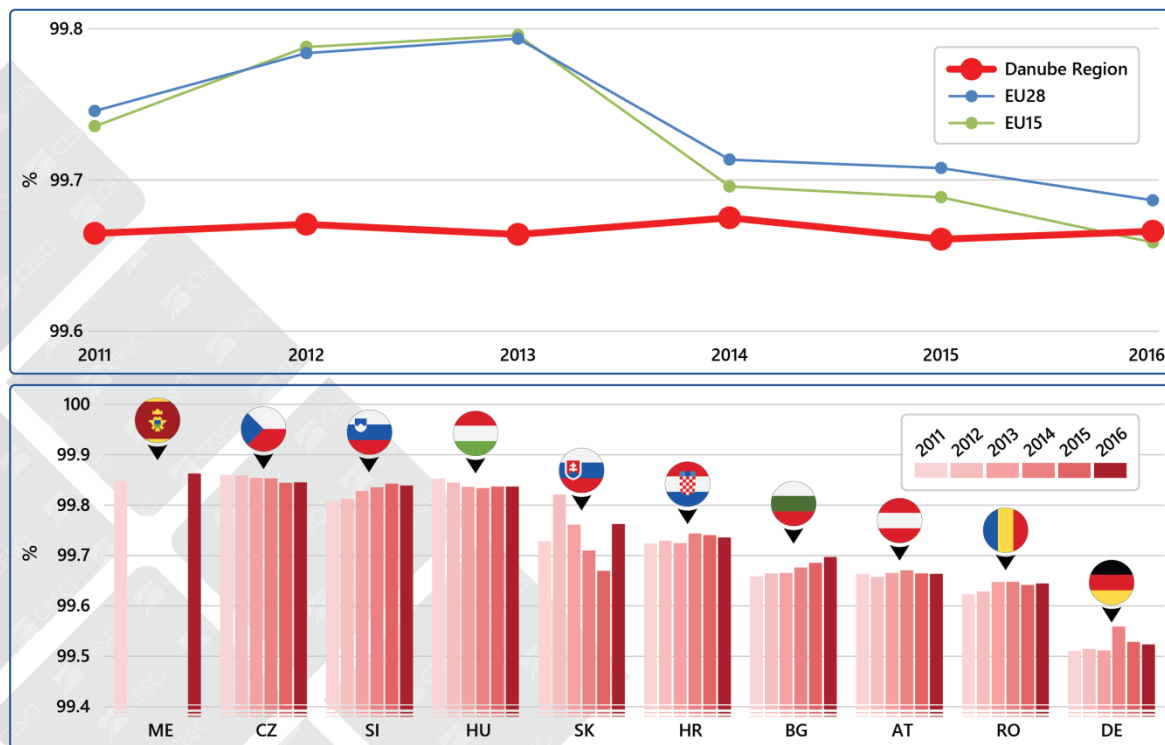


The ecosystem allowing for SMEs to develop is unfavourable in many cases. Economic challenges are also represented in the form of low number and/or share of SMEs. Taking into account enterprises of all company sizes the share of SMEs within the Danube Region is lower than the EU28 average. In the second half of the 2010s the value stagnated. Since 2016 the share of SMEs of the Danube Region from all enterprises has been higher than the share of SMEs in the western part of Europe (EU15). Still, the underdevelopment of SMEs is reflected in shares lower than of the EU averages.

Focusing on national data within the macro-region, the share of SMEs is relatively low in Germany, but it stays on a mediocre level in Romania, Austria, Bulgaria and Slovakia as well. Only Montenegro, Czech Republic, Slovenia and Hungary are known for outstanding number of SMEs.



Number of SMEs as a % of total enterprises, 2011 - 2016



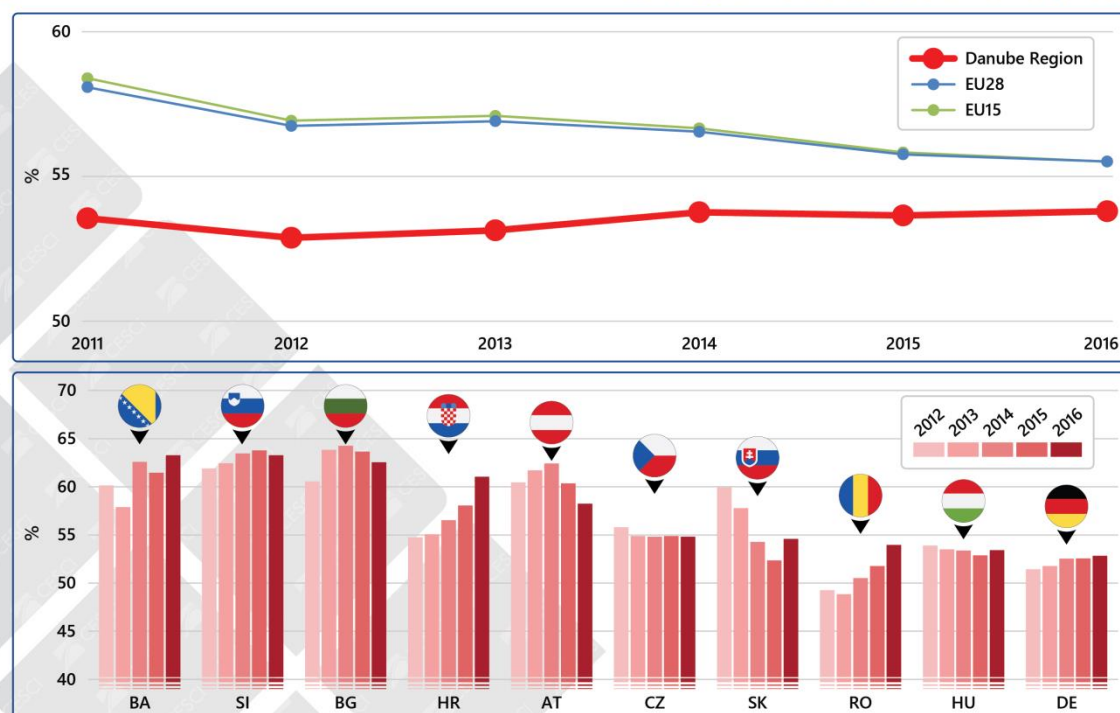
source: Eurostat, data submitted by the members, flags: Freepic
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The top figure represents aggregated national level data. The values of the Danube Region does not include Bosnia and Herzegovina, Moldova, Montenegro, Serbia and Ukraine and the values of the EU28 does not include Malta.

Entrepreneurship suffers from weak competitiveness. Comparing the Danube Region average to the rest of the EU average, there has been a decreasing but still visible gap in favour of the European Union in relation to the added value of SMEs. The share of the SMEs in the enterprise sector is lower compared to the average of the EU28. Between 2011 and 2016 the share of SMEs in production increased from 53.4% to 53.8% of value added of enterprises, while the shares slightly decreased in the EU15 (from 58.4 to 55.5%) and EU28 (from 58.1 to 55.5%).



Value added at factor cost of SMEs as a % of value added of enterprises



source: Eurostat, flags: Freepic

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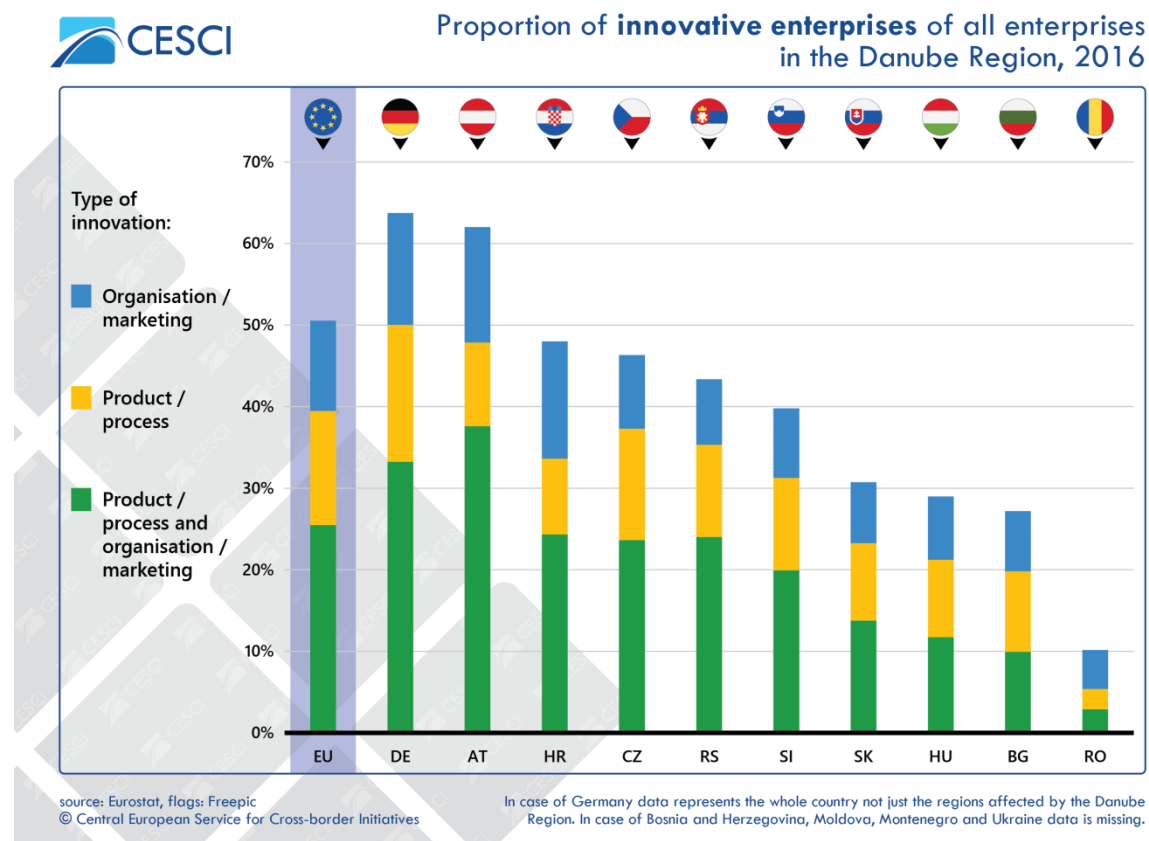
The top figure represents aggregated national level data. The values of the Danube Region does not include Moldova, Montenegro, Serbia and Ukraine and the values of the EU28 does not include Malta.

In terms of turnover of SMEs, the major specialities and main characteristics are described below. Despite of numerous SMEs operating in manufacturing, when it comes to turnovers only Bosnia and Herzegovina (24.4%) and Slovenia (22.3%) stand out compared to the EU28 (22.1%). This shows that SMEs in manufacturing are largely not efficient. Construction is another field where the macro-region performs below the EU average (10.5%). However, on the positive side, there are huge differences in wholesale and retail sale in favour of the Danube Region. While the data is 31.7% for the EU28, in many countries it is higher than 40%, and could reach 50% or more (e.g. Bulgaria 54.7%, Austria 45.5%). SMEs in accommodation and food service activities are more numerous than the EU average (2.8%) in countries with developed tourism regions, namely Croatia (5.4%) and Austria (4.5%). In professional, scientific and technical activities the macro-region lags behind the European level (8.8%); none of the related countries have high shares in SME turnovers regarding this area (the average is 5.6%). The same applies to information and communication (EU28 3.9%, the other data is between 1.9 to 3.9%), furthermore administrative and support service activities (EU28 5.3%, while the average is around 3%).

The enterprises in the Danube Region are performing in a less innovative way compared to the European Union as a whole. Innovation in the private business sector is not as widespread and comprehensive as on the more western and northern parts of the continent. Only the German and Austrian enterprises are innovative in large numbers. Croatia, Czech Republic, Serbia and Slovenia are in a worse situation if compared to the EU28. Slovakia, Hungary and Bulgaria, not to mention Romania, are all characterised by very low number of truly innovative enterprises. The Danube Region lags behind when it comes to enterprises having organisation/marketing plus



product/process type of innovation combined together. Thus, the lack of innovation or partial innovation is typical at many enterprises mainly due to lack of capital including human capital. Based on the European Innovation Scoreboard, SMEs with product or process innovations are above the EU27 average of 2019 (99.6) in Montenegro (164.4), Germany (126.8) and Austria (141.8) exclusively. On the other hand, in Ukraine (11.9), in Bulgaria (33.4), in Hungary (39.4) and in many more eastern and south-eastern states of the Danube Region the values are often below the EU level. Regarding opportunity-driven entrepreneurship, Germany (142.7) is the only one with a higher value than that of the EU average (136.2), all the other countries suffer from medium to very weak representation of such sectors.



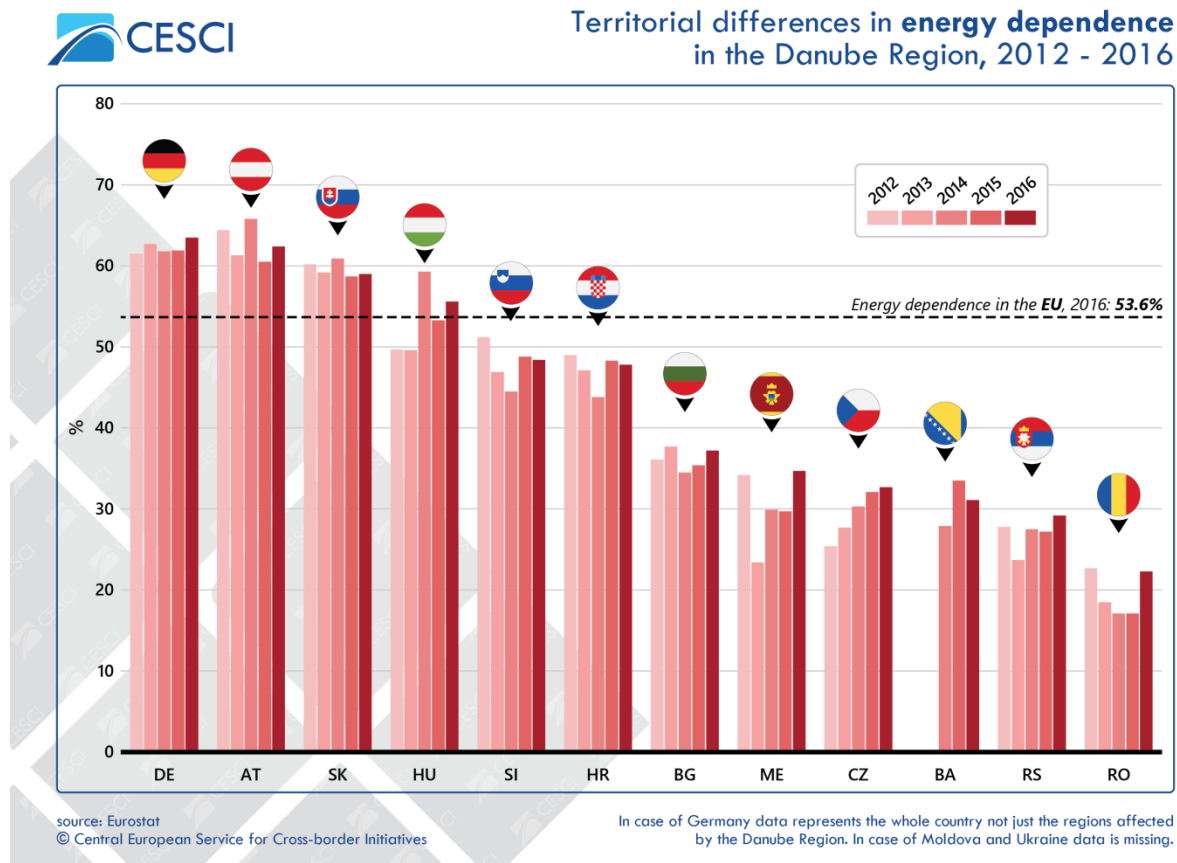
In the very recent times the situation of entrepreneurship is heavily affected by COVID-19. With regard to the economic sentiment indicator, economic actors had a positive view in 2019. Due to the pandemic, the confidence of economic actors decreased seriously in 2020. The value of the economic sentiment indicator dropped by 11.2% (from 101.3 to 90) between September 2019 and September 2020 in the EU27. Based on the changes in the values of the above-mentioned indicator, the Danube Region was particularly affected by the negative economic effects of the pandemic. Except for Germany (-2.9%) and Slovenia (-9.7%), all countries of the Danube Region have suffered an above average decrease in terms of economic confidence. Montenegro (-44.1%) has suffered an extraordinary decline, furthermore the values of the economic sentiment indicator have significantly dropped in the case of Croatia (-21.9%), Serbia (-19.2%), Hungary (-17.0%), Romania (-13.7%) and Slovakia (-13.6%). The Danube Region was particularly affected by the economic consequences of the pandemic, thus the recovery of the region's economy requires increased attention.



Consequently, the SME sector faces some complex challenges. This includes the low number and added value of SMEs. There is a growing need for supporting transnational business infrastructure policies and transnational business development services to increase value added and innovation potential. The non-supportive business eco-system calls for the transnational cooperation in supplier networks and cluster policies in order to integrate the SMEs into vertical and horizontal value chains. While the regional economies of the Danube Region are heavily based on the industrial sector, and significant reindustrialisation has taken place, the majority of economies is unprepared for the challenges of the upcoming changes related to industry 4.0. Support for transnational knowledge transfer, smart specialisation strategies and testing of industry 4.0 technologies (digital industries, vocational education etc.) are all needed to restore and gain competitiveness on the transnational level. The combination of business, educational, scientific knowledge and infrastructure as well as networking is relevant in this case to be able to create products and services with transnational impact. At last but not least, due to the Coronavirus pandemic the transnational actions for just and industrial transition within the macro-region cannot be separated from the recovery process.

PO2 A greener, low-carbon Europe

SO ii. promoting renewable energy

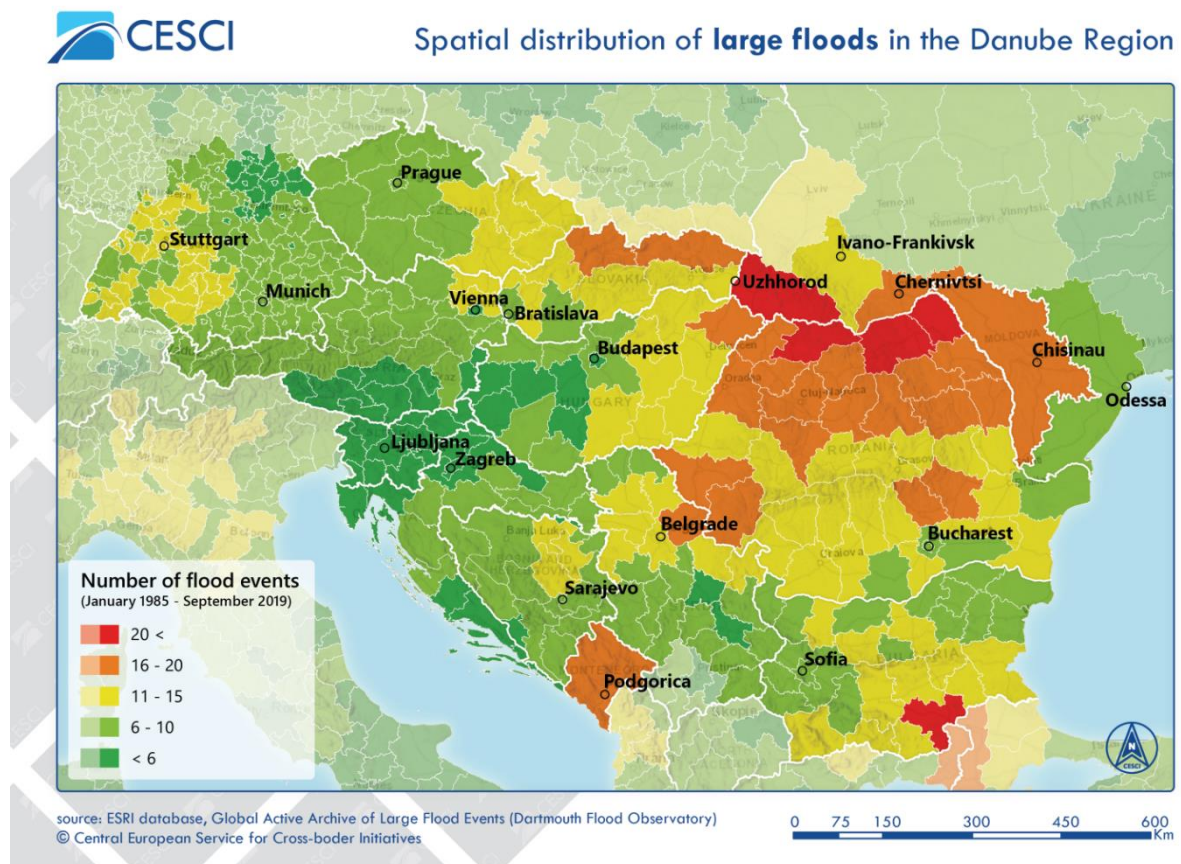




With regard to PO2 SOii promoting renewable energy, the Danube Region still heavily relies on fossil fuels in relation to both production and consumption. Despite of significant favourable changes in many related states, the energy sector is very far from being a low-carbon economic field. Sustainable production and consumption would require a significant decrease of use of non-renewable energy sources and a shift to renewables in all states since the share of fossil fuels in production is generally between 80% and 65%. The need for shift to renewables is also underlined by the inefficient technology and infrastructure related to the thermal power plant network, which has not been reconstructed, thus no major positive changes have taken place in recent years. The majority of economies still heavily relies on uncertain fuels from Russia (and by track Ukraine). This brings up the question of lack of energy security. This exposure to non-renewable sources results in energy dependency of the vast majority of the Danube Region to energy sources of external markets. Security of supply is not safeguarded, for which regional renewables available in the macro-region could contribute for transnational cooperation. In spite of having a large variety of renewable energy sources across the macro-region with a few similar and complementary endowments from region to region, the utilisation level of renewables is still low. Apart from some countries the share of renewable energy in gross final energy consumption is low in the Danube Region, and has never reached 50% in any countries. The production and consumption of renewables have similarities across the macro-region given that biofuels and hydropower are having significant roles, and solar energy, wind, geothermal energy have changing utilisation levels. Another reason for a greener energy sector is the high and steadily increasing level of energy consumption paired with low energy efficiency. Therefore, the support for harmonised actions and transnational cooperation is required in order to decarbonise the energy and the related transport and building sector, especially considering the heating and cooling systems of buildings. Also, the still relatively high GHG emissions by the transport sector calls for increasing the utilisation of renewables. Introduction of alternative fuels and new technologies in transportation could be a field of joint measures and policies. High GHG emission is not caused only by transport, but also by the heating and cooling sector (e.g. burning of fossil fuels, especially coal), which is a significant factor in creating a greener energy mix. The sector is still characterised by low utilisation of RES, thus the sector requires a profound shift to a more environmentally friendly energy production and consumption.



SO iv. promoting climate change adaptation, and disaster risk prevention, resilience, taking into account ecosystem-based approaches



Considering PO2 SOiv, promoting climate change adaptation, and disaster risk prevention, resilience, taking into account ecosystem-based approaches, the majority of the macro-region is predicted to be greatly exposed to climate change. None of the participating countries or regions can be independent from the global effects of global warming in the Danube Region. The continental and mountainous bio-geographical regions, which make up the most extensive areas of the Danube Region, both have to tackle the increasing temperatures and population of invasive species, negative changes in forests, shrinking water supplies, and growing energy demands. The large heterogeneity of distinct habitat types is in danger across the region because of weak adaptation techniques and fragmentation. Despite of the recognised negative impacts of climate change, insufficient adaptation and mitigation can be observed. Weak adaptation techniques regarding many effects of climate change (e.g. floods, droughts, decreasing biodiversity) are a severe problem. Low climate change adaptation abilities call for the propagation of best practices in relation to climate change adaptation methods and strategies. There is a growing need for tackling the increasing negative effects and impacts of climate change meaning that support for macro-regional initiatives that aim to decrease such effects by transnational actions (e.g. researches, policy recommendations, joint actions, territorial action plans, development/improvement of forecasting tools, as well as operational cooperation) are important. Taking into account one of the most apparent environmental risks, flood-related ones should be further emphasized. High risk of flood damage is a major challenge across transnational regions of



the river Tisa and its tributaries in particular, but the Danube itself, the Drava, the Mura and the Sava River Basins are also flood prone areas having severe flood events. The greatest event in recent years is known as the catastrophic 2014 Southeast Europe floods affecting Croatia, Serbia, Bosnia-Herzegovina and Romania causing at least 63 deaths. It affected over 1.6 million people in Serbia and Bosnia and Herzegovina with a financial damage up to 3.5 billion EUR for Serbia, Bosnia and Herzegovina. Hundreds of thousands of citizens were left without electricity and suffered from evacuation or the damaging of their homes. All the related rivers of transnational character have riverside areas hit by large and frequent flood events.

Based on the European Environmental Agency, beside severe floods, other types of climate change-related disasters are also present and have been intensified in the macro-region. The increase in the global surface temperature is expected to affect the frequency and intensity of heat waves, which can increase the frequency and intensity of heavy precipitation events, have strong direct impacts on human health and wellbeing, society, ecosystems and agriculture. The annual maximum value of daily maximum temperature, have shown significant upwards trends across Europe since the 1950s. Europe experienced 11 intense and long heat waves between 1950 and 2016, most of which occurred after 2000. The summer of 2003, 2010 and 2015 were the hottest and driest summers in recent decades in Europe, and such extreme summer heat waves will become much more common in the future. The projected frequency of heat waves is strongest in southern and south-eastern Europe. From the countries of the Danube Region Croatia, Slovenia, Bosnia-Herzegovina, Montenegro, Serbia, Romania, Moldova and Bulgaria will be particularly affected by these extreme heat waves. Increasing surface temperature supplemented by rain deficiency (meteorological drought) can cause soil moisture drought, affecting plant and crop growth, which in turn may deepen into a hydrological drought affecting watercourses, water resources and groundwater-influenced natural ecosystems. Significant European droughts occurred in 2010, 2011 and 2015. The frequency and severity of droughts showed significant increases in recent decades in the case of many Danube Region countries like Hungary, Slovenia, Austria, Slovakia, the Czech Republic and Bosnia-Herzegovina. Regarding soil moisture droughts, south-eastern Europe will be one of the most affected regions in Europe in the upcoming decades. Climate change is also expected to increase forest fire risk in Europe. Based on a set of regional climate models the potential forest fire risk will increase seriously in several European areas, notably in the Mediterranean and Central Europe covering a series of Danube countries also. Various sources of accidental pollution of rivers can lead to major disasters especially in relation to the Danube and its tributaries. This was exemplified by the effects of the Baia Mare cyanide spill in Romania in 2000 that was spreading downstream along the Tisa, but several other accidents can be named with transnational relevance (e.g. in the case of the Sotk salt mine in Ukraine). Based on the International Commission for the Protection of the Danube River (ICPDR) operational industrial sites associated with a major risk of accidental pollution, due to the nature of the chemicals being produced, stored or used at the plants, can be considered widespread across the macro-region. Potential Accident Risk Spots can be located at high density around Ingolstadt, on the Váh-Nitra-Hron, from Komárno to Budapest, along the Upper Tisa River Basin covering Romania, Ukraine and a part of Hungary, between Alba Iulia and Deva, Romania etc. The largest number of spots can be found in the transboundary zone stretching the Morava to the Mureş, but other potential future disaster sites of transnational relevance are located in Germany, Austria,

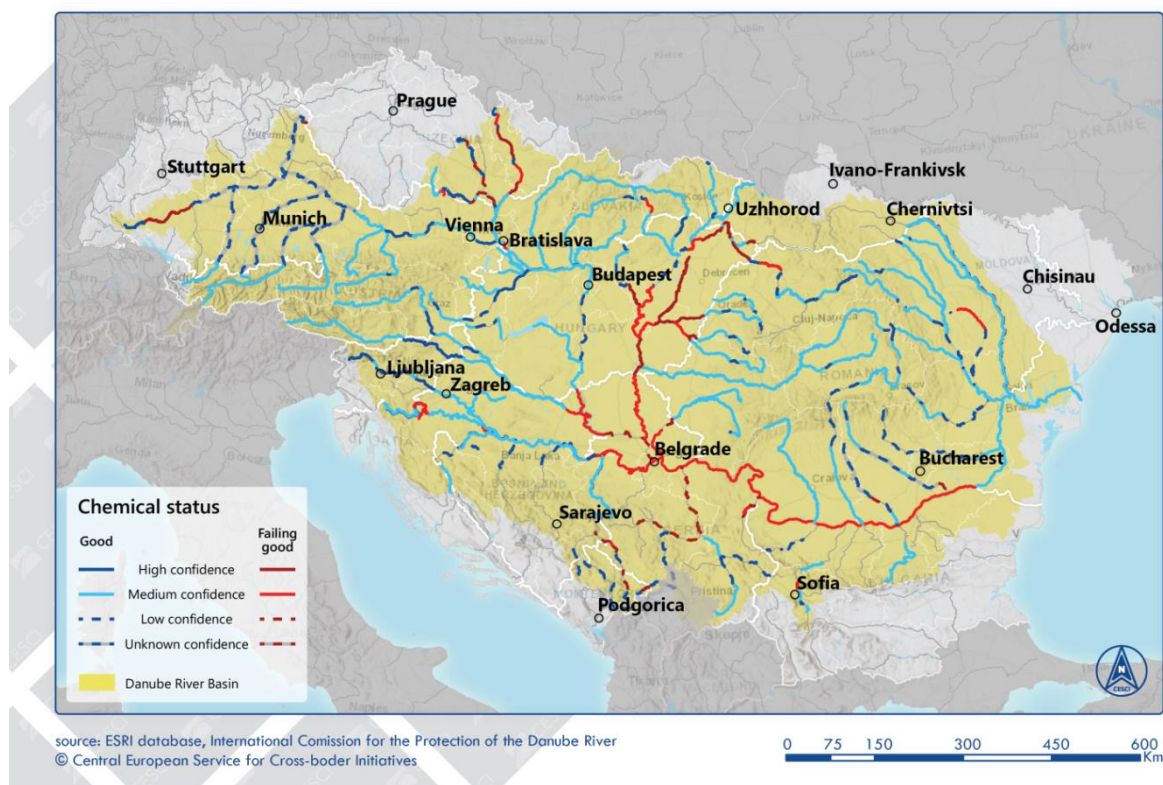


Croatia, or along the joint Bulgarian-Romanian Danube section as well. Besides operational sites, old contaminated sites, including landfills and dumps, in potentially flooded areas are of great risk. The largest number of sites can be found in Romania (the Târnava, the Mureş), Slovakia (e.g. the Váh, the Hron), Hungary (e.g. the Sajó/Slaná, the Tisa), but in all related states there are potential sites of future disasters. Hence, it is important to work on preventing accidental pollution and on improving response capability.

The above-mentioned climate change-related disasters and the various accidental pollutions affect transboundary landscapes of several Danube Region countries and carry high risk at the level of the Danube Basin. Hence, activities encouraging cooperation in integrated environmental risk management, research, forecasting, adaptation and mitigation are therefore of paramount significance. Transnational risk management plans for such areas exposed to climate change-related floods and natural disasters are also important to have and to be implemented.

SO v. promoting access to water and sustainable water management

With regard to PO2 SOv promoting access to water and sustainable water management, it is worth underlining that one of the basic joint features of the Danube Region is that it covers the water system of the Danube and its tributaries. Transboundary water bodies link the related regions, and transnational water catchment areas give special emphasis to cooperation in water management with transnational importance, and they connect the given upstream and downstream countries. This interconnectedness causes joint challenges and requires joint solutions. The complex functional territories of catchment areas and river basins call for territorially integrated actions in relation to PO2 SOiv, SOv and SOvii covering the topics related to negative changes in water quantity and quality parameters, water habitats as well as environmental, water and risk management activities. From quantity point of view increasing water use across the region, decreasing ground water levels and shrinking supplies has to be highlighted. They urgently call for measures for sustainable management of transboundary water abstraction together with water-saving and water retention solutions in agriculture and industry, and reducing groundwater overexploitation. From quality aspects transboundary contamination and water pollution diffusion is a transnational challenge. Despite the considerable improvements achieved in previous years by the coordinated efforts of the Danube Region countries, support for joint transboundary water management initiatives linked to joint water catchment areas including joint actions in monitoring, prevention and reduction of water pollution (organic, nutrient, hazardous substances, pharmaceuticals, plastics) is a very much needed field of cooperation. At last but not least, weakening connections between wetland habitats can be listed as a challenge to extensive transboundary areas, so revitalization and rehabilitation of transboundary water streams and water systems in the Danube River Basin is worth noting.



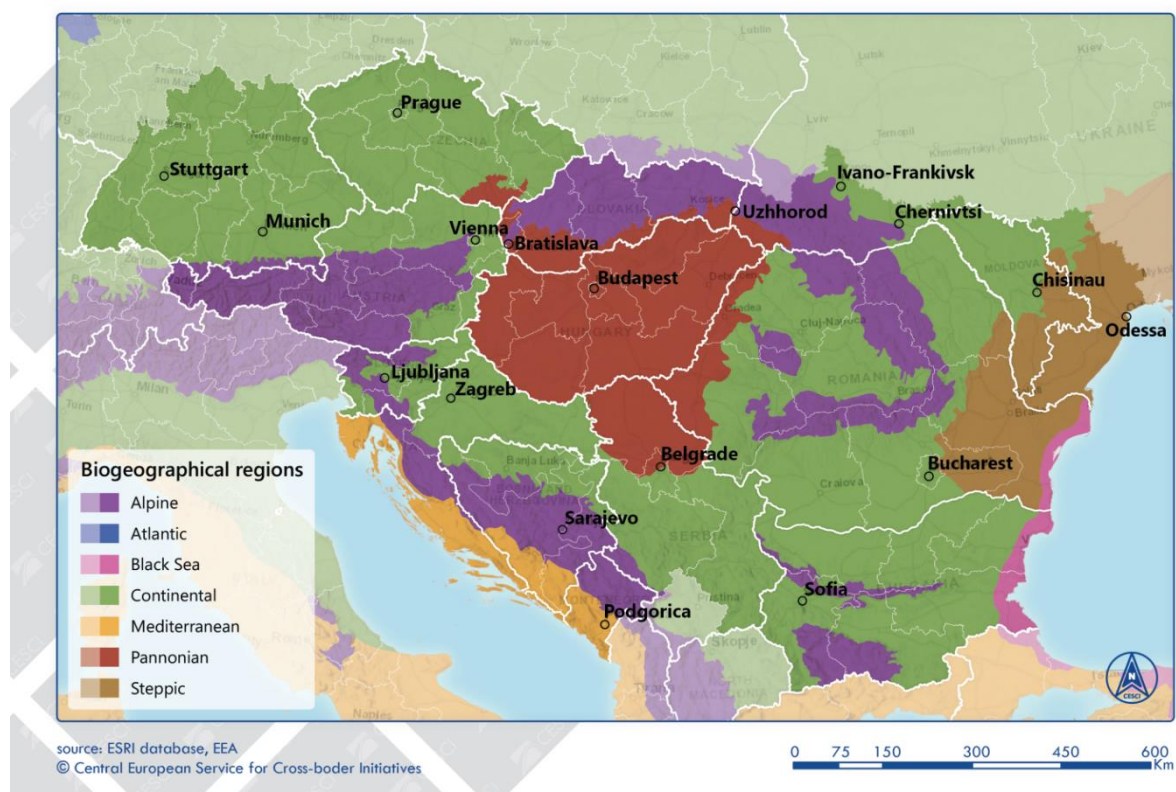
SO vii. enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution

In relation to PO2 SO vii enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution, there are extensive habitat types with transboundary nature as well as problems and potentials to deal with. Some habitat types are unique making them outstandingly valuable to protect and valorise their biodiversity. All biogeographical regions within the Danube Region have a transboundary nature. It means that both flora and fauna do not stop at the border, the artificial state borders are not aligned to the natural borders of environmental regions. The macro-region is rather a colourful mosaic of different regions. However, these regions unite many areas across the state borders; the Pannonian region expands to Hungary, Slovakia, Czech Republic, Ukraine, Romania and Serbia as well, while Alpine covers various territories in Austria, Slovakia, Ukraine, Romania, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro and Bulgaria. The ecological picture of the Danube Region is heterogeneous, but there are several regions which create cohesion across the ecological geographies of the given states. Out of the 13 ecological regions formed in the macro-region all of them are transboundary in character. Pannonian mixed forests are autochthonous in as many as 10 countries. Other ecological regions with strong transboundary feature include Carpathian montane coniferous forests (Czech Republic, Slovakia, Ukraine, Romania), Dinaric Mountains mixed forests and Illyrian deciduous forests (Slovenia, Croatia, Bosnia and Herzegovina, Montenegro), and East European forest steppe (Ukraine, Moldova, Romania, Bulgaria). This transboundary diversity requires special attention to



the transnational protection and management of the ecological regions of the Danube Region, including also the habitats of transnationally relevant umbrella (flagship) species like e.g. the sturgeon populations, whose protection are considered as top priority in the Danube Region. ¹

¹ Transboundary character applies to the umbrella or flagship species and their habitats in the macro-region. They have complex demands on their habitats, and therefore by preserving the habitats and dynamics that satisfy their needs, it is possible to protect the habitats of many other species. In the past the Danube had the largest diversity of sturgeons of any river worldwide, which reflects the past ability of the Danube to provide a healthy and varied habitat. When no dams hindered the migration of species, they ranged from the Delta of the Danube to the headwaters in Bavaria. Sturgeons are today on the brink of extinction due to the overexploitation, disruption of spawning migration and loss of habitats, hence sturgeons are valuable indicators of water quality and ecosystem health. Furthermore, other species should be listed here. The white-tailed eagle as a top predator of aquatic ecosystem is of special protection concern and it is a sensitive indicator of biocides and pollutants. As a flagship species it shows the importance of the Danube as a breeding and hunting habitat. Danube population has about 650 breeding pairs, which is concentrated in the vast wetlands of the Hungarian-Croatian-Serbian border area. The sand martin's population has about 22 817 breeding pairs at 82 different colonies along the whole Danube, based on DANUBEPARK's monitoring. Most colonies were found in the border section of Bulgaria and Romania. The little ringed plover can be found along the whole Danube. According to DANUBEPARK's monitoring, 369 territories and 218 breeding sites of little ringed plover were recorded. The highest density of habitats is between Vienna and Bratislava, furthermore, the border section between Romania and Bulgaria has the highest importance in terms of number of territories. River regulation and poor land management are the main factors impacting the distribution of these species. Further flagship species can be identified, such as orchids (e.g. *Orchis ustulata*) for dry habitats, black poplar, seagulls, black stork, night heron, little egret, black kite etc.



One of the main challenges is related to the interconnectivity of the elements of the ecological network. Fragmentation of transnational habitats and ecosystems, insufficient measures to secure biodiversity of the macro-region can be experienced. This calls for support for the improvement of ecological connectivity between habitats, nature protection areas along transnationally relevant ecological corridors. The Danube Region is rich in different categories of protected areas including transboundary regions of high biodiversity. There are several extensive such areas and many of them are situated along the state borders. It also means that there are territories with significant natural values which could be protected transnationally due to their exceptional flora, fauna and/or landscape shared by the neighbouring countries. However, the management of nature protection of these areas is challenged by the still low level of joint management and protection initiatives, furthermore by notable differences in the regulations, competences, human and financial resources etc. of the given protected areas. Despite of some cooperation, borders are barriers to effective nature protection on a transnational level, thus state borders fragment even the otherwise similar environments by hard artificial borders. Weak management capacities and skills for ecological regions of transnational relevance (e.g. Pannonian landscapes or the Mura-Drava-Danube Transboundary Biosphere Reserve) raises the question of development of transnational management schemes, creation of institutionalised forms of cooperation in relation to the ecological regions. Joint conservation and preservation techniques and planning schemes are needed. Institutionalised, long-term management network(s) of 'Danubian' transboundary ecological regions would create real transnational impact. Wetland habitats are of great significance in the Danube Basin, therefore their fragmentation, ecological status should be taken



into account. As a solution, revitalization and rehabilitation of transboundary water habitats and adjacent green infrastructure are very much needed in the macro-region. In relation to protected areas, in particular water habitats, invasive species endanger the ecological balance in many transboundary ecological areas. This urges nature protection stakeholders to come up with joint solutions considering the spread of invasive species. Furthermore, the valorisation of natural heritage, nature protection areas are on a low level. The sustainable economic utilisation of protected areas should be supported instead of irreversible exploitation of areas with high biodiversity.

PO4: A more social Europe

SO i. enhancing the effectiveness and inclusiveness of labour markets and access to high quality employment through developing social infrastructure and promoting social economy

Considering PO4 SOi enhancing the effectiveness and inclusiveness of labour markets and access to high quality employment through developing social infrastructure and promoting social economy, the spatial distribution of unemployment is still characterised by high inequalities. The previously strong north-west versus south-east divide remains mainly because of persisting frictional and structural inequalities. There are still regions of the Danube Region which have to cope with high and truly long-term unemployment rates despite of an overall improvement in employability across the majority of the macro-region after the economic crisis erupted in 2008-2009. Unemployment, long-term unemployment in particular is a permanent challenge to be tackled within the macro-region. The reasons of unemployment and its large spatial inequalities include weakly developed local economies that cannot secure employment for certain groups who therefore remain excluded from regional employment markets. This is mainly because of labour-intensive investment shortage, non-harmonised supply and demand, exclusion from education. Other reasons include weakly developed alternative employment forms (e.g. remote working, part-time employment) as well as limited transport accessibility to major workplaces from remote areas.

Inequalities and exclusion from the labour market is a more severe problem for certain vulnerable groups of the labour market. These groups include the less educated workforce which forms the widest strata of vulnerable groups on the labour market. Those of working age with lower secondary educational attainment at most suffer not just from higher unemployment rate but low income levels as well. Employability heavily depends on educational attainment, especially in Slovakia, the Czech Republic and Croatia. Less than a quarter of people with at most a lower secondary education level are employed in these regions. Further countries still having major challenges in employment growth among the least skilled and qualified groups include Montenegro, Bosnia and Herzegovina, and also some Romanian and Bulgarian regions.

Regional problems of low levels of education and employment are readily evidenced but there also exists a different challenge in terms of employment for those who succeed through tertiary education. Apart from metropolis and capital city regions, employment opportunities for



jobseekers with tertiary education are guaranteed only in a limited manner. There are high levels of inequalities in terms of tertiary qualified employees; the western region of the macro-region boasts with higher shares, while on the eastern part capital regions tend to stand out. In addition, many western regions managed to increase employment for tertiary qualified people unlike the majority of eastern regions. Therefore, support for designating innovation-led policies to retain skilled labour and a more sustainable migration of educated people (e.g. by introducing transnational study and RDI programmes, promoting alternative, atypical employment schemes suitable for the needs of the tertiary educated living in rural regions) should be promoted.

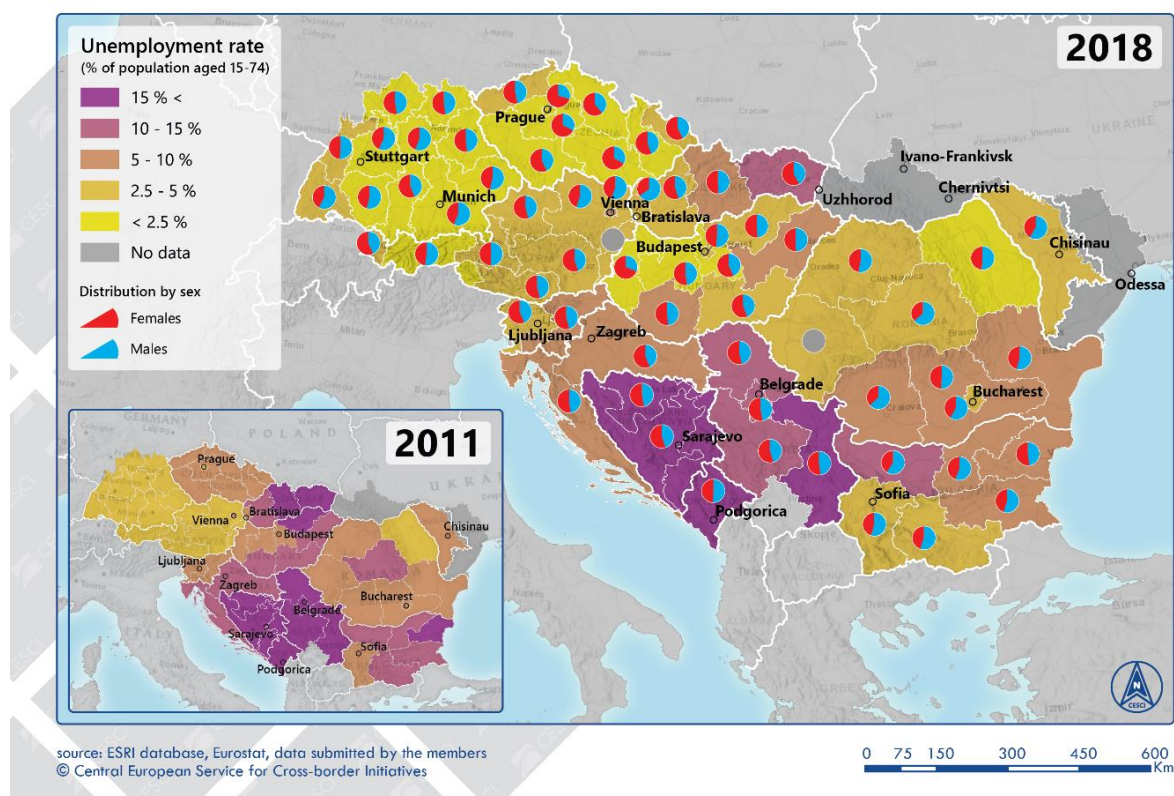
It is of great importance to mention the different minority groups as vulnerable groups regarding the labour market inclusion and integration. Vulnerable groups requiring more inclusive labour market solutions are ethnic minorities. In quite a few regions, especially where vulnerable population is living (e.g. populous Roma minorities) the unemployment has not decreased significantly. There is a great overlap between regions battling with extreme poverty and having vulnerable social groups such as the Roma or people with low educational attainment. Apart from indigenous ethnic groups, immigrants from the Middle East, Africa and outside of the Danube Region of various backgrounds with colourful work culture, language and professional skills as well as qualifications should also be highlighted. Thousands of newcomers in recent years struggle to be legally employed. The special needs for their labour market integration are a new challenge together with creating a more inclusive environment for people with different ethno-cultural characteristics to the majority of the population. The low level of inclusiveness regarding the aforementioned groups tends to lead to spatial inequalities, even to the most radical forms of social exclusion (e.g. areas of high risk of ghettoisation). In all the related states certain slums, ghettos at distinct state can be found, either in rural or urban areas, where one of the triggering factors in their formulation was the weak access to employment (and education) and the systemic fail of the regional labour markets. The elderly is often regarded as a minority group in the labour market. Europe's ageing population raises many challenges for policymakers in relation to employment, working conditions. Promoting employment opportunities for an ageing workforce requires innovative thinking. The ageing of the European working population calls for policy attention to two issues: ensuring that demanding working conditions can be undertaken by an older workforce and ensuring that working conditions are sustainable over the life course to allow people to remain in work longer.² Data shows that older workers feel that if they became unemployed, they would not find a similarly paid new job and would even find it difficult to re-enter the labour market, according to the Sixth European Working Conditions Survey. It is important to deal with the special needs of the ageing workers across Europe. The share of workers aged 50 and above has significantly increased since 2005. Consequently, more attention should be paid on their preferences, skills and position in the labour market. Supporting the knowledge exchange in creating more inclusive measures in terms of labour market policies and related tools should be supported in the future. Furthermore, In the EU28, some 7% of workers felt they had been discriminated against in the 12 months prior to the aforementioned survey on grounds of sex, race, religion, age, nationality, disability or sexual orientation. Discrimination based

² Eurofound (2015), *Sustainable work over the life course: Concept paper*, Publications Office of the European Union, Luxembourg



on age is the most prevalent form, followed by discrimination based on sex, nationality and race (including ethnic background and skin colour).

Furthermore, in comparison with the EU average the macro-region is characterised by more notable differences in terms of employment based on urbanisation levels often resulting in border peripheries that need to fight against high unemployment. High unemployment is much more concentrated in rural and often depopulating/depopulated areas than in the rest of the EU. Areas characterised by employment possibilities exclusively concentrated on a small number of sectors exclude populous labour market groups. There is a dependence of the labour market on few particular economic sectors in the majority of the regions. The mono-functional employment structures tend to be exposed to labour market crises, and employ large number of vulnerable (e.g. low skilled, physical workers or people with specialised knowledge) employees. Therefore, restructuring and diversifying the employment is needed and it can be reached by the implementation of territorially integrated action plans for employment, with special focus on enhancing the spread of innovation structures targeting mono-functional (e.g. industrial, tourist) regions. Taking into consideration the unemployed by sex, there is still a lot to do with equal employment, since unemployed women outnumber men especially in heavily industrialised regions of Czech Republic, western Slovakia, western Hungary in particular. In the Danube Region gender inequality is a real problem taking into account employment levels. In every country the employment rate of women is notably lower than that of men. There are huge gaps between the two sexes in many countries. In Czech Republic, Hungary, Slovakia, Romania, Serbia, and Montenegro the gender gap is still significant in comparison with the EU average. This all shows that the inclusiveness of the labour markets of the Danube Region is rather limited. Also, it underlines a macro-regional field of manoeuvre in cooperation in a more inclusive labour market. Despite of such challenges, insufficient development in labour cooperation in tackling long-term unemployment especially in relation to low qualified people has to be improved. Support for transnational cooperation and coordination of education/ academia, labour market (coordination of supply and demand of professional qualifications) is very much needed.



The cohesion of the Danube Region is very much related to strong, unbalanced and intensifying transnational labour migration links and the flow of workforce which creates new spatial and social relations within the Danube Region itself. The lack of local workplaces, low wages and disharmonised educational and employment opportunities mean that jobseekers often end up in foreign employment, contractual works on the westernmost parts in the macro-region in high numbers. Severe inequality in earnings boosts labour migration from south-eastern, eastern countries to the labour markets of the western states, Austria and Germany in particular. In addition, a new phenomenon, also because of the military conflict and economic crisis in Ukraine, is the large number of Ukrainian working age population migrating even to central European labour markets. High unemployment, conscription, devalued currency are among the main push factors, while significantly higher wages, various labour market opportunities and open positions, better quality of life, peace and language (mainly for Slavic-speaking countries) are among the main pull factors for the migrants. Accordingly, in recent years e.g. Czech Republic and Hungary also became receiving regions of labour force coming from Danube countries, i.e. for Ukrainian workers. Regarding labour migration within the Danube Region, instead of a cyclic migration, the different target countries often become permanent residence for the workers and their families from source countries such as Serbia, Croatia, Bosnia and Herzegovina, Romania, Bulgaria, Hungary, Ukraine and Moldova. Commuting and foreign employment can result in severe labour market disharmony on the level of the Danube Region.

Migration processes have led to the intensification of spatial disparities resulting in decreasing economic and social cohesion among Danube Region states in many ways causing challenges in both the source and the target/receiving states and their labour markets. Areas hit by strong



emigration are experiencing huge population loss especially in relation to skilled labour. The processes results in a massive depopulation and ageing of the population as well as lack of qualified workforce capable of acting as the basis of prosperity. Since high inequalities in labour market are going to be present in a long run it is of major importance to tackle the challenges deriving from strong migration flows and changing population distributions affecting the labour market and its inclusive character.

The macro-region is characterised by one-way migration of (highly) skilled workforce towards the western and urban parts of the macro-region, as well as outmigration of skilled labour (brain drain) from the macro-region. Not including Germany and Austria, part-time employment solutions have not been sufficiently introduced in the vast majority of the macro-region. However, it also has to be noted that labour migration if managed and coordinated jointly at some level can contribute to stronger labour market integration. Transboundary labour migration has potential to be utilized jointly in the macro-region. Before the relatively new phenomenon of the COVID-19 effects on employment and social inclusion owing to the significant employment growth and emigration of working age population from some Central and East European countries, extremely low unemployment rates were measured in these source countries. This was an emerging new challenge in many parts of the macro-region. In southern Germany, in the Czech Republic or western Hungary it is more relevant to have a discussion about a general labour shortage. The lack of sufficient number of employees could jeopardize further economic growth and catching-up to recently dynamic markets. This is because of various reasons: mass outmigration of workforce to other regions, extensive labour-intensive investments in that specific region, lack of sufficient supply from the educational sector are among the main factors. Thus, not only unemployment but the lack of workforce on the supply side also has to be mentioned as a challenge. Depopulating and also often remote areas lack of employable active age workers particularly in the eastern and rural parts of the macro-region affected by outflow of active age population, low fertility rates, ageing calls for joint coordination of policies aiming at the re-integration of elderly people to the labour market and for less labour-intensive developments as well.

In order to take into account the impacts of COVID-19, although data are not available for all countries, certain process can be detected regarding employment change. As a result of COVID-19, stagnant or increasing employment rates have been replaced by decline. The employment rate of the EU27 countries was decreased by 2.8% in the second quarter of 2020. To varying degrees, all European countries were affected by this decline. Among the countries of the Danube Region, Hungary (-4.5%), Austria (-4%) and Romania (-3.1%) have suffered an above average decrease.

Based on Eurofound's 'Living, working and COVID-19' e-survey³, 5.2% of the EU27 respondents has permanently lost their job during the COVID-19 pandemic. Among the Danube Region countries in the case of Bulgaria (10.3%), Hungary (8.4%) and Slovenia (5.3%) that rate was even higher. The rates of respondents who have temporarily lost their job were higher in the case of Slovenia (35.7%), Romania (33.4%) and Bulgaria (25.7%) than the EU27 average (22.9%). Based on the same e-survey, 8.8% of the EU27 respondents answered that it is somewhat likely to lose their job in the next 3 months, 6.6% of them thought that it is very likely to lose their job in the next 3 months. Bulgarians (20.1% rather likely, 13.2% very likely), Slovaks (11%, 9.4%), Croatians (11.4%,

³ Eurofound (2020), Living, working and COVID-19 dataset, Dublin, <https://www.eurofound.europa.eu/data/covid-19>



7.9%) and Romanians (10.8%, 11.2%) had a more pessimistic view than the EU average. These data reflect on the situation in April/May 2020, so changes may have occurred since.

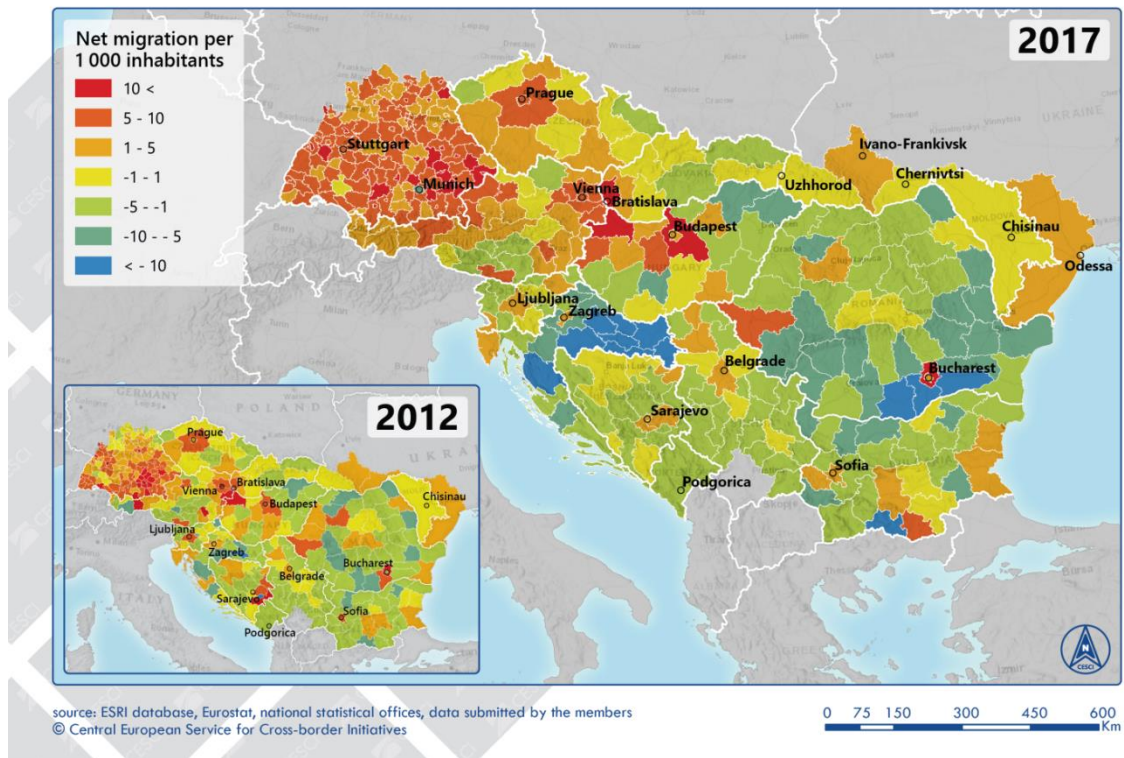
The unemployment rate (percentage of active population) has increased by 1 percentage point (from 6.6% to 7.6%) between September 2019 and September 2020 in the EU27 because of the negative impacts of the new Coronavirus pandemic. In general, the countries of the Danube Region are characterized by a lower unemployment rate, although it has increased remarkably in the Danube Region as well. Compared to the EU27 average, the increase in the unemployment rate was higher in Bulgaria (+2.2 percentage point), Germany (+1.4 percentage point) and Slovakia (+1.1%-points). In the case of Austria, Hungary, Czech Republic, Slovenia and Romania, the growth of unemployment rate was below 1 percentage point.

The health care crisis can lead to social crisis since during the Coronavirus social inequalities have increased especially because of exclusion from the labour markets. The most vulnerable groups such as the aforementioned less educated, rural population, people with disabilities, elderly people, ethnic minorities tend to suffer the most from job loss. Mass unemployment among these groups is going to be a brand-new challenge across large parts of the macro-region.

Since there is a great dependence of the labour markets on few particular economic sectors (e.g. the hardly hit tourism and service sector) there is a growing need for restructuring and diversification of employment to increase its inclusive character. Job protection and creation thus is already a topic of transnational relevance. Plans for inclusive employment with a special focus on enhancing the spreading of innovation structures targeting mono-functional (e.g. industrial, tourist) regions in particular have high importance already. Innovative and alternative forms of employment (e.g., telework) can have positive impacts across the macro-region.



Spatial distribution of **net migration** in the Danube Region

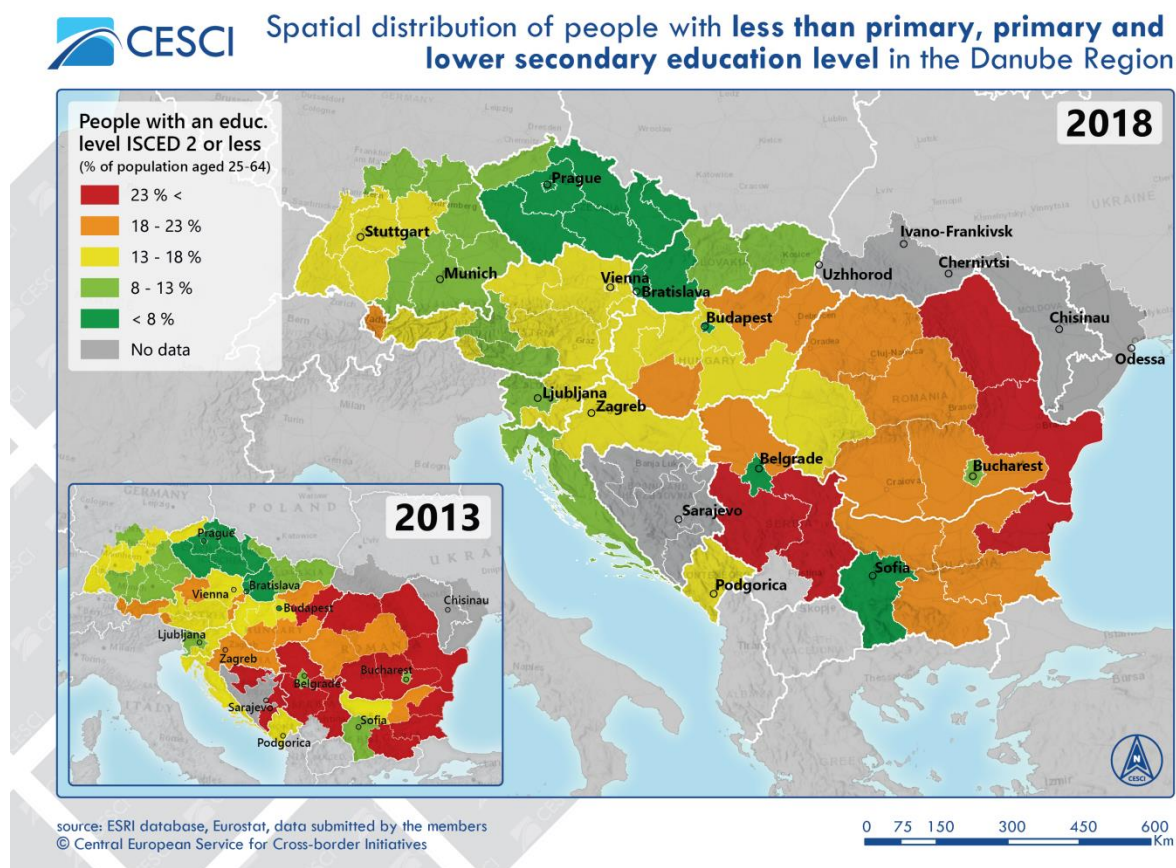




Employment growth can be better addressed in the future by giving more focus on social economy and its job creation effects. Social entrepreneurship is not a commonly-used practice to find innovative solutions to employment and other social challenges yet. The role of civil society in providing inclusive workplaces and targeting better integration of inclusive initiatives to employment policies can also be better encouraged. Capacity building for the civic sector would provide innovative solutions to the creation of more inclusive jobs in the labour market. For instance, with the involvement of the non-governmental organisations and the civil sector social challenges as severe ageing can be better tackled. The innovative approach of such social challenges can contribute to job creation for people excluded from the highly competitive labour markets by serving social goals for the public good. The world of work has undergone profound changes in the last decade including new technologies and forms of work. Social innovation is needed to tackle today's labour market challenges: persistent high level of youth unemployment, ageing working population, polarisation of the workforce, development of multi-jobs handling, increasing transitions between different work statuses. Despite of notable positive changes (regardless the pandemic) progress varies between countries and regions, age groups and gender. These challenges will be exacerbated by demographic changes, skill shortages and technological evolution. Policymakers and relevant stakeholders should therefore use these innovative tools and measures to promote and implement social innovation and to work in partnership to build open, inclusive and sustainable labour markets that enable everyone to be employed. In the Danube Region social innovation with regard to labour market has further potential. One particular field could be grouped around labour market (re)integration of particular jobseekers. Encouraging the diverse forms of work to bring more people into the labour market (e.g. by the support of labour migrants and refugees in getting a job) or empowering Danube Region citizens to build their career path (e.g. by the implementation of skills policies that better support work-based learning and prior learning recognition, the fostering of dual learning and apprenticeships by promoting the exchange of best practices at EU level) can be mentioned here. Reforms in labour and social policy innovations are therefore important. Social innovation including structural and organisational innovation can generate a great shift to a more inclusive market. The other important leg or pillar of social innovation within the macro-region could reinforce the reintegration of vulnerable people and people with disabilities through generation of new types of work opportunities from agriculture and handcrafts to catering industry. Knowledge transfer could be supported in this field.



SO ii. improving equal access to inclusive and quality services in education, training and lifelong learning through developing accessible infrastructure



In relation to PO4 SOii improving equal access to inclusive and quality services in education, training and lifelong learning through developing accessible infrastructure, access to education is a key to employability and social cohesion in general within the Danube Region. The socio-economic status and the level of integration highly depend on educational attainment. High proportion of low-skilled people poses difficulties for a few regions in shifting to a more developed economy with higher added value, more stable jobs and higher salaries. In all of the regions poor qualification makes almost impossible to reach social mobility knowing that education is a key in battling poverty and unemployment. Considering the change in the spatial configuration of regions, high proportion of such low-skilled population still persists on the easternmost and southernmost parts of the macro-region. The share of the least educated employees in Germany and Austria is high, indicating that the integration of those workers is successful. However, in the case of many other regions, employment growth has not affected the less educated strata of the population successfully due to disharmonies in the supply and demand sides.

There is still high share of population with unequal access to primary, secondary and tertiary education. In many regions generations suffer from non-inclusive educational systems. Regarding primary and secondary education, the ratio of early leavers from education and training is an informative indicator on equal access to education. The higher percentage of population aged 18-24 are considered as early school leavers, the less likely it is that the given region sustain equal



access to primary and secondary education to its young generations. From this point of view, the Danube Region certainly has room for improvement in creating a more inclusive education especially in terms of macro-regional cohesion since on the western parts the ratio is strikingly lower.

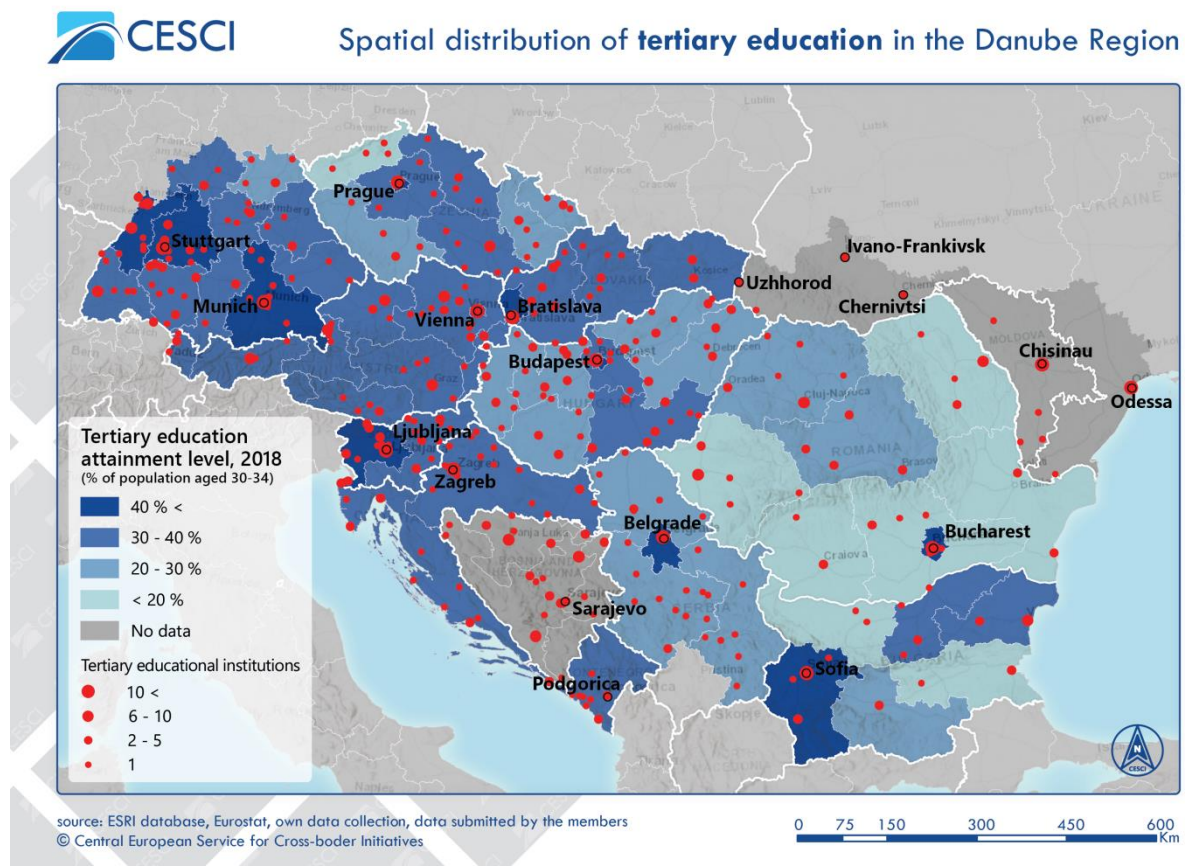
Taking into account the temporal changes, interestingly a deteriorating tendency in reaching a more inclusive educational network is observable especially on the eastern regions. These regions usually contain remote rural areas with high fertility rate of disadvantaged population, which increases its size, but little has taken place for better and longer integration of the children into the school system. Thus, the share of these communities, exposed and vulnerable to poverty, has been increasing, also as the children of more educated and wealthier families tended to move with their parents to capital regions or economically more dynamic areas of the respective countries. Consequently, the need for equal access to inclusive and quality services in education has been growing as the share of children who need special integration and services keeps increasing too. This phenomenon can also lead to further disharmony with the labour market needs and emerging segregation in specific areas of the school networks. It is a real challenge to better integrate people with special educational needs and secure them a specialised infrastructure and service system. Apart from early school leavers the integration of other disadvantaged learners should be further improved to reach equal access. Thus, there is a need for a stronger cooperation in creating and sharing models and tools for more inclusive educational policies by strengthening the knowledge exchange between the best and worst performing regions. This requires the cooperation of both the national and the regional level public bodies and related offices.

Furthermore, accessible education should also mean better access not just in physical space but in virtual space. Therefore, challenges can be underlined in relation to the cross-cutting theme of digitalisation. There are large differences in the development and implementation of e-learning systems. Remote learning is still not accessible for many especially in areas with bad digital infrastructure, i.e. weak or non-existent internet connection and related IT devices due to poverty and lack of sufficient governmental investments, high rate of digital illiteracy. In addition, the latest waves of COVID-19 showed that weak access to digital and remote learning increase social inequalities, and limit the skills development of the respective population with unfavourable accessibility.

Considering secondary education, there is a correlation between training and employment meaning that there is a high probability for skilled, trained professionals for employment. Also due to lack of tradesmen across most parts of the macro-region (e.g. plumber, electrician, and painter), attending to vocational learning services and infrastructure can be a huge advantage for many learning age people on the labour market compared to having only primary school. The macro-region should face the challenge that derives from the on-going loss of educated and skilled workforce due to higher economic attractiveness in western European countries along with the stay of unskilled and undereducated people of growing shares. It is proven that the currently applied and running learning structures are rather rigid, and the majority of the educational infrastructure and service lack flexibility (in terms of responsiveness to labour market needs), competence orientation and openness (e.g. acknowledgement of informal education) and adequate governance structure. Thus, the skill sets provided at the school system need to be



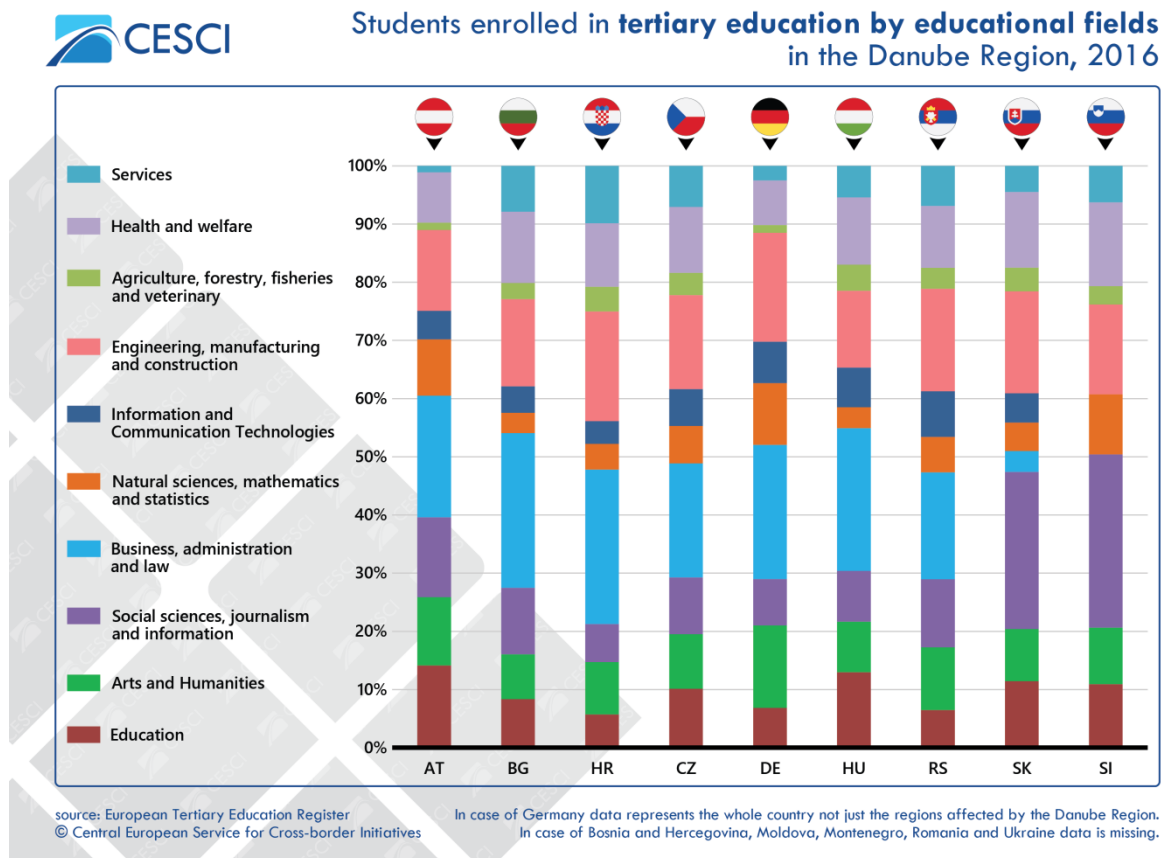
revised, and transnational cooperation can be a source for sharing the right modes and forms of that.



Despite of all discussed, in many regions there is a neglected, weakly developed infrastructure with often out-dated knowledge offered with no real cooperation with the private sector (the demand side). Non-harmonised demand and supply sides considering VET, trainings and vocational schools cause frictions in the labour market that result in exclusion from the primary labour market. High long-term unemployment and severe mismatches due to unfavourable educational, vocational conditions especially in south-eastern states in relation to labour market needs improvement. The harmonization of labour market demand and training structures can efficiently contribute to a long-term unemployment reduction in the south-eastern countries in particular. It is worth noting that there are working examples concerning the harmonization of demand and training structures. The active adaptation of e.g. German or Austrian innovative solutions (e.g. work-based learning) and best practices particularly in the countries of south-east is of great importance in reaching a more inclusive and accessible secondary and adult education. Support for the exchange of experiences on vocational education and training systems, the development of dual training schemes, the improvement of adaptability of the studied and taught professions in the Danube Region could change the current situation notably. The tertiary education attainment level has an immediate and direct impact on the labour market processes, especially on productivity, employability, added value, and thus the rate and speed of economic development. Observation can be made that the capital regions are the main centres where the more educated population concentrates apart from the western regions. Furthermore, what is even more relevant on a



transnational scale as a challenge is the strong pull factor from the direction of western regions of the EU and Europe, including countries situated outside of the Danube Region (e.g. the United Kingdom, the Netherlands). This created a one-sided, westward attraction force. The number and geographical distribution of the tertiary educational institutions also correlates with the proportion of the population with tertiary education attainment. It appears that in regions where there are more institutions, the ratio is also higher such as in Baden-Württemberg. As about the distribution of tertiary education institutions among the capitals Prague, Budapest and Bucharest has the highest number, followed by Sofia, Vienna and Belgrade, with the lowest number of such institutions operating in Sarajevo and Podgorica.



Still considering tertiary education, there is a visible discrepancy between the supply and demand on the labour market. While in the majority of the countries of the Danube Region the economy and the current business cycle would require more human resources in manufacturing, ICT and services, these educational fields are by far not the most popular ones in the countries. The cross-cutting general tendencies show that most students opt for studying business, administration and law, social sciences or journalism at universities, which results in labour shortage in critical fields simultaneously with unemployment among the highly educated young people. This skills mismatch is an area that has to be handled in the short run. The non-harmonised educational offers with the needs of labour market leads to increasing student and labour migration, brain drain, tertiary unemployment among graduated young people. Extensive regions can be left out of the recent socio-economic development resulting in loss of skilled people and young intellectuals because of unfavourable or even non-established higher education systems. At the same time individual differences regarding the main study fields can be noticed among the participating countries. A



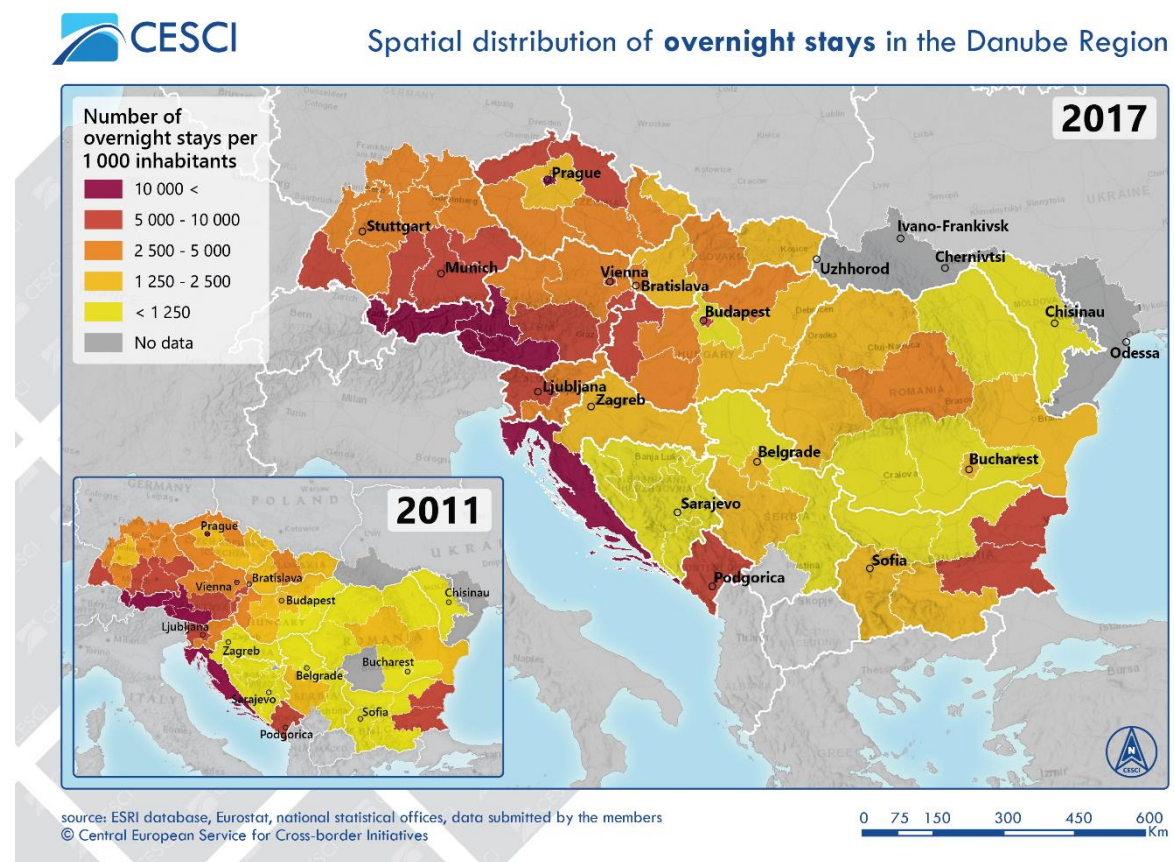
major difference is that in Slovakia and Slovenia the ratio of students being enrolled in social sciences, journalism and information studies is so high (double as much as in other countries) that in the case of Slovenia the information and communication technologies cannot even be represented. Services is another area where considerable differences can be noticed; in Austria and Germany services are the least popular fields, while comparatively in Croatia and Bulgaria the most students opt for this field. Germany and Austria (together with Slovenia) are also slightly outliers considering the ratio of students studying natural sciences, mathematics and statistics.

Apart from the number and density of higher education institutions, their quality is also a determinative factor in raising generations of productive and competitive labour. In the Danube Region there is a clear dominance of German and Austrian universities when it comes to the best-performing institutions according to the internationally referenced Shanghai Ranking. In fact, among the first 15 universities, ten is from Germany, four from Austria and only one is from the Czech Republic while in the first 100 in the world rank only the Heidelberg University (47th), the University of Munich (52nd) and the Technical University of Munich (57th) managed to fit in. This German dominance also means one-sided relations and capacities in favour of the western regions of the Danube Region. Thus, capacity building in terms of human resources and scientific networks as well has great necessity. Considering lifelong education, one of the targets under the strategic framework for European cooperation and training (ET 2020) is that, at European level, an average of at least 15% of adults (population aged 25-64) should participate in lifelong learning by 2020. Based on data from 2018 only Austria (15.1%) and Slovenia (11.4%) perform better than of EU28 (11.1% including the UK) while all the other adult education systems underperform (Czech Republic: 8.5%, Germany: 8.2%, Hungary: 6%, Serbia: 4.1%, Slovakia: 4%, Montenegro: 3.2%, Croatia: 2.9%, Bulgaria: 2.5%, Romania: 0.9%). Therefore, the promotion of lifelong learning and related programs would be necessary to be better addressed. Especially areas battling with long-term unemployment, which often fail to introduce accessible lifelong learning systems, have to introduce measures for alternative educational infrastructure and services including (re)training, adult education.

To sum up, there are considerable differences in the educational structure. The main challenges derive from low educational attainment and thus low social mobility of some specific groups (e.g. unemployed and Roma people), disharmony with the labour market needs even on a transnational level, non-innovative, rigid educational structures in relation to vocational education and training especially, lack of adult and lifelong education opportunities. Consequently, there is a need for cooperation between institutions responsible for inclusive education, harmonisation of educational policies and governance models across all educational levels. Improving the market orientation of educational offers (avoidance of skill mis-matches), and focus on the quality aspect of education. Apart from the cooperation between educational institutions, academia, enterprises (employers) and governments, policy makers, it is required to better address civil society in creating a more inclusive educational offer accessible for all. In addition, synergies with PO4 SOi education aspects in tackling long-term unemployment and unemployment for low qualified people should be found. Support for transnational cooperation with relevant stakeholders in the educational and labour market, employment sector can be envisaged.



SO v. enhancing the role of culture and tourism in economic development, social inclusion and social innovation



Regarding PO4 SOv enhancing the role of culture and tourism in economic development, social inclusion and social innovation, it is important to underline the role of cultural and tourism activities in reaching a more inclusive society across the macro-region. Such activities, i.e. cultural and creative industries, travel and tourism industries can significantly contribute to employment, which is a key factor in combating social exclusion. Based on Eurostat findings, high tourist activity couples with lower regional unemployment rates. There is a great potential still very much left untapped in involving different vulnerable groups to these sectors which otherwise often face lack of labour opportunities. According to even the 6th Report on Economic, Social and Territorial Cohesion the majority of tourism-related projects of the Cohesion Policy programmes were implemented in the Convergence regions. Consequently, such projects can have a positive impact on social inclusion in regions which suffer the most from having low level of inclusion and high share of vulnerable groups. Social innovation can lead to diversification thus it creates jobs and alternative, additional income sources for areas where there is a lack of employment opportunities because of e.g. weak economic structure or bad accessibility. Furthermore, areas hit by depopulation can gain new development impetus by (re)integrating them to the socio-economic networks of tourism and cultural spheres. Significant groups and regions are left out from present flows because of weak social innovation. Innovative solutions can open up new opportunities for people with disabilities, the elderly, and those living in remote areas etc. Often the given regions



and strata of population possess outstanding cultural and natural heritage on which innovative, sustainable and above all, inclusive solutions can be based.

Tourism within the service sector is one of the most relevant economic activities within the Danube Region, and has been a popular field of transnational cooperation. In order to assess its situation and role in economic development, it is worth taking into account the related statistics on the demand and supply side of it (as they are main factors in cohesion) including contribution to GDP, employment, accommodation and cycle paths of transnational relevance, as well as overnight stays. It is important to deal with the role of tourism and culture sector in the economies since these activities have been affected heavily by the Coronavirus pandemic lately.

Tourism sector plays a vital part in driving the EU economy. Based on WTTC's data, tourism sector is an important contributor to the GDP of many Danube Region countries, above all in Croatia (25%), Austria (15%), Bulgaria (12%) and Slovenia (12%). The group of countries where the share of tourism in the production of GDP is moderate consists of Germany (9%), Hungary (9%) and the Czech Republic (8%). Slovakia (6%) and Romania (5%) belong to the countries where the tourism has a relatively low importance in the GDP.

Besides the sector's direct contribution to GDP, tourism plays an important role in the employment of EU citizens. It shows the magnitude of the tourism sector that the share of tourism in the employment is above 10% regarding 15 of the 27 EU Member States. Among the Danube Region countries, the role of tourism is essential in employment in Croatia (23%) and Austria (16%). The share of tourism in employment is relatively high in Slovenia (13%), Germany (12%) and Bulgaria (11%), and moderate in the case of Hungary (9%), Czech Republic (9%), Slovakia (6%) and Romania (6%). If only the accommodation and food service activities (NACE I) are taken into account, the sector's share in employment is above the EU27 average (4.8%) in Montenegro (8.5%), Croatia (6.4%) and Bulgaria (5.6%). Group of countries where the share of accommodation and food service activities in employment is below the EU27 average (4.8%) includes Hungary (4.2%), Slovakia (4.2%), Slovenia (4.1%), Germany (3.7%), Serbia (3.6%) and Romania (2.6%) from the macro-region.

The tourism sector employment rate of the EU27 countries has decreased by 2.8% in the second quarter of 2020 taking into account all economic activities. Regarding wholesale and retail trade, transport, accommodation and food service activities (NACE G-I), the decrease of employment rate was even higher in the EU (-4.9%). The related employment rate dropped in all Danube Region countries in 2020. Austria (-8.3%), Hungary (-7.9%) and Bulgaria (-7.3%) have suffered an above EU average decline. In the case of Germany (-2.8%), Croatia (-2.8%), Slovenia (-2.2%) and Romania (-1.2%), the decrease of the employment rate was moderate. Due to the great economic importance of tourism, it can be stated, that the Danube Region was particularly affected by the huge decline of (international) tourism. Tourist infrastructure with regard to accommodation capacities has large inequalities within the macro-region. The Danube Region has developed accommodation facilities in terms of quantity measures in the case of the Alps, the Adriatic and the Black Sea. Apart from Jihozápad from Czech Republic all the regions with the highest number of



places per 1 000 inhabitants are situated in and around the aforementioned geographical areas.⁴ On the other hand, large areas suffer from poorly constructed infrastructure mainly in the case of Romania, Bulgaria and Bosnia and Herzegovina. The lack of accommodation facilities are often characterised by regions situated right next to areas with extensive capacities especially in Croatia and Bulgaria. Taking into account the changes in the last years, apart from some regions (e.g. Adriatic Croatia, which performed the best by an increase to 249% of 2011), usually less well-performing regions lead the growth in terms of bed-places.⁵ It is very unfavourable that these positive changes have been interrupted by the crisis deriving from the effect of the Corona virus pandemic.

Based on overnight stays the most popular tourist destinations are the high mountainous regions (Eastern Alps) and the seaside resorts (e.g. Dalmatia in Croatia, Sunny Beach in Bulgaria), in particular.⁶ There are severe differences in the distribution of tourist nights; the Bulgarian coasts being exceptions, there is a strong east-west divide. From east or south-east to the Budapest–Zagreb–Podgorica line only the Romanian Centru region stands out as an attractive area to tourists. Regions with low number of tourist spending are situated between the aforementioned alpine and Mediterranean landscapes, especially in Moldova, Romania, Serbia, Bosnia and Herzegovina.⁷

Between 2011 and 2017 Bosnian, Croatian, Hungarian, Romanian and Bulgarian regions became more popular for incoming guests at highest pace.⁸

By the spread of the new Corona virus this fast-paced development has been interrupted and it is expected to hamper growth in the sector manifesting in a severe drop back to previous levels. As a result of restrictions imposed to prevent the spread of the epidemic, such as closing borders, restrictions on freedom of movement, social distancing, closure of accommodation and catering establishments etc., the volume of (international) tourism has decreased significantly. Compared to the same period of the previous year, the number of arrivals at tourist accommodation establishments was decreased by 56.8% during the period between April and October 2020 in the EU. Countries heavily dependent on international tourism have been more vulnerable to travel restrictions, but the whole EU has suffered a significant decline regarding the demand for tourist accommodation establishments. Among the Danube region countries, the decrease in the number of arrivals was the highest in the case of Croatia (-65.1%), Hungary (-63.7%), Bulgaria (-58.3%),

⁴ The leading regions with the highest number of bed-places per 1000 inhabitants are as follows: Adriatic Croatia (723), Tyrol (376), Salzburg (318), Carinthia (250), Vorarlberg (152), Yugoiztochen (135) and Severoiztochen (112) from Bulgaria and Jihozápad from Chechia (125).

⁵ Fastest growing regions included as follows: Continental Croatia 217% of data in 2011, Federation of Bosnia and Herzegovina 190%, southern Transdanubia 190%, Southern Great Plain 155%, northern Hungary 149%, Centru 165%, Nord-Est 157% and Sud-Muntenia 139% from Romania, and the Bulgarian Yugoiztochen 146%.

⁶ Regions with the highest number of guest nights per 1 000 inhabitants are as follows: Adriatic Croatia (59 005 nights in 2018), Tyrol (50 065), Salzburg (42 497), Carinthia (20 158), Vorarlberg (17 729), Burgenland (9 526) and Styria (8 867) and Vienna (8 082) from Austria, Prague (14 100), Yugoiztochen (9 529) and Severoiztochen (8 438) from Bulgaria, Lower Bavaria (8 225).

⁷ Regions with the lowest number of guest nights per 1 000 inhabitants are as follows: Romanian regions of Sud-Vest Oltenia (994), Nord-Est (704) and Sud-Muntenia (681), Bulgarian regions of Severen Tsentralen (943) and Severozapaden (728), southern and eastern Serbia (8 862), Federation of Bosnia and Herzegovina (845), Republika Srpska (689), Vojvodina (620), Moldova (545) and Brčko District (267) from Bosnia

⁸ Regions with the fastest growth of guest nights included: Federation of Bosnia and Herzegovina (227% of the data of 2011 by 2017), Adriatic Croatia (225%), Hungarian regions of southern Transdanubia (203%), northern Hungary (199%), Southern Great Plain (192%) and central Transdanubia (185%), Continental Croatia (201%), the Romanian Centru (190%) and Nord-Vest (168%), and the Bulgarian Yugoiztochen (180%).



Romania (-57.8%) and Serbia (-57.7%). The decline was below the EU average but also massive in Slovakia (-53.3%), Czech Republic (-51.5%), Austria (-49.9%), Slovenia (-49.2%) and Germany (-45.7%).

It weakens social cohesion that tourism in the macro-region is concentrated on few traditional resorts, while there are insufficient number of interconnections and level of cooperation between destinations, services, products and related stakeholders. Tourist infrastructure has large inequalities within the macro-region. The Danube Region has developed (accommodation) facilities in terms of quantity measures in the case of the Alps, the Adriatic and the Black Sea. On the other hand, large areas suffer from poorly constructed infrastructure. Based on overnight stays the most popular tourist destinations are the high mountainous regions (Eastern Alps) and the seaside resorts (e.g. Dalmatia in Croatia, Sunny Beach in Bulgaria), in particular. There are severe differences in the distribution of tourist nights, with a strong east-west divide.

In the Danube Region several Cultural Routes of the Council of Europe have been designated and certified in order to better connect the cultural and natural heritage sites and tourist attractions of Europe. It can be regarded as a development tool to support the transnational interconnection and management of the tourism products and services; thus, it is of transnational relevance to enhance the tourist valorisation of joint heritage. In order to strengthen the management of tourism related to the Cultural Routes, cultural tourism policies, recommendations and guidelines drafted in the framework of Routes4U are needed to be implemented. According to the designated Roadmap for the Danube Region the management structures of successful Cultural Routes in the Danube Region should be analysed to compile and share best practices on management structures and implementation of activities in the Danube macro-region. Main needs in this respect includes: creation of cultural tourism products requiring the involvement at the local destination level of a wide range of private and public stakeholders from the cultural and tourism sectors. Well-established networks of key stakeholders at the destination level are the guarantee for developing networks and cooperation among the stakeholders along the Cultural Routes. In spite of the high number of designated EuroVelo routes across the Danube Region, there is still a large share of undeveloped section and the quality also differs along the built or planned sections of the given routes. In many cases the paths are paved and supplied with a hard surface but the adjacent infrastructure and services are missing (e.g. resting areas, rental services).

Tourism destination management, which is a major example for the need for better transnational governance as well, of the Danube Region countries, differs from each other in many aspects. The main organisations responsible for tourism management and development, the capacity, power, role and responsibilities vary country by country and also within the countries, depending on the actual territorial level. Therefore, the strong need for capacity building in management schemes should be mentioned in relation to the enhancement of the role of tourism in economic development.

There are large discrepancies in the valorisation of both cultural and natural heritage sites especially in relation to communities lacking the required infrastructure, information and skills, and who does not feel they can capitalise from the often non-sustainable (mass) tourism. The COVID-19 pandemic and the introduced travel restrictions and reinforced border controls highlighted the importance of more local, remote, rural areas (e.g., less frequently visited mountainous areas,



wetland areas) across the macro-region where social distancing and other measures intended for slowing down the spread of the virus can be perceived. It is worth noting that based on Eurostat data of 2018, 45% of the tourist accommodation capacity (measured in bed places) of the EU27 was located in rural areas. The Danube Region is rich in rural areas and such less well-known, less visited but large areas along with numerous values that can be turned into destinations of "Corona-friendly" attractions and destinations. Also, non-built areas around bigger cities that can be reached in a daytime can experience a boom in recreation and tourism. The management and policy harmonisation in this field can be an added value of the macro-region too. The macro-region can react jointly to a shift to new forms of tourism as well as the changing patterns of tourist flows. This could also mean that the mentioned remote, rural areas are often ideal locations for developing sustainable, green, slow and community-led tourism destinations and management models with the involvement of the previously neglected vulnerable local communities.

The process of destination management does not happen in isolation. It involves a range of sectors, communities included. There is a need for a more holistic destination management approach which engages more broadly with the community, it is not simply focused on marketing the destination. Destination management should also be based on the involvement of communities, their leaders. Along with economic purposes such as raising employment and output, tourism needs to be managed in order to ensure that it leaves a positive legacy for current and future generations. There is a need for a management approach that integrates the community's existing goals and management programs into a comprehensive and coherent framework. The planning should be adapted to the needs of local communities living within the territory of the given destination. Adapting or creating a strong community based vision for the future of the destination is a fundamental concept that needs to be considered for all destination management endeavours.

Tourism development stemming from a community is generally more successful than development set apart from a community. Even more so, tourism development which is not integrated with the community can be disastrous for many parts of the Danube Region. In order to achieve a community-led tourism, the practice of tourism planning needs to shift the focus from economic growth and marketing to community input. Consultative destination planning is needed where communities work together to share knowledge and ideas about creating a sustainable tourism destination, defining what they can offer, and agreeing on what their values are. These values should be expressed in the tourism vision and brand. They should underpin decision making in other destination management aspects. Community vision and values have to be detected and addressed. This tourism presents a way to provide an equitable flow of benefits to all affected by tourism through consensus based decision-making and local control of development. Furthermore, community based tourism should focus on the involvement of a community in the planning process to guide the intensity and location of tourism development. Once the community have made these decisions then they will be in a position to own, operate, manage and control tourism development within their settlement. This approach is very much needed as large communities and regions lack sufficient such destination management schemes.

Cultural and creative sectors are important in terms of their economic output and employment. They also encourage innovation across the economy, not to mention the positive social impacts of

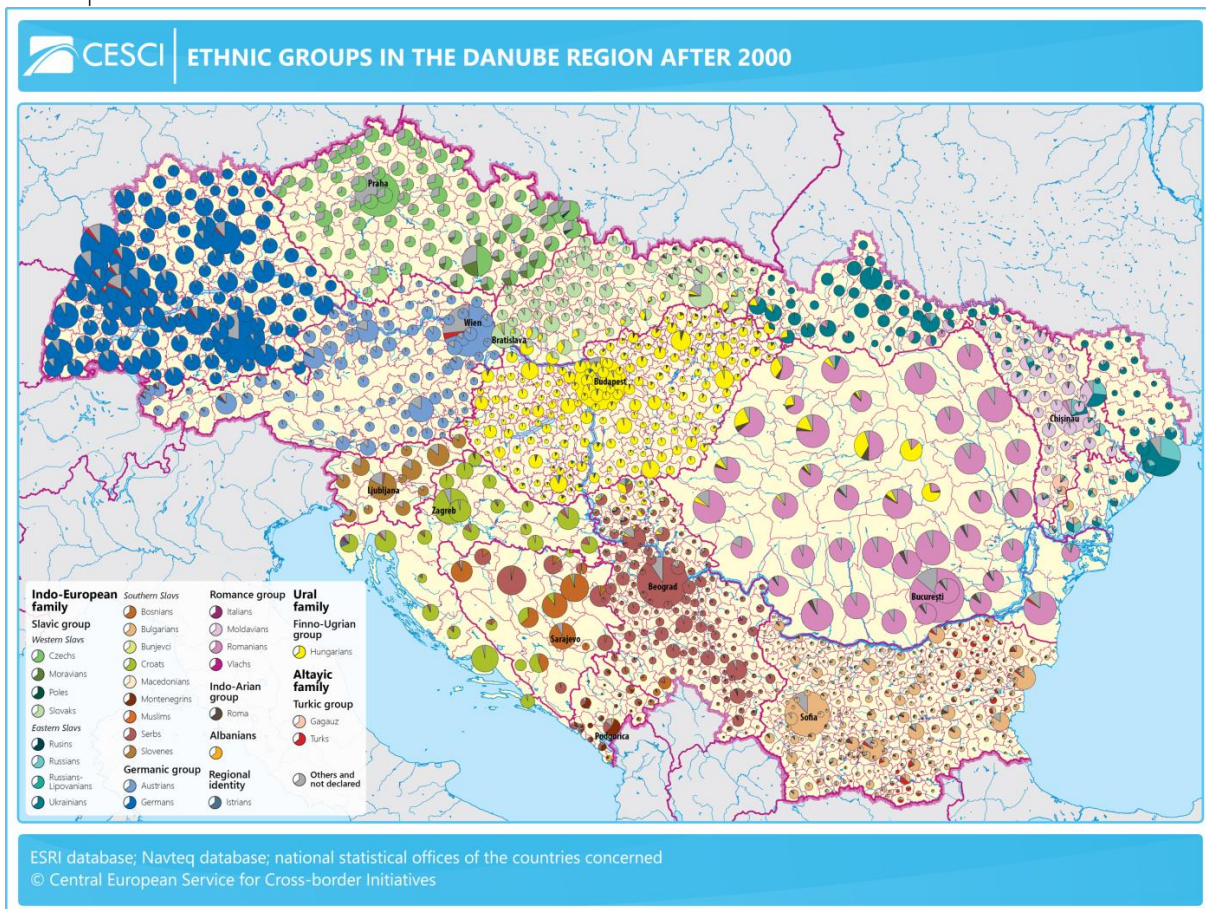


the sector, as well-being and health, education, inclusion, urban regeneration, etc. Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies (NACE R-U) sector gives 3.4% of the EU's gross value added and income. Group of countries in the Danube Region where the sector's share of the gross value added and income is above the EU average are Croatia (3.9%), Germany (3.8%) and Romania (3.7%). The share of the sector is moderate in the case of Slovakia (3.4%), Montenegro (3%), Serbia (3%), Hungary (2.9%) and Austria (2.8%). The economic importance of the cultural and creative sectors is relatively low in Slovenia (2.5%), Bulgaria (2.4%) and the Czech Republic (2.1%). In case there was an absence of recovery strategies, the downsizing of cultural and creative sectors would have a negative impact on cities and regions in terms of jobs and revenues.

The Danube Region is known for the historical coexistence of numerous ethnic, language and religious groups who often comprise of vulnerable groups to be better integrated to the regional societies. The heterogeneity of the population has remained significant up to the present, in spite of intensified internal conflicts and external interventions. One of the greatest development potentials of the Danube Region lies in its cultural diversity, which necessitates the elimination of barrier factors to inter-ethnic dialogues and the overcoming of past grievances in order to prevail. This requires dissolution of strong mental borders, identification of cultural interfaces and groups with intermediary role as well as continuance of successful initiatives and projects and creation of new ones. It would be a more constructive approach if in the future more emphasis would be placed on common interfaces facilitating the development of dialogue between the nations of the region. Owing to the new approach the situation of minorities is reassessed; their intermediary linking role comes into prominence. As a result, ethnic diversity could turn into an advantage in the cooperation of the countries in the Danube Region. Anti-segregation policies and the reintegration of minorities and other often disadvantageous people (e.g. Roma people, unemployed young people and employed elderly people) can significantly change the present situation. Instead of strengthening mental borders among nations and specific communities, the valorisation of the rich cultural heritage is a shared potential for the whole Danube Region. The valorisation of these joint resources including human capital can have direct economic and social impacts, such as the joint management of cultural heritage and tourism products as well as the development of creative industries by involving the most vulnerable groups of the given regions. Interethnic relations, as people get to know each other's values and beliefs, population could tear down xenophobic, nationalist voices and Eurosceptic political forces across the whole Danube Region regardless the geographic location. Also, multilingualism should be promoted in order to create a better communication and mutual understanding which would help in establishing long-term social relationships and cooperative communities within the Danube Region. Tourism and culture tend to indirectly support people-to-people type of initiatives, exchanges and media activities contributing to mutual learning, organisation and development of transnational communities and civic initiatives. Taking into account the impacts of such tourism and cultural developments, activities mean often an important first step in improving social cohesion along the borders. The sense of belonging can be strengthened along with creating new job opportunities in order to reinforce the population retention force in regions characterised by serious depopulation often as a result of being a non-inclusive, weakly innovative area that provide non-sufficient quality of life to thrive.



Considering social inclusion and economy, the Danube Region has been incorporating several regions with high share of population at risk of poverty. There is a strong correlation between the spatial distribution of the Roma communities and the people living in poverty. It is quite apparent that there is a strong social divide, which has a geographic dimension in the macro-region. Most of the regions battling with high poverty incorporate extensive rural areas with vulnerable communities such as elderly people or Roma. High risk of poverty, high share of Roma people and people with disabilities across the macro-region, and slow integration of the Roma, national minorities and migrant communities should be tackled. In reaching a more social Danube Region innovation in the field of tourism and culture with a focus on social integration can be a useful tool. By implementing social innovative initiatives such vulnerable groups can be a source of social development.



ISO1: A better cooperation governance

SO i. enhance institutional capacity of public authorities and stakeholders to implement macro-regional strategies and sea-basin strategies, as well as other territorial strategies

Considering ISO1 SOi enhances institutional capacity of public authorities and stakeholders to implement macro-regional strategies and sea-basin strategies, as well as other territorial strategies, it has to be highlighted that most of the countries, 14 exactly, cooperate in the frames of the

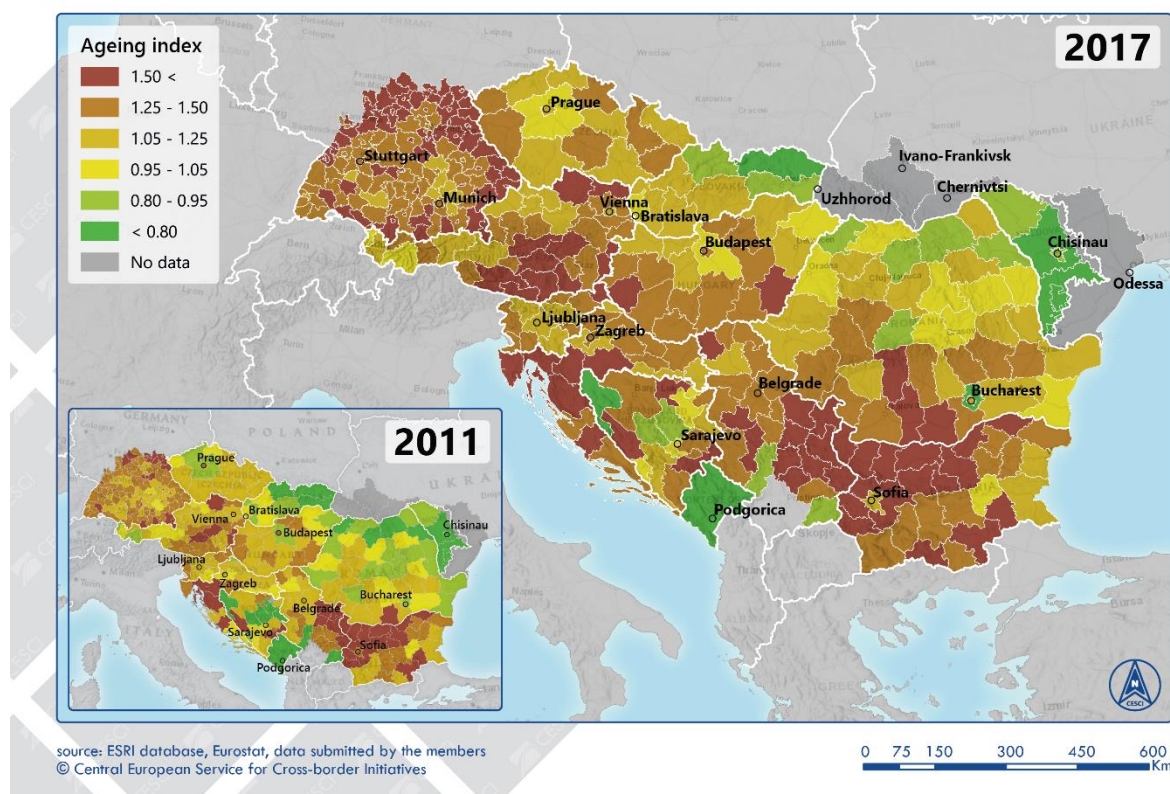


Danube Region compared to the other macro-regions of the European Union. The whole Danube space is suffering from its highly fragmented political and administrative feature with different roles and responsibilities given the participating regions being located in distinctive state models. This is a real hindering factor to cooperation and implies the need for better governance solutions and territorial strategies within the macro-region. There are significant number of challenges and needs that form functional areas and thematic fields to be managed by better institutional capacities of authorities and stakeholders. These could include cross-border hinterlands and urban networks, sending and receiving areas of internal (labour) migration, urban platforms and smart cities, ageing regions, and regions with weak accessibility due to major transport bottlenecks.

Owing to low fertility and high emigration one of the most common characteristic of the Danube Region is ageing. Excluding some north-eastern territories with historically high birth rates, regions inhabited by high share of Muslim and Roma population the whole macro-region has been getting older. The increase share of the elderly population compared to the young population has resulted in a state where there are almost no regions where the population under 15 years outnumber the population over 65 years.⁹ Ageing is a social phenomenon which has turned out to be one of the least selective across the macro-region; large areas regardless geographic location. Ageing has become a sever challenge in many countries, including the border regions of Serbia and Bulgaria for instance. In the most aging regions of Bulgaria, Serbia and Germany the indexes indicate that the elderly population is more than twice as numerous than the younger living in the most ageing part of the macro-region.¹⁰ The extreme level of ageing results in challenges which need to be solved in relation to population retention, local employment, social and health care services, silver economy since radical change in these demographics tendencies are not expected.

⁹ Regions with relatively young age structure include Prešov Region (0.73), Košice Region (0.8), Žilina (0.92) from Slovakia, Ilfov (0.77), Iași (0.83), Satu Mare (0.9), Suceava (0.92), Bistrița-Năsăud (0.93), Sibiu (0.95) and Vaslui (0.95) from Romania, Montenegro (0.79), Raška District (0.87) from Serbia, Brčko District (0.96) in Bosnia-Herzegovina and Szabolcs-Szatmár-Bereg County (0.96) from Hungary.

¹⁰ Regions with the highest ageing index are as follows: Gabrovo Province (2.45), Vidin Province (2.41), Kyustendil Province (2.22) from Bulgaria, Zaječar District (2.38) and Pirot District (2.09) from Serbia, furthermore Wunsiedel im Fichtelgebirge District (2.32), Baden-Baden District (2.3), Hof District (2.22), Kronach City (2.1) and Bayreuth City (2.07) from Germany.



Concerning migration patterns, it has to be noted that a large proportion of relocations takes place within the territory of the macro-region, though the directions and the results of migration are unbalanced. There are still strong spatial inequalities in terms of migration. Regions with positive migration balance are typically of two types of geographic areas; they are either the western(most) regions of the given countries or the whole Danube Region (e.g. Győr-Moson-Sopron County from Hungary, Timiș County from Romania, Istria County from Croatia) or capital regions (of Bratislava, Budapest, Bucharest, Vienna, Prague especially). Thus, there are huge differences in migration patterns within the Danube Region. In general, Germany and Austria has the highest share of regions with strong immigration, and the rest of the regions (except the capital regions) on macro-regional scope are an area with strong emigration. Germany, Austria and the Czech Republic stand out owing to the low number of regions affected by negative migration balance. Among the 20 regions with the highest positive rates only three non-EU-15 regions can be found (Ilfov County from Romania, furthermore Győr-Moson-Sopron and Pest Counties from Hungary). Almost all regions with significant immigration are in Germany.¹¹

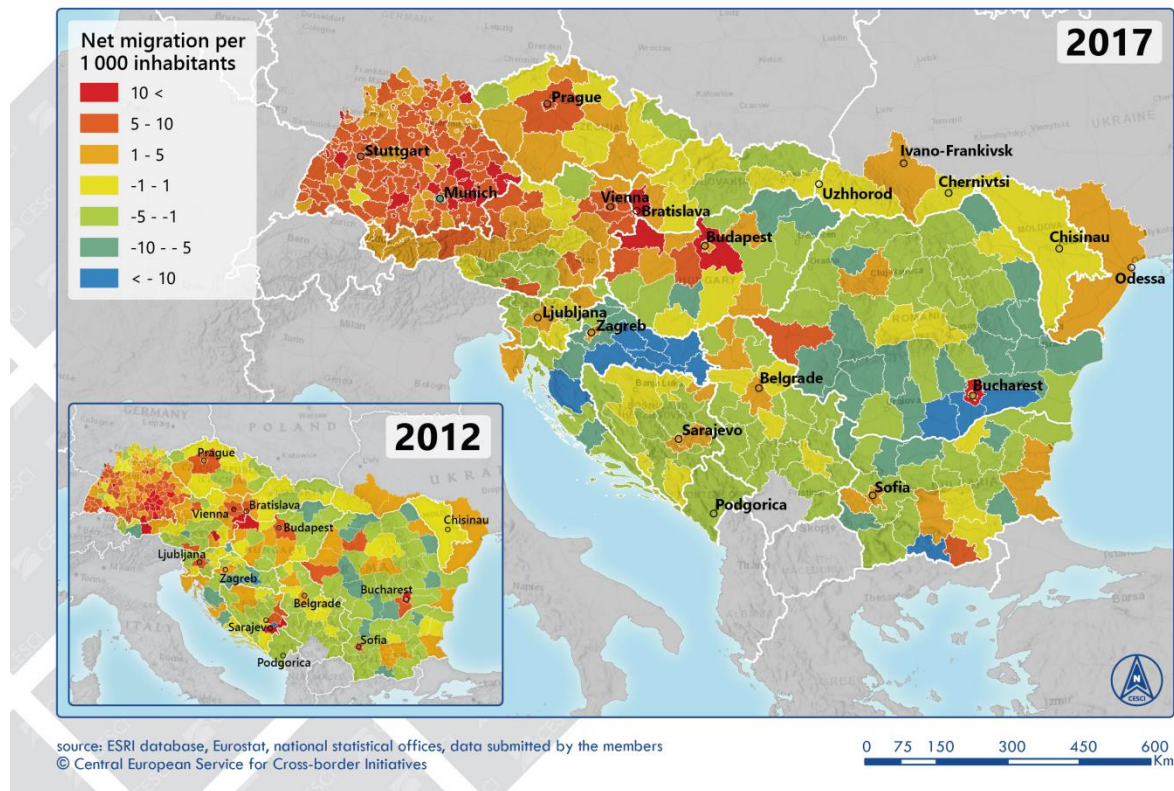
In contrast, large parts of Croatia, Romania, Serbia and Montenegro have to cope with strong emigration. Croatia is in the worst situation in terms of emigration, except for Teleorman County from Romania and Smolyan County from Bulgaria all the worst performing regions are from

¹¹ The ten regions with the highest positive migration balance: Ilfov County (26.00) from Romania, Hof City (21.22), Bamberg City (19.41), Landshut City (19.25), Passau City (18.42), Schweinfurt City (16.12), Bayreuth City (15.79), Regensburg City (13.83), Baden-Baden (13.74) from Germany, and Pest County (13.54) from Hungary.



Croatia.¹² Migration processes have led to the intensification of spatial disparities resulting in decreasing economic and social cohesion among Danube Region states in many ways. Areas hit by strong emigration are experiencing huge population loss especially in relation to skilled labour and younger generations. Because of long-term emigration several extensive peripheries have been emerging on Europe's map characterised by low population retention force and weak economic structures. These all results in a massive depopulation and fast ageing as well as lack of qualified workforce capable of acting as the basis of prosperity. On the other hand, in regions of high positive balance the integration of such large number of immigrants with various cultural and educational backgrounds (from war refugees and asylum seekers from e.g. Syria to economic and labour migrants from central and south-eastern Europe) can be challenging. The two different types of regions have different kind of challenges making the strengthening of the economic and social cohesion difficult across the macro-region. Since high inequalities in labour market, income, quality of life is going to be present in a long run, it is of major importance to tackle the challenges deriving from strong migration flows and changing population distributions. The majority of the macro-region has to tackle the intensifying westward and urban directions of migration. In the frames of the discussed movement of people both target and source areas are strongly interconnected, thus the management of the given flows cannot be separated from either population loss or population gain regions.

¹² The ten regions with the lowest migration rates: Vukovar-Srijem County (-34.69), (-23.16), Sisak-Moslavina County, Brod-Posavina County (-25.3), Požega-Slavonia County (-25.87), Virovitica-Podravina County (-20.32), Osijek-Baranja County (-19.02), Teleorman County (-12.86), Lika-Senj County (-11.98), Bjelovar-Bilogora County (-11.13), Smolyan County (-10.17).



There has been an increasing urban-rural divide in many aspects of cohesion (functions, economic growth, employment etc.) within the macro-region. When it comes to the degree of urbanisation, the Danube Region has been characterised by a strong urban-rural duality. This polarisation of the 'Danubian' settlement network has emerged in the form of two distinct development paths, which is reflected in various elements of economic and social cohesion as well as calling for different transnational cooperation needs. This divide can be detected and is having demographic, migration, economic competitiveness, and environmental, etc. implications. Generally, urbanised areas have a wide range of public and private functions to offer, are often the core areas of socio-economic development as engines of growth, characterised by population increase, and are also targets to major business investments and migrants (including highly skilled and younger/active age population, labour and student migrants from the Danube Region), and have special challenges such as pollution, traffic congestions, urban sprawl, challenges of social integration etc. Rural areas are often having a small range of functions for public provision, emigration of intellectuals, young generations, depopulation effects, less educated, but more ageing and deprived population thus weak competitiveness as well as accessibility, less favourable situation for economy of scale and deploying new functions and institutions.

Urbanisation is not necessarily connected to administrative boundaries, and in the last years urbanisation processes created even more towns and suburbs. In the last decade the urbanisation not just increased but reinforced twin cities (e.g. Komárom and Komárno, Slavonski Brod and Brod, Gmünd and České Velenice, Ruse and Giurgiu), created transboundary suburban areas (e.g. around Bratislava or Košice), transboundary (polycentric) metropolis regions as well (e.g. around



Vienna, Bratislava, Brno and Győr) with special problems and potentials. Nowadays, transnational answers should be given to the challenges of the much urbanised as well as to the largely rural areas of the macro-region owing to many similarities and emerging urban structures across the borders.

The macro-region is covered by lots of urban hinterlands of transboundary (or even transnational) character overlapping each other and the state borders. Monocentric inland urban networks can be supplemented by the other side's urban centres. The state borders that became more open as a result of European integration created an opportunity for networking of bordering settlements that in many cases had been almost hermetically separated from each other for decades. The spatial organizing power of cities can be re-established by organizing transboundary metropolitan areas, agglomerations, twin cities and town twinning cooperation. The possibility of integrated management of centres/catchment areas on either side of the border created new urban development areas and challenges. With the transformation of spatial organization, the provision of public services and other central functions of the cities will result in newly strengthened types of functional urban areas and settlements. The coordinated development of urban functions based on joint and complementary features and the management of the centres and their hinterlands creates a new situation in terms of international city competition. The functional effects of urban agglomerations are crossing administrative boundaries especially in the 'Danubian' urban space which is fragmented by multiple state borders. Thus, encouraging transnational cooperation between municipalities in functional urban areas separated by state borders should be supported. Due to the transboundary features of the urban areas common policy co-ordination is required for the planning and operational efficiency of these zones and functional developments (preparation of integrated development plans, joint transboundary management and governance).

The topic of Smart City has emerged and became a relevant field of urban development policies as IT advancement gained new impetus and the matter of environmental and economic sustainability has also gained more importance. However, within the macro-region smart solutions have been introduced more comprehensively mostly on the very western part of the Danube Region. In the majority of the major cities sporadic, dot-like developments have been carried out. Based on many different rankings, German and Austrian cities are among the "smartest" ones (e.g. Vienna, the 12th among top smart cities in the World), while Romanian, Bulgarian, Slovak and Hungarian cities are performing the worst in general analysing EU Member State cities. There is only Vienna among metropolis governments from the macro-region which has really started implementing smart solutions and methods in the frames of a comprehensive elaborated strategy. Apart from Vienna, little has been put into practice, and none of the major cities made it to the TOP50 smart cities in the World. In the frames of networking smart city solutions could be shared, and a better coordination and management of urban services and infrastructure can be targeted for achieving a better quality of life for the citizens.

Generally speaking, on the western part of the macro-region successful and efficient transboundary development and management models have been introduced in the very last decades to support joint solutions (e.g. in the case of The Upper Rhine Area, Trinational Eurodistrict of Basel) of which Eurodistrict Strasbourg-Ortenau has been of EU level importance (see the easing of legal and administrative obstacles to cross-border transport between the two



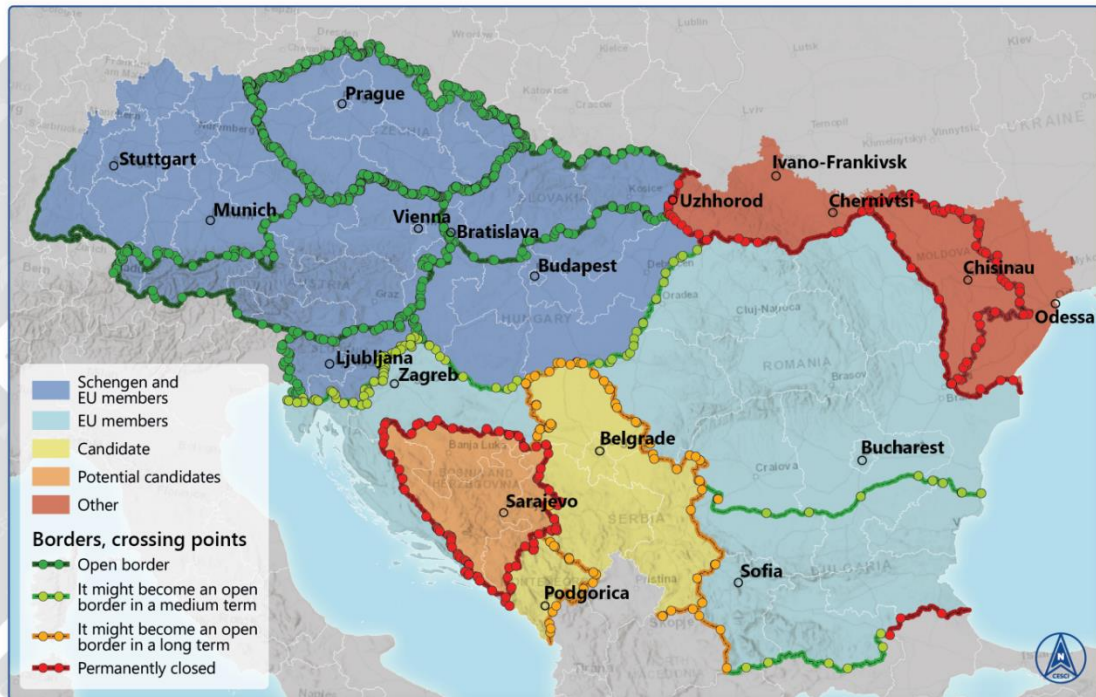
cities too). By supporting smaller and middle-sized urban centres and their functional urban areas poly-centrism and a more balanced distribution of central urban functions can be maintained across the macro-region. It requires urban development policies which support transboundary developments, institutionalisation and knowledge sharing in the field of settlement networks.

Integrated urban-rural governance models could consider accessibility aspects and transport bottlenecks since the different forms of cooperation often tend to include transport-related topics as well as it was discussed above. The lack of sufficient cooperation, missing forms of governance and planning has led to extensive areas of weak accessibility within the Danube Region. There is a need for capacity building with regard to transport bottlenecks in particular, for institutional and public stakeholders that can possibly cover certain fields of transport from public transport system solutions to the actual inter-institutional cooperation of public bodies and authorities in the field. There is still a lot to do in enhancing capacities of the relevant stakeholders in eliminating major hindering bottlenecks because of e.g. missing cooperation forms and skills, planning and consultation methods, institutions.

To conclude, weak governance of transnational, transboundary territories with distinct processes of emerging functional urban areas and urban-rural discrepancies, depopulation, ageing, brain drain etc., missing institutionalisation calls for capacity building for public authorities as well as the development of e-governance and long-term territorial governance structures. Multi-level governance and capacities have largely been missing to efficiently observe, initiate project and institutional cooperation and governance forms in order to better address such spatial phenomena having transnational character. There is a need for the establishment of vertical and horizontal governance models, new institutions and new networks of already existing institutions and capacities considering governance tools in order to tackle major cross-sectorial territorial challenges of the macro-region.



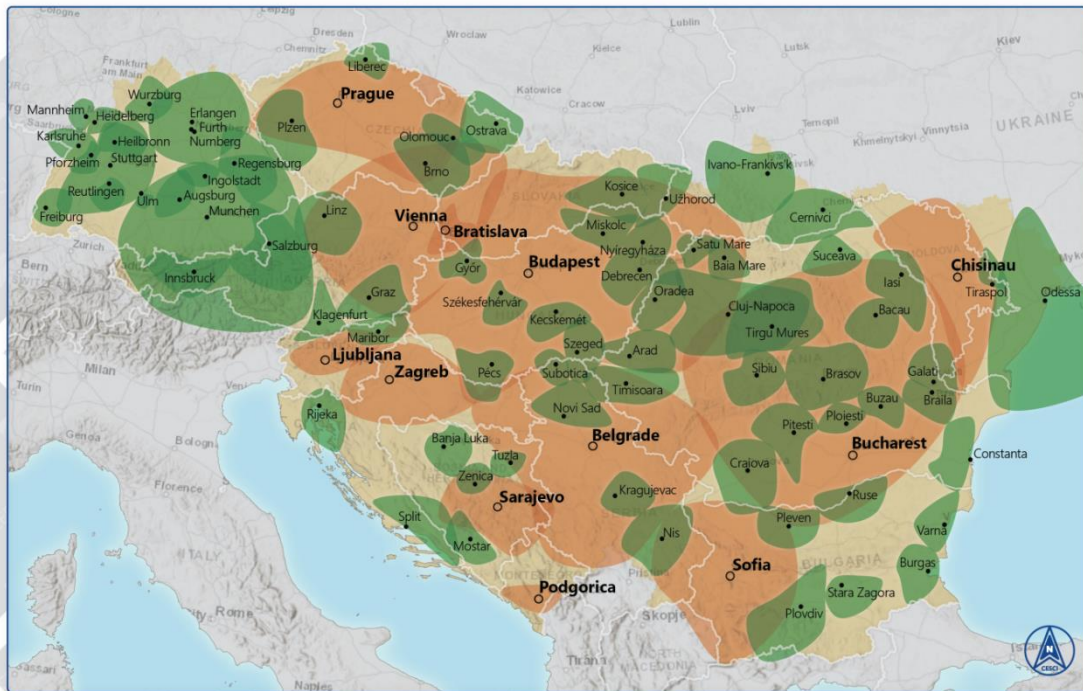
Status of the borders in the Danube Programme Area



source: ESRI database, data submitted by the members
© Central European Service for Cross-border Initiatives



Theoretical hinterlands of the main- and subcenters (100 000 inhab.<) of the Danube Region in relation to their competing center, determined with the Reilly formula



source: ESRI database
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Justification for the selection of policy objectives and the Interreg specific objectives

Here the document contributes to the justification of only those specific objectives which were chosen by the Task Force, in line with the results of the Territorial Analysis and the findings of the Stakeholder Analysis. All of these specific objectives are needed and relevant in order to make the programme able to contribute to the above described territorial objectives of Danube Transnational Programme.

In the followings the descriptions are providing more evidence on the selection and revealing some related types of possible actions.

PO1: A smarter Europe

SO i. developing and enhancing research and innovation capacities and the uptake of advanced technologies

Justification for selection

The majority of the Danube Region is still considered as a technology-follower area, and characterised by large gaps between the old and the new Member States as well as the associated countries in relation to innovation ecosystem. This is reflected in indicators including GERD, expenditure on RDI, RDI share in GDP, patent applications, share of ICT in employment.

The Danube Region consists of both RDI leaders and followers, which gives potential to breaking down the hindering factors in knowledge production and transfer. The macro-region is a mix of the most innovative regions of Europe including Austria (GERD: 1279.6 EUR) and Germany (1121.7), the “transition zone” of East-Central European countries (Slovenia 393.4, Czech Republic 280.8, Hungary 139.5, and Slovakia 118.1) and economies with low investment in knowledge and technology advancement (Bosnia and Herzegovina 9.4, Ukraine 10, Montenegro 20.6, Romania 41.4, Serbia 43.6).

Considering technology generation, based on the data dashboard of Advanced Technologies for Industry¹³ apart from Austria (average value of all advanced technologies: 41.0) and Germany (89.0), all the EU countries within the Danube Region are lagging behind compared to the EU27 average (34.0). The only country with relatively high value is the Czech Republic (19.0). In many fields of advanced technologies Germany and sometimes Austria and the Czech Republic (e.g. in relation to Robotics) perform better than the EU average exclusively, from advanced materials to Augmented/Virtual Reality. The technology gap is even wider in favour of Germany in relation to

¹³ Source: <https://ati.ec.europa.eu/data-dashboard/overview>



certain fields, e.g. mobility technologies. With regard to mobility only Germany (34.53) exceeds the value of the EU level (14.1).

The uptake of innovative technologies is moderately slow. The level of adoption of all studied advanced technologies¹⁴ is very low in Romania (9.0) and Bulgaria (7.0), and low in Hungary (16.0) and Slovakia (20.0) taking into account the Member States. Only the level of Germany (35.0) is above the EU27 average (31.0). There are certain fields where some Danube Region countries have outstanding performance compared to the EU average: Slovakia and Croatia in robotics, Austria, Germany, Croatia and Romania in photonics, Austria, Germany and Slovakia in advanced materials, Romania, Austria and Germany in Artificial Intelligence, Hungary, Austria, Germany, Slovakia and Czech Republic in security, Romania, Slovakia, Croatia in connectivity, Germany and Croatia in cloud computing, Slovakia, Croatia and Germany in the Internet of Things, Austria, Germany, Croatia and Romania in augmented/virtual reality, Austria and Germany in nano- and microelectronics, Germany in industrial biotechnology, Croatia in blockchain, Romania in Big Data.

With regard to technological uptake an important factor is collaboration that reflects the level of connections should be taken into account. The average values exceed the EU average (33.0 statistical clusters in the country) in relation to Slovenia (43.0 clusters) and Austria (68.0 clusters). Regarding specialisation in clusters for emerging industries Germany (446 number of statistical clusters in the country), Czech Republic (54), Romania (50), Austria (38) and Hungary (33). Based on per capita values Czech Republic, Austria and Slovenia stand out from the Member States of the Danube Region in terms of innovation clusters. In relation to international co-inventions the share of them is high in Montenegro (50%), Serbia (50% in 2016), Bosnia and Herzegovina (44.4% in 2016), Slovakia (47.65%), Croatia (38.03%), the Czech Republic (33.41%), Hungary (33.17%), Romania (33.15%) and Bulgaria (32.84%) in particular. It shows that these generally smaller countries in terms of population or innovation capacities rely heavily on transnational connections. The innovation cooperation is strong in Austria (51.9%, the share of firms within manufacturing cooperating with other on innovation) and Slovenia 48.8%, while the share is very low in Bulgaria (17.2%), Serbia (18.8%), and still low in Germany (23.6%) and Hungary (27.6%).

Considering employment in ICT, compared to European-scale changes, the Danube Region exceeded (increase by 0.31% point between 2008 and 2018) the growth of the EU15 (increase by 0.26% point) but failed to catch up with the development pace of the EU28 (0.36% point). The reason behind this is the low advancement of employment in the ICT in non-Member States of the macro-region in particular.

Thus, mostly the westernmost economies are well performing with regard to the European average level of RDI, while the latter group of countries are performing weakly in relation to effective RDI as well as the efficient and fast uptake of technologies. Knowledge-intensity shows large territorial differences, while there are uncoordinated profiles and capacities, overly concentrated RDI activities. There are technology champions, innovative regions mostly on the western half of the macro-region with sufficient human and infrastructural resources, well-

¹⁴ Advanced materials, nanotechnology, micro- and nanoelectronics, industrial biotechnology, photonics, advanced manufacturing technology, robotics, internet of things, artificial intelligence, security, connectivity, cloud computing, blockchain, big data, augmented reality, mobility technologies.



functioning inland, national systems. These countries and region are able to attract skill workforce and capitalise from brain-drain to create and adapt new technologies. On the other hand, several other regions are lagging behind since they lack such financial and human resources and have unfavourable infrastructural conditions to retain their workforce and to create an attractive labour market and RDI environment. This one-sided, unbalanced situation can be overcome by joint technology generation and adaptation solutions, transnational connections among firms and other stakeholders. The competitiveness could be enhanced by ability development to allow both types of stakeholders to enter into new forms of collaborations on macro-regional level. The combination of different resources could lead to new suppliers, clients, innovation clusters, joint products and services in the field of advanced technologies. The Danube Region is suitable for such international co-inventions and innovation cooperation. Consequently, the currently mediocre innovation and uptake performance of the macro-region can be improved with stronger and newly designed links. This could lead to a win-win situation as both parties of the macro-region can gain from transnational cooperation: the better performing states gain new impetus for their innovation generation processes, while the other regions can be helped by the transfer and uptake of the jointly created technologies.

Consequently, activities related to the uptake of advanced technologies and innovations represent a high potential in joint knowledge management and valorisation initiatives covering joint knowledge production, technology generation as well as transfer and technology uptake. Therefore, it is of great importance to better integrate partners of the whole innovation ecosystem to carry out joint development and uptake activities.

In the shadow of the COVID-19 pandemic the importance of bringing the partners' capacities together and the better combination of resources, infrastructure and skills has increased. Temporary a shrinkage in RDI activities may be witnessed as the budget for many stakeholders could be expected to decrease. However, there are certain fields (e.g. mobility technologies, AR/VR, cyber security services) in which an intensified and accelerated uptake process can be reached to create a smarter and more competitive Danube Region jointly.

Strategic frameworks

Considering the **EU Strategy for the Danube Region Action Plan** there is a strong connection with the actions of PA 7 Knowledge Society. The SO contributes to an increasing level and quality of network activities, strengthening the existing links and fostering new cooperation in the Danube Region. The key target group is the quadruple helix actors. The actions proposed will also encourage research and academia to participate in transnational clusters, and the better connectivity of R&D partners. The actions also cover Intelligent Traffic Systems, improvement of innovative low-carbon technologies, including smart solutions, application of various ground-breaking technologies in terms of transport and energy in particular. Furthermore, along with PA 7, there is a clear connection with PA 8. One of the most important actions described that is in harmony with the possible actions under this SO is called "To foster cooperation and exchange of knowledge between SMEs, creative industry, academia, the public sector and civil society in areas of competence in the Danube Region". It is a common goal of the Action Plan and the aforementioned actions of the Territorial Strategy to improve the framework conditions in



innovation and technology transfer in the Danube Region. Emphasis could be laid specifically on actions supporting the internationalisation of SMEs and facilitating interdisciplinary cooperation in order to create effective synergies for the full exploitation of applicable results in the specific thematic field on innovation and technology transfer. The objectives which are particularly supported by the possible actions of this document are connected to the support and improvement of the competitiveness by generating technology offers, technology requests and expressions of interest in the field of innovation and technology transfer, to the improvement of policy dialogue and public governance in innovation and technology transfer by promoting adequate policies and policy papers, to the establishment of Trans-Danube Digital Value Chains, to the improvement of Digital Innovations to SMEs, to the mapping and evaluation process/benchmarking of the collaboration of the clusters, and to the fostering of cooperation regarding Artificial Intelligence and Cyber-security.

Regarding **A new strategic agenda for the EU 2019-2024** developing a strong and vibrant economic base as one of the main priorities is supported by the actions of this SO. Designing an industrial policy fit for the future, addressing the digital revolution, artificial intelligence and the fragmentation of European research, development and innovation. New technological developments are to be supported here. The given SO also contributes to the priority Building a climate neutral, green, fair and social Europe by having an effective circular economy, embracing changes by green transition and technological evolution.

The possible actions are also in line with the **European Commission's priorities for 2019-24**. Especially the European Green Deal by creating a climate-neutral continent and by becoming a modern, resource-efficient economy as well as the priority named 'A Europe fit for the digital age' can be mentioned. The latter is in direct connection to the SO by supporting digital and new generation of technologies.

The interconnection between the **European Green Deal** and the SO is strong with regard to policy area for action named Mobilising industry for a clean and circular economy by encouraging the transformation of the industrial sector and all the value chains, promoting circular economy and new forms of collaboration with industry and investments in strategic value chains. Accelerating the shift to sustainable and smart mobility priority area should also be targeted by this SO by achieving sustainable transport system and infrastructure, reducing emissions.

Recovery and Resilience Facility is supported in being better prepared for the challenges and opportunities of the green and digital transitions. Among the flagship areas for investment and reforms clean technologies and sustainable transport can be highlighted along with the reskill and upskill (to enhance innovation growth). The SO supports both the green and digital investments and the uptake of new technologies in relation to energy, transport, industry and other sectors in accordance with the green and digital transition.

Territorial Agenda 2030 is connected to the SO by calling for strengthening of innovation capacity, the transition of Europe's economies towards a place-based circular and carbon/climate-neutral economy, fit for the digital age, sustainable mobility.



The SO support the idea of the **New Leipzig Charter on Sustainable European Cities** about efficient and carbon-neutral transport and mobility systems by new technologies. The transformation related to a green city requires investments in innovative and efficient technologies.

Related types of possible actions

- Support for technology generation and uptake of related technologies regarding smart, sustainable and green transport technologies and networks, as well as e-mobility solutions in relation to transnational transport networks and transboundary functional urban areas;
- Support for the uptake of advanced technologies in relation to smart infrastructure in Danube Region cities: integration of smart cities solutions in the planning, management and development of the Danube Region cities;
- Support for transnational circular economy collaboration forms, harmonisation of related policies and uptake of technologies in specific related domains (e.g. electronics and ICT batteries and vehicles, packaging, plastics, textiles, construction and buildings, food and nutrients);
- Support for other relevant and innovative, advanced technologies by transnational technology generation cooperation (e.g. in the field of nanotechnologies, advanced materials, advanced manufacturing and processing (production technologies) and health industry (e.g. establishing joint medicine research clusters/centres, usage of digitalisation and artificial intelligence in medicine/health care, analysing big data sets in medicine, biotechnology), optimising test bed functionality and synergies (e.g. by conducting joint tests at the test bed facilities with a view to defining, adopting and promoting best practices in utilisation of such infrastructures or to link capabilities of several test bed facilities and establishing common practices among them);
- Support for transnational uptake of technologies along thematic value chains: specialisation in transnational Danube Region clusters for emerging industries, support for a higher level and new forms of collaboration within the quadruple helix to encourage co-inventions and innovation cooperation.

PO1: A smarter Europe

SO iv. developing skills for smart specialisation, [just transition], industrial transition and entrepreneurship

Justification for selection

The macro-region consists of economies with many common and complementary features related to economic structure to be utilised jointly. At the same time, the Danube Region is still characterised by large gaps in relation to economic competitiveness and catching-up. This context gives plenty of opportunities for capitalizing on the comparative advantages for delivering



interventions at transnational level e.g. acting as a transit(ion) and interaction zone for trans-European business relations owing to its geographic position.

The macro-region builds up of diverse economies with different fields of excellence and specialisation. Large inequalities (calculated by the shares of the added value of the given activities in GDP) lie in all sectors including agriculture (e.g. Moldova 10.2%, Ukraine 10.1% and Montenegro 6.8% against Germany 0.7%, Austria 1.2%, Slovenia 1.9%, or the Czech Republic 2%) or services (e.g. Austria 62.7%, Germany 61.5%, Croatia 58%, and Moldova 53.3%, Ukraine 51.3% and Serbia 51% on the other hand).

Industry has larger proportion (28.25% in 2018) in the related economies compared to EU28 (21.9%). Unpreparedness for the challenges related to industry 4.0 can cause severe loss in competitiveness since many economies are heavily based on industry (e.g., Czech Republic 32.7%, Germany 28%, Slovakia 31.3%, Romania 29%, Slovenia 28.9%).

Slow transition is a common problem. Except for capital city regions mostly (e.g. Budapest, Bratislava Region 10.2% of total employment) hi-tech sectors are weakly developed (e.g. in Sud-Vest Oltenia 1% from Romania, Šumadija and Western Serbia 1.1%, Yugoiztochen 1.1% from Bulgaria).

Comparing the Danube Region to the rest of the EU, there has been a decreasing but still relevant gap in favour of the EU in relation to SMEs added value. The share of the SME sector is lower compared to both EU15 and EU28. Between 2011 and 2016 the share of SMEs in production increased from 53.4% to 53.8% of value added of enterprises, while the shares slightly decreased in the EU15 (from 58.4 to 55.5%) and EU28 (from 58.1 to 55.5%).

It is a strength that high share of certain services (tourism, transportation etc.), high share of industry can be detected in the macro-region at certain regions, and the reindustrialisation processes have been going on. However, despite of on-going positive structural changes in several national economies, the changes have been insufficient on macro-regional level: still weak technology and innovation intensive activities, low share of business services, products with low added value in eastern economies are all weakening the cohesion. Extensive growth only reinforced manufacturing and assembly industries in particular. Uncoordinated, many times weak smart specialisation initiatives can be witnessed in many states and regions. On macro-regional level the low added value of economic activities because of structural problems is a real challenge. There are still insufficient measures to take advantage of comparative advantages and economic peculiarities on a transnational level to support more efficient catching-up policies. Potential lies in better addressing economic cohesion across the macro-region by transnational cooperation in building on the specificities of the national and regional economies. Consequently, there is a need for (harmonised) smart specialisation strategies and policies in the Danube Region. The elaboration as well as the implementation of plans and activities regarding smart specialisation has been very different in the macro-region. The notion as well as the practical development and management of smart specialisation strategies vary across the Danube Region; e.g. in some countries the regions have reached certain fields of excellence, while in other countries the processes and structures even on national level have just been developed. Thus, cooperation with special focus on SMEs is necessary. The support for transnational alignment of S3 strategies to reach better



synergies is of great relevance for the macro-region of so varied capacities and economic fields. While the westernmost countries have gained more experience in regional and international platform and other forms of alliances with this regard, mostly the Balkan and eastern states have less knowledge and best practices. For transnational cooperation there are various priorities from agricultural innovation through advanced technologies in the vehicle and other machine industries to ICT services where the identification of strategic areas for intervention can be done on the level of the Danube Region.

Weak entrepreneurship is reflected in that while in the EU28 47.6 SMEs per 1000 inhabitants are operating, the Danube Region had 39.2. The share of the SME sector in the value added of enterprises (53.8%) is lower compared to EU28 (55.5%). Except for Germany and Austria low proportion of enterprises are innovative in terms of organisation/marketing and product/process type of innovation. The share of innovative enterprises within the Danube Region is below the EU average.

Strategic frameworks

The related possible actions of this SO cover the objectives of the **EU Strategy for the Danube Region Action Plan** regarding contribution to an increasing level and quality of network activities, strengthening the existing links and fostering new cooperation as well as to the implementation of Smart Specialization Strategies in all Danube countries. The related actions of the given SO support the strengthening of cooperation among universities, research organisations and SMEs in the Danube Region. It is important to further promote, implement and make use of the smart specialisation strategies in the whole Danube Region. The action proposed agrees with the Action plan on that SMEs require access to scientific and applied research knowledge combined with innovation expertise. For successful technology transfer the transnational collaboration between research organisations and companies or among companies is crucial. Furthermore, entrepreneurial skills in the digital age should be improved. There is a strong connection with the objectives and actions of PA 8 in relation to the competitiveness of SMEs by technology and knowledge transfer.

Considering the **Commission priorities for 2019-24** there is a strong correlation with this SO with regard to An economy that works for people in particular. The actions of the SO are in harmony with the idea of strengthening small and medium-sized enterprises as the backbone of the EU's economy.

In relation to **Green Deal** the policy area called Mobilising industry for a clean and circular economy should be mentioned as an important part of the policy to be supported. The decarbonisation and modernisation of energy and resource-intensive sectors is essential. The creation of an industrial strategy supports just like the given SO supports the transition of all sectors, a process which is an opportunity to expand sustainable and job-intensive economic activity. Furthermore, there is a strong connection between the SO and the Green Deal in fostering new business models and supporting SMEs to achieve a breakthrough. Ensuring just transition is of great importance, and the SO should contribute to the management of challenges in the transition



e.g. structural changes in business models, skill requirements. There is also the Strategy for smart sector integration that is supported via this SO.

Recovery and Resilience Facility, along with the SO, also supports actions to mitigate the economic and social impact of the Corona virus pandemic and make European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transitions. Both support digital and green investments to tackle the transition process. Among the flagship areas recharge and refuel (sustainable transport and charging stations), reskill and upskill have high importance, i.e. education and training to support digital skills that is in line with developing skills for smart specialisation.

Territorial Agenda 2030 similarly to the actions proposed under the SO recognizes areas in economic transformation and industrial transition. It also recognizes the relevance of actions to regions and urban agglomerations in economic transition. The actions are in harmony with the TA2030 by supporting transition to circular economy and the development of place-based industrial symbiosis processes. Smart Specialisation Strategy (S3) platforms are facilitated by both the TA2030 and the related actions of the SO. The actions proposed agree upon the need for smart specialisation strategies that can play an important role in the economic transition. Regarding the 4th industrial revolution public authorities and decision makers need to constantly innovate and engage in stakeholder dialogues to prepare for transitions and to shape policies effectively.

Related types of possible actions

- Enhancing cooperation related to entrepreneurial skills in advanced technologies, industries of high Danube Region importance (i.e. owing to social impacts, market needs) to better combine existing capacities and competences;
- Building cooperation structures to obtain innovation capacity needed to be competitive at regional and EU level, identify niches within the EU market and become attractive as a partner within the Danube Region or towards other EU regions;
- Establishing platforms enabling transfer of knowledge and skills and building inter-regional synergies for the development of regional smart specialisation strategies with a special focus on the involvement of entrepreneurial actors and existing networks in discovering and exploiting promising areas of specialisation;
- Setting up and piloting measures for regions allowing for exchange of experience on implementation of smart specialisation strategies, e.g. networking of regions specialised in the field of industry 4.0 and related professional skills, support for related knowledge exchange between model regions and regions lagging behind in terms of elaborating and implementing industry 4.0 planning schemes.



PO2 A greener, low-carbon Europe

SOii. promoting renewable energy

Justification for selection

There are several factors that support the promotion of renewable energy.

All power systems are based on fossil fuels which reach at least 60% in each country. The efficiency of thermal power stations is low since only Austria (64.6%) surpasses the EU average (50.5%) significantly.

The energy dependence in several countries is higher than the EU average (53.6%), such as in Germany (63.5%), Austria (62.5%), Slovakia (59%) and Hungary (55.6%). Apart from Slovenia (-2.8% points) and Austria (-2% points) the rate has not decreased notably, or even increased between 2012 and 2016.

The share of renewables in gross final energy consumption is low, and has never reached 50% in any countries. In the majority of the countries the share was stagnating (e.g. Austria +0.2% points, Bulgaria -0.3% points) or significantly decreased (Montenegro -3.7% points, Hungary -2.9% points). Increase worth mentioning occurred only in Germany (3.1%), Slovakia (1.4% points), and the Czech Republic (1% points). Notable shares can be mentioned in Montenegro (40%), Austria (32.6%) and Croatia (27.3%), while in Slovakia (11.5%), Hungary (13.3%), the Czech Republic (14.8%) and Germany (15.5%) renewables play minor role compared to fossil fuels and nuclear energy.

There is a huge variety in the energy mix of the macro-region by region and source. Biofuels offer more than 50% in all countries except for Germany (36%, while EU28 average is 49%), and represent the highest rates in Hungary (87%) and Ukraine (79%). Hydropower (EU28 11%) in Serbia (41%), Austria (34%), Bosnia and Herzegovina, Slovenia (32% each) and Montenegro (29%) is by far the second most utilised source. Wind, solar energy, municipal waste and geothermal energy are less preferred, but altering Danube Region countries have specialised in them.

Considering that heating and cooling was responsible for nearly half (45.4%) of the gross final consumption of energy in the EU27 in 2019, the heating and cooling sector plays a key role in decreasing GHG emission. The share of the heating and cooling sector in consumption was particularly high in the case of Moldova (57.9%), Romania (54.1%), Slovakia (54.0%) and Hungary (52.3%). Fossil fuels (natural gas, coal etc.) that are currently used in the largest proportion for heating have significant GHG emission, not to mention their local air pollution effects. Despite of moderate growth in recent years the share of renewables in the sector remains low (22.1% in the EU27), especially in Germany (14.1%), Hungary (18.1%) and Slovakia (19.7%). Increasing the share of renewables still has great potential, and it is essential to improve the energy efficiency of households in order to reduce the amount of household energy consumption per capita (KGOE), which is above the EU27 average (549) in the case of Austria (734), Germany (667), Hungary (595) and Croatia (562).

As a result of underutilised renewables, energy dependency, lack of high energy safety characterises the Danube Region that still heavily relies on fossil fuels. Thus, the shift towards renewables is crucial.



Strategic frameworks

The possible actions in the frames of this SO are in line with the **EU Strategy for the Danube Region Action Plan** especially with regard to PA 2 Sustainable Energy. It is important to further explore the sustainable use of renewable sources, to increase the energy independency and to promote and support multipurpose cross-border RES utilisation projects. It is of great importance to use renewable energy in buildings and heating systems. Furthermore, supporting alternative fuel based local transport system and ensuring sustainable transport systems are also guaranteed by the actions outlined.

The interconnection between the **European Green Deal** and the SO is very strong in relation to the policy area called Supplying clean, affordable and secure energy. The actions here contribute to the goal of no net emissions of greenhouse gases in 2050. Consequently, there is a clear need for energy efficiency. Based on the document and the related actions of the SO a power sector must be developed that is based largely on renewable sources. The smart integration of renewables, energy efficiency and other sustainable solutions across sectors will help to achieve the goals of the SO. Accelerating the shift to sustainable and smart mobility is another important area to support by e.g. sustainable alternative transport fuels. The reduction of transport emissions is needed, and the SO can also contribute to this achievement. Road, rail, aviation, and waterborne transport will all have to contribute to the reduction. Also there is strong cohesion with the area of building and renovating in an energy and resource efficient way. Thus it is important to decrease the emissions from buildings and establish a platform to design and construct buildings in accordance with the mentioned goals.

Recovery and Resilience Facility just like the given SO supports green transition and environmental sustainability. There is a chance to commit to green priorities, environmental objectives in relation to flagship areas of power up (generation and use of renewable sources) and renovate (energy efficiency of buildings). Future-proof clean technologies should be frontloaded and the development and use of renewables should be accelerated. The Facility encourages the improvement of the energy and resource efficiency of public and private buildings.

Territorial Agenda 2030 is connected to the SO by secure, affordable and sustainable energy. Renewable energy should be seen as a sustainable and resilient solution to support to reach a healthy and green Europe. Increasing energy efficiency and diversifying energy production are important measures to take.

Related types of possible actions

- Strategy making and policy support in reaching low-carbon energy production and supporting the decrease of energy dependency in countries and regions most dependent on fossil fuels and resources from external (non-macro-regional) energy markets;
- Capacity building for sustainable energy planning especially in regions with high share of non-RES energy production or consumption;
- Support for harmonised actions and transnational cooperation in the buildings' heating and cooling sector (e.g. decreasing carbon intensity in heating, RES integration in building sector combining it with storage and charging solution systems for e-mobility) in countries



and regions where heating and cooling sector has outstanding share in energy consumption;

- Reduction of GHG emissions in the transport sector: introduction of alternative fuels and new technologies (e.g. electric vehicles) in transportation, support shift to more environmentally friendly means of transportation, especially in public transport and freight transport, coordination between energy providers in relation to infrastructure elements of Danube Region relevance;
- Joint planning of infrastructure for the utilisation of renewable energy sources with the facilitation of knowledge exchange between regions of the lowest and the highest share of RES in the energy mix;
- Development of incentive policies to encourage the renewable energy production based on the Danube Region available resources.

PO2 A greener, low-carbon Europe

SO iv. promoting climate change adaptation, and disaster risk prevention, resilience, taking into account ecosystem-based approaches

Justification for selection

The macro-region is greatly exposed to climate change, thus CC adaptation can be regarded as a horizontal issue that should be taken into consideration in any actions within SO iv. The transnational Continental and Carpathian/Alpine Mountain bio-geographical regions covering multiple countries in the Danube Region both have to tackle with increasing extremities in relation to environmental disasters caused by climate change. Out of these, extreme amount of water as well as intensifying water scarcity, droughts are considered the main challenges.

Extensive parts of the Danube Region are heavily exposed to large floods. Owing to having both upstream and downstream areas with a transboundary character, the Danube Region experiences frequent floods risking large transboundary riverside areas. Neighbouring regions with high number of floods (over 16 between January 1985 and September 2019) are part of the catchment area of the Upper Tisa and the Dniester in particular. These regions incorporate the joint border areas of Ukraine (e.g. Zakarpattia Oblast), Romania (e.g. Maramureş County) Slovakia (e.g. Prešov Region), Hungary (Szabolcs-Szatmár-Bereg County) and Moldova. Other highly flood hazardous regions with extreme flood levels from the last ten years can be found on the Tisa and its tributaries, the Sava, the Mura-Drava as well as the Danube river. There is a need for a more efficient coordination of river basin management with emphasis on flood risk, and joint actions in disaster prevention, forecast and response. Given the basin and transnational character of the river system within the Danube Region, apart from natural disasters such as floods, risk prevention, emergency response and disaster management especially concerning the water-related man-made catastrophes (e.g. cyanide, heavy metal or salt pollution) should also be better addressed. Climate change related environmental risks and disasters like droughts, forest fires or heat waves



are becoming more frequent issues season after season in many different parts of the Danube Region. Although these phenomena do not have transnational impacts, it is important to harmonise and standardise the preparation of response authorities and organisations and their related procedures at transnational scale for a more effective preparedness and response in case of emergency situations.

Strategic frameworks

Pillar 2 Protection the environment of the **EU Strategy for the Danube Region Action Plan** should be mentioned as the basis for the suggested actions of this SO. There is a strong connection with Action 6 Promote measures to adapt to climate change impacts in relation to water quality and quantity. Also there is a clear interconnection to PA 5 Environmental risks; the actions support objectives concerning the address of challenges of water scarcity and droughts, the support of the assessment of disaster risks in the Danube Region, the encouragement of actions to promote disaster resilience, preparedness and response activities. Thus, risk management plans for different climate-related hazards including floods, forecasting and risks management systems, joint preparedness activities of disaster response actors, risk reduction, establishment of minimum standards and joint procedures, harmonisation of climate change adaptation strategies are all supported in harmony with the Action Plan.

The interconnection between the **European Green Deal** and the SO is very strong. This is true in the case of the whole package. Work on climate adaptation should continue to influence public and private investments, including nature-based solutions. It will be important to ensure that across the EU, investors, insurers, businesses, cities and citizens are able to access data and to develop instruments to integrate climate change into their risk management practices. It is important to mobilise research and innovation to deliver change in climate adaptation. The actions should bring together a wide range of stakeholders including regions and citizens and initiate partnerships with industry. The Green Deal and the SO support new opportunities for monitoring of water pollution. Creating a toxic-free environment requires more action to prevent pollution from being generated as well as measures to clean and remedy it. It is a priority to boost the ability to predict and manage environmental disasters.

Recovery and Resilience Facility puts environmental sustainability in the forefront. The activities of the SO should protect the health and well-being of citizens from environment-related risks and impacts. Reducing pollution is also important.

Territorial Agenda 2030 is connected to the SO by increasing the resilience of all places impacted by climate change. Risk and disaster management as well as prevention measures are important to building resilient communities. The increased risks of droughts, floods and other natural and mixed natural and technical hazards call for place-based responses, cooperation and coordinated policies. Climate change mitigation and adaptation actions even can bring new development opportunities for places as expressed in the TA2030.

The proposed actions of the given SO are in harmony with **The EU Strategy on adaptation to climate** which is encouraging and supporting all Member States to elaborate and implement comprehensive adaptation strategies, to address gaps in knowledge about adaptation, to promote



adaptation and ecosystem-based approaches in key vulnerable sectors, all in order to ensure that Europe's infrastructure is made to be more resilient.

The SO in accordance with the **EU Floods Directive** which also supports the assessment and management of flood risks aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods. The Directive also encourages the preparation of joint plans and strategies e.g. river basin management plans, in order to achieve good ecological and chemical status, and for the sake of mitigating the effects of floods. According to the Directive, the causes and consequences of flood events vary across the countries and regions. Therefore, the SO is in line with the Directive which highlights the significance of river basin level cooperation, management and monitoring activities as well.

There is a strong interconnection between the actions of the SO and the **Danube Flood Risk Management Plan**, which provides tailored solutions towards flood protection, prevention and mitigation on a national level and the basin-wide level as well. Development of river basin management plans under Directive 2000/60/EC and of flood risk management plans under the Danube Flood Risk Management Plan are elements of integrated river basin management. The two processes therefore use the mutual potential for common synergies and benefits ensuring efficient use of resources.

Related types of possible actions

- Harmonised, jointly developed and tested tools, solutions and measures for climate change modelling, forecasting and vulnerability assessment on Danube Region / River Basin scale ensuring their application at policy and / or operational level;
- Joint strategies, solutions and pilots to strengthen preparedness and adaptive capacity of the disaster management organizations, volunteer rescue teams, the society, economy and nature to cope with the impacts of climate change (e.g. ecosystem services based solutions, urban heat islands);
- Integration of new research results into the climate change adaptation practice for different types of territories in targeted thematic fields (e.g. floods, droughts) and improving skills and competences for policy makers and stakeholders;
- Developing and testing new and updated, coordinated, harmonised, integrated strategies and tools on transnational river(basin) scale to prevent flood risks, or drought, (especially covering the great alluvial plains of Hungary, Slovakia, Croatia, Serbia and Romania) and to apply nature-based solutions;
- Elaborating harmonised, joint strategies, action plans, contingency planning, developing and testing monitoring and alert systems, decision support tools, improving operational cooperation, interoperability, institutional and technical capacities of emergency response authorities and non-governmental organizations to combat environmental risks such as flood, drought or accidental pollution of transboundary rivers especially related to flood prone areas of the Danube, the Tisa, the Sava and the Drava rivers, and other types of climate change-related natural disasters



- Developing and implementing regional level disaster preparedness activities and establish standardized minimum requirements for disaster responders in the Danube Region to achieve better and more effective transnational disaster response.

PO2 A greener, low-carbon Europe

SO v . promoting access to water and sustainable water management

Justification for selection

One of the basic joint features of the macro-region is that the Danube Region covers the water system of the Danube and its tributaries, i.e. the Danube Basin. There are shared water bodies and water catchment areas of transnational importance. Joint river sections, surface and underground water bodies also mean that both the quantity and the quality of such waters, e.g. contamination and water pollution or increasing water use, decreasing ground water levels, shrinking supplies across borders is a real threat that needs to be tackled jointly. Climate change is forecasted to affect both the quantity, as well as quality of transnational water bodies in the Danube River Basin that requires joint solutions. Regarding the chemical status of the Danube Region rivers, transnational intervention would be needed in the case of Tisza and many of its transboundary tributaries (Someş, Körös) in particular. The chemical status of the Danube is failing on long shared border sections in Serbia, Romania and Bulgaria. The chemical status requires joint measures on the east of the Budapest–Sarajevo line. There is a need for better coordination between water management and certain economic activities such as agriculture, navigation, hydropower and flood protection, which strongly influence water quantity and quality quite often.

Transnational coordination in the field of water supply management in the frames of a river basin management system is required in relation to groundwater. Such bodies cover almost the same size of area as Bulgaria (106 883 km²). As many as 11 groundwater bodies exist with a transnational relevance. The protection and usage of these water bodies are relevant since many of them act as major source for e.g. drinking, agriculture or industry. SOiv SOv and SOvii are needed to manage territorially integrated and therefore effective actions within transnational functional areas of catchment areas, river basins.

Strategic frameworks

The possible actions under this SO support the realisation of many objectives and actions set up in the frames of Priority Area 4 Water quality of the **EU Strategy for the Danube Region Action Plan**. Out of the objective's contribution the following ones are relevant here: preventing and reducing water pollution contributing to protecting water resources and safeguarding drinking water supply, enhancing climate change adaptation measures related to water quality. There is also a strong connection with PA 4 Action 7 with regard to enhance cooperation, increase and exchange knowledge and secure financing to water quality measures in the Danube Region.



Regarding the **Green Deal** A zero pollution ambition for a toxic-free environment is an important area. Digitalisation and optimising how water sources are used are supported by the related actions. It is of great significance to preserve and restore the ecosystems that provide essential services such as fresh water.

The **Recovery and Resilience Facility** also supports green transition in the field of water management. Both the group of possible actions and the Facility aim at improving environmental infrastructure, in particular for water management and reducing pollution to protect the health and well-being of citizens.

The **Territorial Agenda** together with the proposed actions of the SO stands for sustainably accessible water sources. Preserving water and managing wastewater are relevant fields of action here.

Both the **Danube River Basin Management Plan** (of ICPDR) and the group of actions of the SO support harmonised, joint monitoring and modelling systems. As part of the Plan, the Joint Programme of Measures identifies the basin-wide importance of measures as well as priorities regarding their implementation on the basin-wide scale. The implementation of the measures of basin-wide importance is ensured through their respective integration into the national programme of measures of each Danube country.

In accordance with the SO, the **Water Framework Directive** of EC supports the transnational cooperation to create river basin management plans. According to the Directive, Member States shall encourage the active involvement of all interested parties in the production, review and updating of the river basin management plans. In line with the proposed actions of the SO, the European Parliament and the Council shall adopt specific measures to prevent and control groundwater pollution, and to achieve the objective of good groundwater chemical status.

Related types of possible actions

- Developing and testing coordinated, harmonised, joint solutions, and tools for more effective monitoring and modelling to ensure harmonised data availability, as well as for improved management measures to prevent and mitigate water pollution or to restore good quality of water (e.g. because of hazardous and emerging substances pollution and insufficient level of wastewater treatment) especially considering transboundary waters of deteriorating or bad quality, taking also into account the possible impacts of climate change on the quality of water;
- Development, testing and/or implementation of harmonised strategies, management solutions and tools for improving sediment balance, or reconnection of adjacent floodplains/wetlands to improve water quality in transnational water bodies;
- Developing harmonised, joint monitoring and modelling system(s) in order to better understand the transboundary groundwater systems of Danube Region Basin;
- Defining joint strategies and harmonised measures, elaborating and adopting innovative solutions in relation to water exploitation and protection ensuring balanced use of water, taking also into account the impacts of climate change for future water demand



- Regional/local water planning approaches with regard to better management practices in cooperation with water treatment and agriculture particularly in relation to regions with low share of water treatment or high level of water use and diffuse pollution by the agriculture.

PO2 A greener, low-carbon Europe

SO vii. enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution

Justification for selection

The macro-region is a colourful mosaic of different regions resulting in high biodiversity, which is in danger also because of weak adaptation techniques to climate change that comes with e.g. invasive species or fragmenting habitats. All the 7 biogeographical regions within the Danube Region have a transboundary nature including Continental as the most widespread region. The Pannonian region unites many regions of Hungary, Slovakia, Czech Republic, Ukraine, Romania and Serbia, while Alpine covers various territories in Austria, Slovakia, Ukraine, Romania, Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro and Bulgaria.

Out of the 13 ecological regions formed in the Danube Region all of them are transboundary in character. Pannonian mixed forests are autochthonous in as many as 10 countries. Other ecological regions with strong transboundary feature include Carpathian montane coniferous forests (Czech Republic, Slovakia, Ukraine, Romania), Dinaric Mountains mixed forests and Illyrian deciduous forests (Slovenia, Croatia, Bosnia and Herzegovina, Montenegro) and East European forest steppe (Ukraine, Moldova, Romania, Bulgaria).

The high diversity is reflected in high number of transboundary protected areas from wetland habitats (e.g. the Danube Delta) to hilly and mountainous landscapes (e.g. Carpathians, Dinaric Alps, Czech Forest-Bavarian Forest). There are territories with significant natural values which could be protected transnationally due to their exceptional diversity shared by the neighbouring countries. Nature protection is challenged by the still low level of joint management and protection initiatives, furthermore by notable differences in the policies, competences, and human and financial resources of the given protected areas. Despite of some cooperation (e.g. Mura-Drava-Danube Transboundary Biosphere Reserve), borders are barriers to effective nature protection on transnational level.

Apart from the ecological corridors and regions, the protection of umbrella species is also of great significance. Therefore enhanced transnational cooperation is needed with regard to safeguarding the transboundary habitats of indigenous animal population including e.g. wild sturgeons.

The ratio of Natura 2000 areas in the Danube Region is significantly higher in almost all states compared to the EU average (18%) with the exception of Germany (15%), Austria (15%) and Czech Republic (14%).



Strategic frameworks

The possible actions listed are in a strong connection with the **EU Strategy for the Danube Region Action Plan**, with Priority Area 6 in particular. Out of the objectives especially improve management of Natura 2000 sites and other protected areas through transnational cooperation and capacity building, strengthen the efforts to halt the deterioration in the status of species and habitats occurring in the Danube Region, reduce the introductions and spread of Invasive Alien Species and maintain and restore Green and Blue Infrastructure elements through integrated spatial development and conservation planning. The actions in the frames of this SO facilitate the management and the ecological restoration of wetlands, the protection of umbrella species, freshwater species and their habitats, the promotion of ecological connectivity, the development of a common approach to define and determine ecological corridors, the knowledge sharing between environmental, transport and spatial planning sectors on spatial integration of green infrastructure, and the harmonisation of the strategic management documents between protected areas on river systems in accordance with the Action Plan.

The **European Green Deal** heavily relies on the area of preserving and restoring ecosystems and biodiversity. It is of paramount importance to halt biodiversity loss. In the frames of these and the related SO actions, all objectives, such as increasing the coverage of protected biodiversity-rich land and sea areas building on the Natura 2000 network, improving and restoring damaged ecosystems to good ecological status, increasing biodiversity in urban spaces should be supported.

Regarding the **Recovery and Resilience Facility** green transition also means that protecting and restoring biodiversity and natural ecosystems is a key to strengthening the carbon sink, boosting resilience and preventing the emergence and spread of future outbreaks. It is relevant to support environmental infrastructure in terms of protecting biodiversity. The protection and restoration by the related actions also envisages the creation of new economic opportunities in rural areas through more sustainable land use, just like in the Facility.

Territorial Agenda 2030 also highlights to need to combat the loss of biodiversity. The possible actions similarly to the TA2030 encourage integrated management taking into consideration different geographical specificities. They support the development of nature-based solutions as well as green and blue infrastructure networks that link ecosystems and protected areas in spatial planning, land management and other policies to increase the resilience. Implementing green infrastructure is proposed in the TA2030 as well. There is a need for actions concerning land and sea use, urbanisation, fragmentation of natural habitats and ecological corridors.

The proposed actions are in line with the **Leipzig Charter** in creating a more sustainable urban environment and designing related green infrastructure across the macro-region. The actions support green and sustainable cities.

The possible actions of the SO in line with the **EU Biodiversity Strategy for 2030** aims to ensure that Europe's biodiversity will be on the path to recovery. Protecting and restoring nature will require action by citizens, businesses, social partners and the research and knowledge community, as well as strong partnerships between local, regional, national and European level including transnational cooperation. The possible actions in accordance with the Strategy support the creation of a coherent network of protected areas. There is a need to do more for a Trans-



European Nature Network. Significant areas of carbon-rich ecosystems, such as peat lands, wetlands should be strictly protected. The actions are in line with the key commitments of the Strategy, namely with the integration of ecological corridors and the effective management of all protected areas, the definition of clear conservation objectives and measures, and the appropriate monitoring of such areas. Based on the Strategy it is important to set up ecological corridors to prevent genetic isolation, allow for species migration, and maintain and enhance healthy ecosystems. In this context, investments in green and blue infrastructure should be promoted and supported through macro-regional cooperation as well. The possible actions support the realisation of the EU Nature Restoration Plan focusing on restoring ecosystems across land and sea by reducing pressures on habitats and species. Out of the key commitments regarding the Nature Restoration Plan, the following can be highlighted considering the possible actions of the SO: at least 10% of agricultural area is under high-diversity landscape features; at least 25% of agricultural land is under organic farming management, and the uptake of agro-ecological practices is significantly increased; significant progress has been made in the remediation of contaminated soil sites; at least 25 000 km of free-flowing rivers are restored; there is a 50% reduction in the number of Red List species threatened by invasive alien species; the losses of nutrients from fertilisers are reduced by 50%, resulting in the reduction of the use of fertilisers by at least 20%. It is essential to increase efforts for soil ecosystems to protect soil fertility, reduce soil erosion and increase soil organic matter. This should be done by adopting sustainable soil management practices. Restoring freshwater ecosystems is also of great importance.

Related types of possible actions

- Improvement of ecological connectivity between habitats, nature protection areas along transnationally relevant ecological corridors of the Danube Region;
- Developing and testing harmonised strategies and joint solutions for planning green and blue infrastructure developments to improve and, or restore ecological connectivity along transnationally relevant ecological corridors;
- Actions in revitalisation and rehabilitation of water habitats along major transnational river (systems), exploring the potentials of restoration and reconnection of floodplains and adjacent areas;
- Establishing (institutionalised) management and cooperation network(s) of 'Danubian' transboundary ecological regions, protected areas including development and testing of harmonised management strategies and solutions, conservation and preservation techniques, toolkits, ensuring also sustainable use of natural resources;
- Joint, harmonised strategic planning and solutions for transboundary ecological regions increasing the resilience of habitats and ecosystems and their ability to adapt to climate change impacts by development of eco-friendly land use systems, landscape management and improved measures in soil protection activities;
- Coordinated, joint solutions in prevention and control of IAS and management of their priority pathways
- Safeguarding better habitat and population protection measures with regard to the Danube flagship (umbrella) species



PO4 A more social Europe

SO i. enhancing the effectiveness and inclusiveness of labour markets and access to high quality employment through developing social infrastructure and promoting social economy

Justification for selection

The Danube Region is affected by interconnected challenges of high (long-term) unemployment, profound income inequalities, intensifying westward labour migration and weak social economy. Employment is a field where increasing socio-spatial disparities in the Danube Region can be found causing severe weakening of cohesion.

The strong persisting north-west versus south-east divide in spatial inequalities on the labour markets results in depopulation, ageing, unfavourable economic structure, low population retention force in often transboundary peripheries. The Danube Region is a part of Europe where large shares of population are currently living abroad partly because of differences in employment conditions. Since high inequalities are going to be present in a long run, it is of major importance to tackle the challenges deriving from westward migration flows.

The pattern and the high level of long-term unemployment (e.g. in Severozapaden 76.8% from Bulgaria, Montenegro 75.2%, central Slovakia 67.1%, Sud-Vest Oltenia 56.7% from Romania, Southern and Eastern Serbia 55.1%) have not changed significantly, especially where vulnerable population is living. There is a great overlap between regions battling with extreme poverty and having vulnerable social groups such as the Roma. High unemployment is much more concentrated in rural areas.

In all countries the highest employment rates are for the most educated active age population, and are the lowest for the least educated. The biggest gap in every country can be found between the people with the lowest and the people with the highest educational attainment.

Alternative, innovative and part-time job opportunities, workplaces have been largely missing to support the inclusiveness of the labour markets. E.g. in the EU27 countries 5.4% of the employed persons between the ages of 15 and 64 worked from home on a regular basis in 2019. Among the countries of the Danube Region, only Austria (9.9%) and Slovenia (6.8%) had higher values than the EU27 average. In Bulgaria (0.6%) and Romania (0.6%) even the proportion of occasional home workers was negligible. In Montenegro (1.4%), Serbia (2.5%), Hungary (3.4%) and Croatia (5.0%) the proportion of people working from home was below the EU average as well. As a result of COVID-19, 36.5% of EU27 employees started working from home, but the transition rate to remote working was much more modest in Southeast European countries. Among the countries of the Danube Region, Romania (18.5%), Hungary (28.1%), Croatia (28.3%), Bulgaria (28.8%) and Slovakia (31.3%) were significantly underperforming in terms of the transition to remote working. Regarding remote working, less developed countries and regions with a great number of vulnerable people, performed less successful. Consequently, significant progress could be reached in the field of remote working in the context of just transition and social inclusion.



Social entrepreneurship is still not a commonly-used practice to find innovative solutions to employment and other social challenges. Taking into account the profound gaps and inequalities in employment, the methods of social innovation should be promoted across the macro-region. With the help of developing and adapting social innovation both the best and worst-performing regions can capitalise from knowledge generation and transfer in the form of alternative, new and digital forms of employment opportunities. Social innovation can create jobs for the socially disadvantaged people in many economic activities from healthy food to catering services carried out with the help of disabled persons. Innovative ideas can be turned into social enterprises, businesses with new employment option even for the ones most excluded from the primary and private labour market. Up until the depression due to the Corona virus extremely low unemployment rates caused a general labour shortage in areas such the capital city regions and regions with large manufacturers (e.g. in and around Prague, Bratislava or in relation to Central Transdanubia of Hungary). However, the pandemic has heavily hit regions where certain less crisis-proof activities had high shares such as tourist regions (e.g. Adriatic Croatia).

Strategic frameworks

The possible actions under this SO are in harmony with the objectives and actions of the **EU Strategy for the Danube Region Action Plan**, particularly with the ones under PA 9 People and skills. Consequently, the actions proposed support the contribution to a higher employment rate, the ensuring of inclusive education and training and promoting inclusive labour markets, equal opportunities and non-discrimination as well as the promotion of lifelong learning opportunities for all as well as the closer cooperation between educational, training and labour market and research institutions. Action 3 within PA 9 should be highlighted as one of the most directly supported part of the Action Plan in relation to the integration of vulnerable groups into the labour market. Empowering groups at risk of poverty to get access to the labour market is also supported by this SO. Promoting balanced mobility and brain circulation as well as reducing brain drain is another important objective that is formulated in the Action Plan too.

In the frames of the **European Green Deal** under mobilising industry for a clean and circular economy it is expressed that green transition is an opportunity to expand sustainable and job-intensive economic activity. The transition that is supported by many activities of the SO offers great potential for new activities and jobs. The Green Deal also puts emphasis on the protection of citizens and workers most vulnerable to the transition, providing access to re-skilling programmes, jobs in new economic sectors. It is a common goal of the SO and the Green Deal to enhance employability. The transition and the climate change-related challenges, including employment and labour markets, require a strong policy response at all levels. Therefore, it is important to protect workers most vulnerable to transition.

Regarding the **Recovery and Resilience Facility** the related actions of the SO also emphasize efforts aiming at preventing unemployment and social exclusion and at facilitating the adaptation concerning the labour market with regard to the green and digital transitions. It will also be important to foster convergence and improve the resilience of the regions in terms of employment, in particular to reduce territorial disparities. Since the Corona virus crisis affected the youth, the women, and the disadvantaged groups such as, low skilled people and people with



disabilities and people with a minority racial or ethnic background disproportionately, the related actions will facilitate their access to the job market. Ensuring quality employment and social inclusion is important which should pay special attention to disadvantaged groups.

The SO supports the **Territorial Agenda 2030** in creating critical mass for development and promoting synergies while diminishing fragmentation and negative externalities concerning labour markets. Just like the TA2030 the actions formulated contribute to a just Europe that offers future perspectives for all places and people. There is a need for sustainable digital connectivity and e-inclusion of people.

Related types of possible actions

- Joint coordination of policies and planning aimed at integrating vulnerable groups (e.g. elderly people, people with disabilities, ethnic minorities, rural people) to support inclusive employment (e.g. in regions having high share of people aged 60 or above, regions with 10% or more national minorities or people having citizenship of another Danube Region country, regions with significant Roma population, regions characterised as rural according to EUROSTAT classification);
- Support for designing innovation-led policies and planning to retain the skilled labour in favour of the Danube Region against exterior regions and a more sustainable (i.e. less one-sided, more mutually beneficial that do not cause major labour market unbalances in the source regions) migration of educated people within the Danube Region (e.g. by introducing transnational study and RDI programmes for the Danube Region involving more than two regions from the Danube Region, promoting best practices and models for alternative, atypical employment schemes suitable for the needs of the tertiary educated living in rural regions across the macro-region);
- Creation of an information system and support for the provision of information and data about life events connected to periodic and permanent migration of workforce within the macro-region caused by labour market inequalities between the eastern and western part of the macro-region involving border regions of at least three countries of the Danube Region from the group of countries of source region and from the group of countries of target regions of the transnational migration;
- Coordinated policies and strategies to tackle active ageing (e.g. by social entrepreneurship) in regions and cities of the macro-region affected by high level of ageing;
- Build-up of a transnational “Danube observatory system” about labour migration and its impacts on the cohesion of the Danube Region involving offices and bodies responsible for the related issues deriving from living and working abroad in a Danube Region country;
- Fostering cooperation between official bodies responsible for the labour market integration and the private sector interested in enhancing the inclusion of the people with disabilities in the labour market;
- Elaborating model projects for remote working with a focus on social aspects related to inclusiveness and access to employment opportunities for model regions in the Danube Region (with the involvement of best-performing and worst-performing regions, including remote, rural and sparsely populated areas e.g. mountainous regions);



- Restructuring and diversification of employment by the implementation of territorially integrated action plans for employment with a special focus on enhancing the spread of innovative and alternative employment structures targeting mono-functional (e.g. agricultural, industrial) regions where few sectors dominate the employment and labour market.

PO4 A more social Europe

SO ii. improving equal access to inclusive and quality services in education, training and lifelong learning through developing accessible infrastructure

Justification for selection

Exclusion from education and thus from the labour market and social mobility is a major challenge. Therefore, it is important to discuss the inclusiveness of education and learning in relation to students with different impairments (physical, mental, learning and mobility disabilities included). Enabling access, participation, and completion for disadvantaged learners in all levels of formal education should be an objective across many parts of the macro-region. In roughly a third of all EUROSTUDENT countries, 15% or more students indicate at least some limitation to their studies due to impairments. Student satisfaction with the support they receive varies greatly in the Danube Region countries as well, but in most countries students whose impairments are not taken into account are the least satisfied group of learners. The share of students indicating any type of impairment is significant in many Danube Region countries (high in e.g. Germany with 23%, Slovenia with 21%), so tackling with this issue can bring transnational added value especially in the form of knowledge exchange and methodological support among well- and worst-performing regions and institutions in particular. Learning disability (ADHD, Dyslexia) is or above the average of the European level in the Czech Republic (4%) and Slovenia (6%) from the macro-region (where data is available). Other long-standing health problems, functional limitations are highly affecting the student population in Austria (8%), Slovakia (7%), Croatia (6%), Hungary (6%) compared to the European average (5%).¹⁵ It can be regarded positive that especially in Austria and Germany studies¹⁶ and methods have been successfully carried out to better understand the difficulties many such students are forced to face. Studies have shown that financial and mobility constraints tend to hinder the access to and the quality of education for disabled people regardless their actual limitations. The ratio of early leavers (percentage of population aged 18-24) is high in the macro-region since from the western border of Hungary towards the east large cross-border areas are known for values between or surpassing 10-15%, while on the western parts the ratio is lower, averaging around 7.5-10%. A deteriorating tendency is observable especially on the eastern

¹⁵ Source: Social and Economic Conditions of Students Life in Europe. EUROSTUDENT VI 2016-2018. Synopsis of Indicators

¹⁶ For instance Deutsches Studentenwerk (2011): Beeinträchtigt studieren: Datenerhebung zur Situation Studierender mit Behinderung und chronischer Krankheit 2011. Vienna, Austria



regions, which usually contain rural areas with high share of disadvantageous population, but weak integration of children into the school system.

There are strong inequalities within the macro-region regarding vocational education and training. Generally speaking, the Austrian and German models and methods of VET could be used as a best practice across many regions of the macro-region. Especially the non-Member States perform weakly. Knowledge exchange and transfer thus could facilitate a better-functioning training system and training offer across the macro-region. The topic of VET is of great significance since in a few countries vocational education teaches a large proportion of the related population. By enhancing its capacities in creating a more inclusive and efficient system, a lot can be done in the whole educational and social sphere. The share of students in vocational education programmes regarding upper secondary level is high (EU27: 48.8%) in Serbia (74%), the Czech Republic (71.3%), Slovenia (70.9%), Croatia (69.2%), Austria (68.4%), Slovakia (67.8%), Montenegro (67.4%), Romania (56.2%) and Bulgaria (52.9%).

People with tertiary education are increasingly concentrated to capital regions (e.g. Bratislava 60%, Prague 57%, Bucharest 51% and Vienna 48% of population aged 30-34). In western Germany and Austria, but also Croatia and Slovakia to a lesser degree there are no regions with a ratio below 30%, while e.g. the majority of Romania or Bulgaria has less than 20% of population with tertiary education. The inclusiveness of higher education and the educational-social mobility is limited in many Danube Region countries. One of the main indicators is the share of first generation higher education students in the families, which is low in the more eastern and southern countries in general. The share of minorities and student with a migration background is also low in many countries and regions of the Danube Region.

While in the majority of the Danube Region the economy and the current business cycle would require more human resources in manufacturing, ICT and services, most students opt for studying business, administration and law, social sciences or journalism which results in labour shortage in critical fields simultaneously with unemployment among the highly educated young people. This results in skills mismatch. The non-harmonised educational offers with the labour market needs lead to increasing student and labour migration, brain drain, high unemployment rate among the tertiary education graduates. There is a loss of the skilled and young intellectuals because of unfavourable/non-established higher education at certain regions.

Apart from lower levels and earlier educational forms, adult education should also be addressed by the Territorial Strategy. The share of adult participation in learning compared to the EU28 (10.8% of the population aged 25 to 64 participating in formal and non-formal education and training in the last 4 weeks) in 2019 was relatively low in Germany (8.2%), the Czech Republic (8.1%), Hungary (5.8%) and Serbia (4.3%), and was very limited in Romania (1.3%), Montenegro (2.5%), Croatia (3.5%) and Slovakia (3.6%). Above average values can only be mentioned in the case of Austria (14.7%) and Slovenia (11.2%).

Another problematic field where the macro-region is lagging behind in creating a more inclusive educational situation is the digital education. Minorities, people with disabilities and the elderly tend to be excluded from many forms of such education because of digital illiteracy, low income and digital poverty, or the lack of infrastructure or service provision. In 2019, 8% of people aged 16



to 74 in the EU reported that they did an online course in the last 3 months prior to the given survey. Only Germany (8%) and Austria (8%) reached the EU level of participation. In the Czech Republic and in Hungary the share was 6%. In the rest of the Member States (and presumable in the non-MSs too) the share of e-learning was way below the average including Bulgaria (2%), Romania (3%), Slovakia, Slovenia and Croatia (5% each). Due to having best-performing internationally renowned institutions and specialisations in education, capacity building and networking have great potential to create accessible educational services and to use infrastructures jointly.

Strategic frameworks

The possible actions are in strong correlation with the **EU Strategy for the Danube Region Action Plan**, with PA 9 particularly. The actions set up in the frames of the SO contribute to objectives such as to improved educational outcomes, skills and competences, focusing on learning outcomes for employability, to increased higher quality and efficiency of education, training, to ensuring inclusive education and training, to closer cooperation between educational, training and labour market and research institutions. The actions are in line with the related PA of the Action Plan with regard to skills mismatch, labour market information systems, vocational re-education and re-training, dual education, to mention a few. Actions 5, 6, 7 and 8 are the most relevant ones from the Action Plan concerning the content of the SO. The possible actions are in line with the related PA in relation to strengthening vocational education and training (VET), in particular work-based learning in all its forms, exploring the potentials of innovative and active pedagogies, reducing early school leaving, addressing the diversity of learners, enhancing access to quality and inclusive education for all, including disadvantaged groups, and addressing gender gaps.

The **European Green Deal** is in strong correlation with the supported actions. It is important to ensure a just transition in relation to skill requirements. Thus, providing access to re-skilling programmes is crucial. Proactive re-skilling and upskilling are necessary to reap the benefits of the ecological transition. The actions areas are of schools, training institutions and universities which are well placed to engage with pupils, parents, and the wider community on the changes needed for a successful transition. The actions will develop and assess knowledge, skills and attitudes on sustainable development, provide support materials and facilitate the exchange of good practices in networks.

Considering the **Recovery and Resilience Facility** fairness should be promoted. The COVID-19 crisis has disproportionately affected disadvantaged groups such as low skilled people and people with disabilities or people with a minority background. The actions should therefore contribute to the inclusiveness of the education systems. In this regard, equal access to high-quality education and training for disadvantaged groups is particularly important, to compensate for the fact that socio-economic background is currently the most important determinant of children and young people's educational outcome. Out of the European flagship investments the SO covers the area of reskill and upskill. The actions of the SO put focus on digital skills and educational and vocational training for all ages. Education systems needs to be further adapted to the challenges of the 21st century. The actions in harmony with the Green Deal should pay special attention to



disadvantaged groups, women and in particular young people entering the labour market, by supporting adequate offer of apprenticeships and strengthening vocational education and training (VET), work-based training schemes.

The SO's actions agree with the **Territorial Agenda 2030** that names education, digital skills and broadband access as the major factors in increased territorial inequalities. Therefore, there is a need for integration beyond borders in relation to education as well.

Related types of possible actions

- Development of joint educational models, programs, practical tools and materials to support inclusive education for disadvantaged learners, including early school leavers, students with special educational needs and adult education participants, with focus on the knowledge exchange between model regions and potential pilot regions currently lagging behind in introducing such models, programs, tools and materials;
- Initiating best practices in education policy, gather and disseminate knowledge, and support the advancement of educational policy reforms at the national and regional levels across the Danube Region;
- Establishment of research and educational networks e.g. against transnational brain-drain experienced within the Danube Region (territorially unbalanced migration of people with high educational attainment from eastern and rural regions to western and highly urbanised regions) and to support digital and remote education with e-solutions instead of causing social inequalities in both the source and target regions of the macro-region;
- Knowledge exchange in elaborating and developing inclusive vocational education and training models. Support for the exchange of experiences on vocational education and training systems, the development of work-based training schemes including dual training to better support the labour market relevance of skills (e.g. by supporting the implementation of Austrian and German VET models, programs, educational tools in eastern and south eastern regions of the Danube Region)

PO4 A more social Europe

SO v. enhancing the role of culture and tourism in economic development, social inclusion and social innovation

Justification for selection

The macro-region incorporates large number of transnational cultural and natural heritage sites on which the development of joint tourism and cultural products and services, destination management can be based on for the sake of job creation in areas with vulnerable population and areas of depopulation.



High potentials lie in the cultural diversity. The valorisation can have direct socio-economic impacts, such as the preservation of cultural heritage and the development of creative industries.

The outstanding diversity is underlined by the coexistence of 30 ethnic groups, many as national minorities, which can function as connecting links. Interethnic and P2P relations could tear down xenophobic, nationalist voices and Eurosceptic political forces across the whole Danube Region.

7 EuroVelo routes and 19 Cultural Routes of the Council of Europe have been certified to better connect heritage sites from the Iron Curtain across Roman and Jewish heritage to Art Nouveau and viticulture.

Tourism is one of the most relevant economic activities by significantly contributing to employment and added value in many regions, but is concentrated on few mountainous and seaside resorts (Eastern Alps, Dalmatia, Sunny Beach in etc.), both having strong macro-regional tourist flows. There are severe differences in attractiveness based on tourist nights (E.g. Adriatic Croatia 59 005, Tyrol 50 065, Prague 14 100 or Yugoiztochen 9 529 compared to Sud-Muntenia 681, Severozapaden 728, Republika Srpska 689 or Moldova 545). Weak interconnectedness and management of destinations hinders a more balanced and synergic development in the Danube Region.

Valorisation of joint heritage can support job creation, which in turn can support anti-poverty measures and better integration of vulnerable groups, the elderly, people with disabilities, the Roma. Social innovation has an important role owing to the fact that the macro-region incorporates several regions with high share of population at risk of poverty (e.g. Nord-Est 33.4%, Sud-Vest Oltenia 33.4%, Serbia 25.7%, Severozapaden 32.8%, and Montenegro 23.6%).

Strategic frameworks

The possible action within the given SO is in harmony with the **EU Strategy for the Danube Region Action Plan**, with PA 3 Culture and Tourism, People to People in particular. The actions described in the SO also contribute to the objectives of PA 3, namely to develop sustainable forms of tourism, including green tourist products, to ensure the sustainable preservation, conservation, socialization and contemporary interpretation of cultural heritage and natural values, to establish the Danube Region as an important European tourist destination, to establish the Danube as an international travel route, to promote the development of quality products, infrastructure and innovative forms of tourism and culture. The possible actions support similar activities to that of the Action Plan e.g. they promote investments in green and blue forms of tourism including forms of ecotourism, cultural tourism, cycling, hiking and active tourism, they develop effective destination management structures, they support the interpretation, presentation, communication of natural and cultural heritage for touristic valorisation, they enhance the visibility of rural/local, less visited areas, cultural tangible and intangible heritage sites. The actions, in accordance with the related Action of the Action Plan, stimulate economic development based on cultural heritage. Regarding the actions in the SO, Action 3 invest in sustainable quality products, services, innovative forms and infrastructure in the fields of tourism and culture, promote skills, education and creating jobs in the related areas should be highlighted within PA 3.



The proposed activities also support clean and circular economy just like the **European Green Deal** in the field of tourism and culture. The action takes into account just, digital and green transition as an opportunity to expand sustainable and job-intensive tourism and cultural activities. When it comes to these sectors as well, impact on the environment and on climate change should be minimised. In relation to tourism the actions contribute to the acceleration of the shift to sustainable and smart mobility (e.g. by promoting sustainable hiking and cycling). Sustainable and green tourism goals can be reached by integrating the Green Deal's initiatives concerning the preservation of ecosystems and biodiversity.

The **Recovery and Resilience Facility** also stands for the shift towards a sustainable and inclusive economic model. The actions targeted have been designated with being aware of the rising unemployment in the tourism and culture sector across many parts of Europe. The disadvantaged groups' inclusion will require substantial efforts just like the facilitation of access of the disadvantaged (e.g. the elderly, the ethnic minorities) to the aforementioned sector.

The SO is in line with the **Territorial Agenda 2030** that regards cultural capacities as source of economic prosperity of places. Together with the TA2030 it considers natural and cultural heritage as regional development assets that offer unique opportunities for development. Sustainable and effective use of tourism resources should benefit local communities and promote local business opportunities in the sector. The actions take into consideration that mass tourism threatens cultural assets and landscapes and may fragment natural habitats and ecological corridors. The actions formulated with regard to the protection of cultural and natural heritage of Europe with better management and further developments. Areas rich in natural and cultural heritage need to make best use of these assets and their untapped economic and social potential. Concerning such areas it is needed to balance sustainable use of natural resources and economic development. By creating environmentally friendly jobs, fostering community growth and well-being, or working with innovative social entrepreneurs these objectives can be reached. Therefore in line with the TA2030 the actions here will concentrate on empowering local and regional communities to protect, utilise and reutilise their (built) environments, landscapes, material and immaterial cultural assets.

Related types of possible actions

- Promote sustainable and slow tourism concepts, planning methodologies, model regions, and management tools in the Danube Region, in regions of mass tourism (resorts, regions with outstanding overnight stays, high share of tourism in GDP and employment) and regions of weakly developed tourism sector (low number of beds and stays per capita, low share of tourism in GDP and employment) as well in particular to promote and safeguard employability and employment possibilities to vulnerable groups of host communities, and capitalise on EUSDR projects in the interconnected areas of culture, nature and tourism;
- Promoting quality products, services and transnational infrastructure in the tourism and culture sector to support social inclusion of disadvantaged people via new employment forms and job opportunities especially in relation to regions with high share of people with disabilities, large number of minorities, areas with large share of population at risk of poverty, the youth or the elderly;



- Valorisation of joint natural and cultural heritage and cultural activities through the elaboration of new or improved thematic initiatives for example through cultural, hiking, cycle or other thematic routes and initiatives across the macro-region with a special focus on rural or less known (visited) areas;
- Improving accessibility of tourism and culture infrastructure, products and services towards vulnerable groups, such as people with disabilities, the elderly, minorities in regions with outstanding share of the corresponding groups (e.g. severely aging regions);
- Capacity building and development of innovative models for community based tourism to better secure the engagement of host communities of high cultural diversity by involving them in the planning, management and implementation of tourism development in their respective regions;
- Capacity building in social innovation to better support valorisation of joint cultural and natural heritage in particular for tourism and their respective heritage management schemes (study, collection, preservation, digitalisation, exhibition and re-interpretation of joint tangible and intangible elements).

ISO1: A better cooperation governance

SO i. enhance institutional capacity of public authorities and stakeholders to implement macro-regional strategies and sea-basin strategies, as well as other territorial strategies

Justification for selection

The Danube Region is a macro-region of borders: 44.7% of its territories are situated closer than 30 km to at least one state border. Consequently, no major developments can be carried out without having at least indirect transboundary impacts covering several national territories.

The Danube Region is heterogeneous in terms of level of European integration. It consists of old and new Member States, candidate countries, a potential candidate and countries targeted by the Eastern Partnership. There is still a lot of room to cooperate in breaking down administrative and legal obstacles within the Danube Region to serve the four freedoms.

Good governance and regional policy can also function as a prime tool for increasing the level of trust towards the EU. The DTP can support the EU integration, strengthen the visibility and close-to-people character of the Regional Policy.

Except for Germany (E-Government Development Index: 0.88), Austria (0.83) and Slovenia (0.77) the macro-region has less developed e-governance structures compared to the European average of UN states (0.77).

The countries differ in their political-administrative systems. Subsequently, there is no homogeneity between the countries which can render regional cooperation challenging and at the same time offer room for enhancing legal harmonisation. Hence, high diversity in public administration and



governance can be challenging to overcome, and efficiency of public administration regarding cooperation on a transnational level.

The political fragmentation and the challenges of transnational character (e.g. aging, transport bottlenecks) calls for better and new models of governance, inter-institutional cooperation and transnational institutions to manage functional areas (e.g. cross-border functional urban areas, areas affected by labour migration).

Strategic frameworks

The actions of the SO and PA 10 Institutional capacity and cooperation of the **EU Strategy for the Danube Region Action Plan** are interlinked. Strengthening institutional capacities to improve decision-making and administrative performance, furthermore increasing involvement of civil society and local actors for effective policy-making and implementation are important objectives for both the related actions and the Action Plan. Strengthening cooperation capacities for all stakeholders in the multi-level governance system and developing policy guidance for co-designing policies at all levels in the Danube Region are taken into account in the setup of actions. It is important to establish structures to contribute to the facilitation of transboundary capacity building and cooperation. Based on the Action Plan it is of great importance to encourage all EUSDR partner countries to involve national, regional and local authorities. Furthermore, the connection to Action 8 should be discussed. The actions should contribute to the enhancement of capacities of cities and municipalities to facilitate local and regional development. Territorial challenges such as ageing, transport bottlenecks etc. can be better addressed by supporting the drafting of territorial plans or establishing cooperation policies for municipalities and regions. The actions rely on the Action Plan in increasing capacities for cooperation in the area of spatial planning and in terms of functional regions.

The **European Green Deal** focuses on accelerating the shift to sustainable and smart mobility. This covers, similarly to the proposed actions, the elimination of bottlenecks by the reduction of congestions and pollutions. Both urban and rural areas face several challenges in relation to green transition and enhancing resilience.

Recovery and Resilience Facility together with the proposed action supports the transformation of the public administration and the good governance.

One of the main fields where a direct connection with the **Territorial Agenda 2030** can be detected is the idea of functional area/region. The related actions of the SO support the cooperation and networking between cities, towns and their surrounding areas in the same functional region. They promote urban-rural linkages. The SO and its content are aware of such functional regions often break with existing administrative delineations. Thus, the related actions support cooperation beyond administrative and state borders to serve transnational growth. The actions are in harmony with the integrated multilevel governance approach. This means involving people from different governance levels, in particular local and regional ones, as well as diverse policy sectors. It should all derive from the place-based approach which aims at recognising the need for tailored solutions in different types of territories (e.g. aging regions). Furthermore, the actions are also aware of the need for taking the special urban and rural characteristics into



account. These urban, peri-urban or rural areas often face specific demographic and other type of challenges to overcome. Territorial cooperation between places in different countries helps make better use of development potential and address common challenges. Joining forces beyond borders can create critical mass for development and promote synergies. The field of cooperation can include for instance city networks. It is of great importance to facilitate better cooperation between different regions and settlements on different levels across borders. The tools and means can include joint planning or governance. Apart from functional areas sustainable connections between administrative units should also be preferred here. In accordance with the TA2030 smart, sustainable forms of transport and connectivity are needed, especially to support functional regions. The links between regional planning and transport infrastructure should be strengthened as well. Finally, continuous capacity building at all levels is particularly important to enhance participatory implementation of the strategies since the quality of governance is of paramount importance as a principle and cross-cutting issue.

The **New Leipzig Charter** shares the idea that in addition to formal local policies, specific and informal measures need to be enforced at other levels including neighbourhoods as well as wider functional, regional and metropolitan scales. This requires harmonised coordination of measures implemented at all spatial levels. To support sustainable and resilient urban development it is needed to adapt urban policies to such functional areas. Consequently, towns and cities need to cooperate and coordinate their policies and instruments with their surrounding suburban and rural areas on various (shared) policies beyond administrative and state borders. There is also a need for just cities which provide equal opportunities for all regardless age for instance. The actions under this SO are in line with the key principles of the Charter. The SO's actions are formulated also in a way to incentivise governmental and non-governmental actors from all levels and sectors to work together, agreeing on strategic principles. The principles of the Charter such as the integrated approach, participation and co-creation, multi-level governance and place-based approach are reflected in the formulation of the actions. These all should be taken into account in the case of creating and implementing plans on the level of urban as well as functional areas even across borders, on a transnational scale.

Related types of possible actions

- Integrated governance models for addressing challenges arising from demographic change (e.g. aging, depopulation, brain drain);
- Integrated urban-rural governance models including specific territorial development strategies for rural/remote areas as well as accessibility aspects and transport bottlenecks;
- Support for more and stronger inter-institutional relations for the integrated development of transboundary functional areas;
- Capacity building considering especially a better involvement of local and regional public bodies as well as civic actors in transnational policy making, territorial development frameworks and governance models;
- Support for the monitoring and analysis of territorial processes affecting the cohesion and cooperation of the Danube Region to assist capacity building and institutional capacity.



Contribution of selected Specific Objectives to the territorial objectives defined in the Mission Statement of the Danube Transnational Programme

In order to introduce how the related types of possible actions in the frames of the selected Specific Objectives contribute to the achievement of territorial objectives set out in the Mission Statement of DTP2, and what kind of territorial processes within the Danube Basin can be generated, a summary was created in a table format.

For the sake of better understanding, the matrix attached shows the connections between the Territorial objectives deriving from the Mission Statement and the chosen ten Specific Objectives. In case of having connections, it is marked with a plus sign: the indirect contributions are indicated by a single plus sign (+), while the direct contribution of the given SO to the territorial objectives designated in the Mission Statement is marked by two pluses (++).

As it can be seen, all of the territorial objectives are tapped. The selected SOs and their activities can contribute the most to dissolving socio-economic and administrative fragmentation; creating a better institutional platform and transnational cooperation environment as well as to strengthening the cohesion by supporting the exchange flows between regions. The overlapping contributions serving multiple objectives at once also mean that cross-sectorial, cross-thematic and territorially integrated transnational activities would be worth supported with true impacts regarding serving cohesion on macro-regional level.

Territorial objectives deriving from the Mission Statement of DTP2	PO1		PO2				PO4			ISO1
	SOi	SOiv	SOii	SOiv	SOv	SOvii	SOi	SOii	SOv	SOi
Dissolving socio-economic and administrative fragmentation	+	++		+	+	+	++	++	++	++
Creating a better institutional platform and transnational cooperation environment	+	+	+	++	++	++	++	++	++	++
Strengthening of cohesion by the support of exchange flows between regions	++	++			+	+	++	++	++	++
Balancing internal migration links and labour market relations	+	+					++	++	++	+
Utilizing from cultural and natural diversity					+	++			++	+
Decreasing energy-dependency and the risks of climate change	+		++	++	++	+				+
Strengthening the share of technology and innovation	++	++	+	+			+	+	+	+
Coordination of infrastructure development		+	+	+	+	++				+