

**ANALYSIS OF TERRITORIAL CHALLENGES, NEEDS AND
POTENTIALS OF THE DANUBE REGION AND
STRATEGIC OPTIONS IN VIEW OF THE
TRANSNATIONAL COOPERATION FOR THE PERIOD
2021-2027**



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1. EXECUTIVE SUMMARY

1.1 Context

This current document is elaborated in order to provide territorial evidence for the starting programming process of the next 2021-2027 Danube Transnational Programme. The final Territorial Analysis offers a full analytical toolkit to the above mentioned reason; the content can be sum up as follows:

- Mission statement;
- Recommendations (deriving from the findings of the analysis);
- Territorial analysis (full inventory of figures and related textual analysis);
- SWOT analysis and main cohesion challenges of the Danube Region.

In the final version all of the relevant remarks from the Task Force members have been incorporated (There were two concerned Task Force meetings: in Beuron, 7-8th May and in Budapest 5-6th November; plus two internal workshops with the Programme Secretariat).

The prepared material determines the comprehensive, current state of play and challenges of cohesion of the Danube Region, moreover, it identifies the answers that can be given for these (with crucial emphasis on the toolkit of transnational cooperation). Practically this document, which refers to the Danube Programme area and the area covered by the EU Strategy for the Danube Region (EUSDR), should be considered as a solid, fact-respecting fundament for the upcoming programming period; the table of recommendations is a wide 'menu' for picking out the most relevant objectives and priorities with transnational cooperation logic, in order to have a more cohesive Danube Region in the future.

1.2 Mission statement

The mission statement of this document describes the fundamental matters of the situation of the macro-region which would be worth taking into consideration in the upcoming programming process. The statement contains the transnationally most relevant factors which either strengthen or weaken the cohesion of the macro-region. It provides a clear description of what makes the Danube macro-region unique compared to other macro-regions, and how to specify its development path in the frames of this particular transnational programme to avoid one size fits all type of future interventions. It gives a general direction for the future programming by highlighting the main topics and areas of potential interventions. Thus, this text can act as a basis of all future planning considering this transnational cooperation programme.

“From a region of barriers to a region of flows”*Preliminary “Mission of 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. It 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 feature, 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 overcome of barrier effects by targeting territorially more integrated actions and more institutionalised cooperation are well advised in spite of dot-like and temporal developments and connections.

There are **strong but unbalanced migration links** within the region mainly because of 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 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 is characterised by three distinct groups of countries; old Member States, new Member States, and non-Member States, with different development paths, convergence potentials and link 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. Regardless Germany and Austria mostly, 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 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 is in overall 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 **covers 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 **exposed to climate change** greatly. The Continental and Mountain bio-geographical regions, which make up the most extensive areas of the Danube Region, both have to tackle with increasing temperatures and population of invasive species, negative changes in 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 as well. For the 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 is worth taking 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.

1.3 Key findings of the evaluation

This subchapter highlights all the key findings derived from the detailed territorial analysis (Annex 1) and the summary of the SWOT analysis and main cohesion challenges (Chapter 3.6) in order to support the discussion process regarding the elaboration of the transnational programme of the upcoming planning period (2021-2027). Based on the numerous figures created (for further details, check Annex 2 Table of figures), the main findings of the evaluation are grouped into the following categories depending on their validity, time frame and territorial focus.

- **Still valid findings:** It consists of strengthening or weakening factors of cohesion which *have been persisting* since the beginning of the current (2014-2020) programme, and which have not changed much since the statements of the previous territorial analysis.
- **No longer valid findings:** It consists of strengthening or weakening factors of cohesion which *have ceased to exist* since the beginning of the current (2014-2020) programme, and which have altered much *not to be regarded as significant factor* during further planning.
- **New conditions:** It consists of strengthening or weakening factors of cohesion which *have emerged and became vivid* only in the very recent years representing challenges which *used to be unfamiliar or unknown* in the period of 2014-2020 in the macro-region, but in the upcoming period *they are worth taking into account* during further planning.
- **Main “Danubian” trends and topics:** It consists of statements which are not only valid but are currently the *most significant potentials and challenges* of the cohesion in the macro-region. These trends and topics are *specific to the Danube Region exclusively*, and not only characterise the macro-region but summarise *in what factors the macro-region is distinct* from the rest of Europe and the other macro-regions.

Still valid findings

Still valid findings on territorial cohesion

- Shared, transboundary habitats, water catchment areas with environmental risks, need for comprehensive river basin and water supply management;
- Recognised negative impacts of climate change, insufficient adaptation and mitigation;
- Still insufficient measures in waste management;
- Large number of cultural and natural heritage elements and sites with transnational character;
- Large number of transboundary hinterlands and cities of international significance, potentials to polycentric urban development;
- Low density of border crossings in the south-eastern parts of the region;
- Unfavourable territorial capacity regarding the transboundary traffic infrastructure;
- Weak governance of transnational, transboundary territories, missing institutionalisation.

Still valid findings on economic cohesion

- Persisting regional disparities, strong east-west divide;
- Need for the utilisation of the transit position (Russia, China, Middle East, Western Europe);
- Relatively strong but unbalanced FDI and trade flows within the macro-region;
- Slow economic restructuring, low share of technology and knowledge-intensive activities, low added value, overly concentrated RDI in the western regions and major urban hubs;
- Weak service sector on the eastern part of the macro-region;
- Tourism concentrated on few traditional resorts, lack of interconnected destinations;
- Weak SME sector and innovation ecosystem;
- Strong east-west inequalities in accessibility, missing links;
- High share of fossil fuels in consumption, energy dependency to external markets.

Still valid findings on social cohesion

- Severe inland migration from less developed and rural areas to more developed, western and major urban areas;
- Significant population loss due to outmigration from the macro-region;
- Ageing;
- Brain-drain;
- High risk of poverty, high income inequalities;
- Large difference between supply and demand on the labour market;
- High differences in the educational structure, weak vocational level;
- Historical coexistence of numerous ethnic, language and religion groups;
- High share Roma people and people with disabilities across the macro-region, slow integration of the Roma and migrant communities.

No longer valid findings

- No real progress to support the permeability of border by new border crossings and transport connections;
- Slow recovery and catching-up of eastern Member States in terms of GDP and economic interest;
- Weak manufacturing industry in the majority of central and south-eastern Europe;
- On-going and deepening economic crisis
- High and increasing (long-term) unemployment across the whole macro-region

New conditions

- Joint actions in combating climate change;
- Need for cooperation in the development of circular economy;
- Re-bordering, re-emerging strict border regimes;
- Emergence of smart cities;
- High growth potential hindered by labour shortage;
- Uncoordinated management of immigration to the region and emigration from the region;
- Digitalization; Industry 4.0; need for (harmonised) smart specialisation strategies and policies;
- Intensifying labour migration from the eastern to the western part;
- Need for e-governance and long-term territorial governance structures.

Main „Danubian” trends & topics

- Shared water bodies and water catchment areas with transnational importance;
- Weak adaptation techniques to many effect of climate change (e.g. floods, droughts, decreasing biodiversity, fragmentating habitats);
- Danube Region – a region of borders (high density of borders, external and internal borders, Schengen borders), high negative border effects;
- Transition region (in relation to trade, transport, FDI, knowledge transfer and other business relations);
- Low population retention force, depopulation (low fertility, aging, outmigration) of eastern and rural regions in particular;
- Increasing urban-rural divide in many aspects of cohesion (functions, economic growth, employment etc.)
- Labour-intensive, technology-follower area;

- Slow convergence in GDP-growth on national level parallel to major urban regions as engines of growth and target areas for high added value activities;
- Heavy & strengthening internal migration: loser and winner regions
- Twist of labour market: from unemployment to labour shortage;
- Major bottlenecks in transport infrastructure, weak accessibility of extensive areas;
- Energy dependency, lack of high energy safety and still missing interconnections;
- Weak level of social innovation, problematic integration of immigrants, national minorities and Roma people across the macro-region despite of the outstanding cultural diversity.

2. RECOMMENDATIONS

Here a matrix is provided which consist of the the following columns:

- References: the concrete sections (subchapters) of the territorial analysis where the main challenge derives from.
- Main challenges: the description of the actual main challenges, based on the territorial analysis, which are supposed to be tackled by the strategic directions of the new Programme.
- Transnational cooperation needs: these can be consired as responses to the challenges in order to reach higher level of cohesion within the programme area. Only those activities are listed which requires transnational initiatives and interventions.
- Fit to the EUSDR Action Plan: it describes how the Priority Areas (PAs) of the European Union Strategy for the Danube Region relate and support the realisation of the identified cooperation needs.
- Fit to the programming regulations: it describes how the different (new) programming regulations also relevant for the Danube Region relate and support the realisation of the identified cooperation needs.

The main aim of the matrix is to provide the stakeholders with the exhaustive list of territorial, economic and social challenges identified in the macro-region in order to set-up a sound basis for the identification of the programme priorities. It is important to note that the matrix is structured according to the methodology applied to the territorial analysis (see in ANNEX 1.) which may not be fully appropriate for programming purposes; instead the listed topics may be re-organized around priority areas to be selected by the Task Force.

As an overall conclusion of the evidence-based approach applied when drafting this document, it seems that similarly to the preparation period for 2014-2020, **harmonised and comparable statistical data on the macro-region still lacks. Therefore there is an obvious need for transnationally coordinated** action on data gathering and harmonistaion for an overall **observation of territorial trends in the Danube Region.**

2.1 Territorial cohesion

When speaking about territorial cohesion of the macro-region, aspects such as water management, landscape and environment factors, climate change, natural and cultural heritage, transport, spatial organizational, border, governance and cooperation issues are taken into consideration.

In the case of e.g. natural and cultural heritage and transport, the territorially relevant aspects are discussed here, however these topics clearly have economic relevance too, which are described in the next chapter.

Climate change seems to be a very broad topic which can be approached from different directions. Therefore we involved this issue in a general term in order to provide the chance for those in charge of the programming to decide on the approach to be applied and the particular aspects to be dealt with in the next programming period.

Last, but not least, however the document serves as the preparation of a transnational and not a cross-border programme, the topic of borders are presented because different border statutes rooted in the involvement of non-EU and EU, but not-Schengen Member States into the programme still makes the region extremely fragmented which obviously has an effect on the performance of the macro-region. Partly because of this national fragmentation governance is also very important, there is a clear **horizontal need for transnational institutional cooperation** and in some relevant sectors new transnational institutions too.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.3.1 Landscape and environment factors, climate change, hydrography	High risk of flood damage.	Activities encouraging cooperation in joint, integrated river basin management and flood risk management along transnationally relevant river systems.	PA5	PO2 (iv) promoting climate change adaptation, risk prevention and disaster resilience and partly connected to (v) promoting sustainable water management
3.3.1 Landscape and environment factors, climate change, hydrography	Threat of transboundary contamination and water pollution diffusion.	Support for joint transboundary water management initiatives linked to joint water catchment areas including joint actions in monitoring, prevention and reduction of water pollution and emergency response.	PA4	PO2 (v) promoting sustainable water management

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.3.1 Landscape and environment factors, climate change, hydrography	Weakening connections between wetland habitats. Invasive species endanger(ing) ecological balance in water bodies (of the Danube river system).	Revitalization and rehabilitation of transboundary water streams' habitats and adjacent wetland systems in the Danube river-basin. Development of joint solutions to deal with invasive species.	PA6 (PA4, 5)	PO2 (vii) <u>enhancing biodiversity</u> ... Partly also (v) promoting sustainable water management and (iv) <u>risk prevention</u>
3.3.1 Landscape and environment factors, climate change, hydrography	Increasing water use across the region, decreasing ground water levels and shrinking supplies	Support measures for sustainable management of transboundary water abstraction together with water-saving and water retention solutions in agriculture and industry, reducing also groundwater overexploitation	PA4	PO2 (v) promoting sustainable water management
3.3.1 Landscape and environment factors, climate change, hydrography	Increasing negative effects and impacts of climate change.	Support for macro-regional initiatives that aim to decrease the effects of climate change (researches, policy recommendations, joint actions, territorial action plans, development/ improvement of forecasting tools).	PA5	PO2 - b (iv) promoting climate change adaptation, risk prevention and disaster resilience;
3.3.1 Landscape and environment factors, climate change, hydrography	Low climate change adaptation abilities on nation state level.	Propagation of best practices in relation to climate change adaptation methods and strategies.	PA5	PO2 - b (iv) promoting climate change adaptation, risk prevention and disaster resilience;
3.3.1 Landscape and environment factors, climate change, hydrography	Fragmentation of transnational habitats and ecosystems, insufficient measures to secure biodiversity of the region.	Support for the improvement of ecological connectivity between habitats, nature protection areas along transnationally relevant ecological corridors.	PA6	PO2 (vii) <u>enhancing biodiversity</u> , green infrastructure in the urban environment, and reducing pollution;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.3.1 Landscape and environment factors, climate change, hydrography	Decreasing biologically active surfaces, increasing artificial land covers.	Knowledge sharing in order to promote ecologically sound farming and the protection of biodiversity.	PA6, PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies
3.3.1 Landscape and environment factors, climate change, hydrography	Low economic utilisation of protected areas.	Supporting solutions for sustainable economic development of (transnationally relevant) protected areas.	PA3, PA6, PA8	PO2 enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution; PO5 (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.
3.3.1 Landscape and environment factors, climate change, hydrography	Weak management capacities and skills for ecological regions of transnational relevance (e.g. Pannonian landscapes or the Mura-Drava-Danube Transboundary Biosphere Reserve).	Support for transnational management schemes, creation of institutionalised management networks of the ecological regions. Joint conservation and preservation techniques and planning schemes. Institutionalised, long-term management network(s) of 'Danubian' transboundary ecological regions.	PA6	PO2 (vii) enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution;
3.3.1 Landscape and environment factors, climate change, hydrography	Weak coordination of management of cultural and natural heritage in the Danube Basin area.	Cooperation of stakeholder institutions on heritage valorisation.	PA3	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.3.1 Landscape and environment factors, climate change, hydrography	Lack of transnational risk management plans for sites exposed to climate change and overtourism.	Coordinated preservation and (destination and heritage) management of heritage sites and cultural landscapes.	PA3, PA2	PO2 (iv) promoting climate change adaptation, risk prevention and disaster resilience PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.
3.3.1 Landscape and environment factors, climate change, hydrography	Still low level of transnational management and integration of sites and heritages connected by designated routes.	Support for the cooperation, integration and promotion of existing World Heritage Sites and thematic routes.	PA3	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.
3.3.2 Characteristics of urban network	Large peripheral areas with lack of central settlement functions, uneven development processes in the settlement hierarchy in favour of already large major urban centres.	Support for a more balanced urban development incorporating not just the capital city regions in order to support a more polycentric development of the transnational settlement network (mainly by supporting middle-sized cities and a better provision of functions across the macro-region). Improvement of transnational networks and cooperation between cities including regional and secondary centres apart from capitals.	PA10	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.3.2 Characteristics of urban network	Weak urban-rural partnerships, unfavourable conditions for rural hinterlands.	Development of urban-rural governance solutions.	PA10	PO5 (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development
3.3.2 Characteristics of urban network	Slow integration of innovative urban technologies in the planning, management and development of cities, low level of innovation evenness in cities.	Supporting innovation partnerships and urban platforms in smart city research and management.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; PO3 (i) enhancing digital connectivity;
3.3.3 Status of the borders	Macro-region fragmented by borders with different statuses (e.g. internal and external) and permeability; various border regimes. .	Transnational cooperation in policy-making concerning border-related management and infrastructure matters.	PA10, PA11, (PA1)	PO3 (i) enhancing digital connectivity; (iii) developing sustainable, climate resilient, Intelligent and Intermodal national, regional and local mobility, Including Improved access to TEN-T and cross-border mobility Interreg SO A safer and more secure Europe: actions in the fields of border crossing management and mobility and migration management, Including the protection of migrants.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.3.4 Territorial cooperation and governance framework	High demand for inter-institutional cooperation, establishment of joint transnational institutions, multi-governance cooperation to overcome administrative and sectoral barriers based on a territorial approach.	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-sectoral challenges of the macro-region (such as ageing, labour migration etc.)	PA10	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'
3.3.4 Territorial cooperation and governance framework	Deficient support of the institutionalized cross-border and transnational cooperation, civil and non-institutionalized cooperation.	Capacity development of the institutionalized cross-border and transnational cooperation and knowledge networks.	PA10	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'
		Share of best practices in management and governance solutions.	PA10	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'
3.3.4 Territorial cooperation and governance framework	Need for harmonization of vertical and horizontal cooperation.	Supporting local cooperation in the information and knowledge exchange on a macro-regional level.	PA10	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'

2.2 Economic cohesion

In the economic cohesion chapters, the topic of economic structure and performance, sustainable growth, RDI, SMEs, tourism, accessibility, transport and logistics, education, ICT and energy are discussed, among others.

The analysis put emphasis on economic restructuring including a shift toward more knowledge and technology intensive sectors with higher value-added and the role of SMEs in this restructuring process. Economic performance is highly dependent on the labour market and human resource potentials, hereby some related employment and educational issues are also discussed, while the social aspects of these topics are targeted in the next chapter.

In the case of transport and energy, effectiveness and sustainability are in the focus.

However there are many possible fields for transnational cooperation in order to strengthening the economic cohesion in the region, it is also clear that the nature of a transnational programme is different from an economic development programme.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Need for overcoming disparities in development. Better utilization of the transit position and closeness to both eastern and western markets. Insufficient actions in taking advantage of the dynamically growing markets on the peripheries and neighbouring the EU.	Investment promotion, marketing and development of economic relations of the macro-region for the surrounding external economies and for companies within the macro-region interested in market expansion to support trans-European business ties.	PA8	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Still insufficient measures to take advantage of comparative advantages and economic peculiarities on a transnational level to support more efficient catching-up policies.	Cooperation in smart specialisation with a special focus on SMEs. Support for transnational alignment of S3 strategies.	PA7,PA8	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii). enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Unelaborated crisis management models, transnational strategy for crisis mitigation despite of highly exposed economies within the macro-region.	Better analysing the exposure and resilience to an upcoming economic crisis, elaborating of a toolkit and policy how to better mitigate crisis effects.	PA8 and PA10	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Uncoordinated western and eastern market interests, no support in a joint market expansion policy as a united macro-region. Slow emergence of new and non-German transnational companies seated and operated within the macro-region mostly.	Coordinated development of SME support policies on transnational level for their market penetration and foreign trade with the neighbouring region, both with the western and the eastern markets to the Danube Region.	PA8	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Low intensity of internal FDI flows within the macro region. Unbalanced east-west capital relations, untapped inner potentials to increase growth by FDI coming from inner, macro-regional sources.	Increasing the capacities of the policy making level in advancing policies to facilitate internal FDI.	PA8	PO1 (iii). enhancing growth and competitiveness of SMEs;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Low added value of economic activities because of structural problems.	Transnationally coordinated policy support for the production of higher value-added products and services.	PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii). enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
		Support for the exchange of best practices. Development of smart specialisation policies.	PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii). enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Still low level of cooperation in trade and production of higher value-added products.	Support for joint policies on high end product manufacturing, as well as for transnational exchange on markets, ideas and product development.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii). enhancing growth and competitiveness of SMEs;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Still low innovation and added value for SMEs.	Supporting transnational business infrastructure policies and transnational business development services to increase value added and innovation potential.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii). enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Non-supportive business eco-system for SMEs	Support for transnational cooperation in supplier networks and cluster policies in order to integrate the SMEs into vertical and horizontal value chains.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii). enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Uncoordinated, dot-like investments, not interconnected attractions, infrastructures and services. Lack of territorial approach, inland developments.	Enhancing cooperation in the field of destination management for sustainable integrated development of tourism products.	PA3, PA7, PA8	PO1 (iii). enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship; PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Uncoordinated profiles and capacities of the countries' RDI. Unbalanced RDI expenditures and knowledge management capacities.	Support of joint innovation cluster policies, transnational knowledge production, management and knowledge transfer.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Hindering factors in the diffusion of knowledge and innovations (ability to implement knowledge-based and technology-intensive activities).	Promoting cooperation, experience exchange between and capacity building of innovation actors, hubs and RDI centres.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Fragmented human resources and financial expenditures for innovation. Weak transnational innovation ecosystem with lack of joint and designated management, scientific research and valorisation.	With a strong focus on policy learning and policies development, strengthening and development of the synergies and cross-relationships between enterprises, RDI centres, clusters, higher education and the public sector, knowledge transfer, triple/quadruple helix approach.	PA7, PA8	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Unprepared economies 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.).	PA7, PA8	PO1 (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Uncoordinated economic policies based on the retention of regional workforce to settle outside of the macro-region.	Transnational economic planning.	PA7, PA8	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Need for harmonisation of labour demand and training structures, the active adaptation of western good practices particularly in the countries of south-east.	Support for the exchange of experiences on vocational training systems; improvement of adaptability of professions; development of dual training schemes; promotion of life-long learning programs.	PA8, PA9	PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure; (ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure; Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders
3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)	Weak linkages in the use of capacities in institutions of education, further spatial development of the educational and training system based on network cooperation.	Mutual student mobility programmes, cross-border trainings in synergy with the Erasmus+ Programme.	PA7, PA8, PA9	PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) enhancing research and innovation capacities and the uptake of advanced technologies; PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure; (ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure; Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
				b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders;
3.4.2 The existing economic infrastructure (accessibility and energetics)	Strong east-west inequalities in accessibility and bottlenecks in transport infrastructure.	Activities related to the development of transport corridors within the macro region especially in supporting north-south connections (elaborating studies, strategies, plans and action plans).	PA1b	PO3 - c (iii) developing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility; Interreg SO A safer and more secure Europe (ii) actions in the fields of border crossing management and mobility and migration management, Including the protection of migrants.
3.4.2 The existing economic infrastructure (accessibility and energetics)	Deficiencies in the implementation of connecting to TEN-T networks according to macro-regional interests.	Support of transnational transport actions focusing on secondary and tertiary missing links in synergy with the relevant CEF developments.	PA1a & PA1b	PO3 - c (iii) developing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility; Interreg SO A safer and more secure Europe (ii) actions in the fields of border crossing management and mobility and migration management, Including the protection of migrants.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.2 The existing economic infrastructure (accessibility and energetics)	Lack of competitive, environment-friendly and low-carbon transport systems.	Joint actions in developing smart, sustainable and green transport technologies and networks, as well as e-mobility solutions.	PA1b	<p>PO1 - a (i) enhancing research and innovation capacities and the uptake of advanced technologies</p> <p>PO2 - b (i) promoting energy efficiency measures</p> <p>PO3 (iii) developing sustainable, climate resilient, Intelligent and Intermodal national, regional and local mobility, Including Improved access to TEN-T and cross-border mobility</p> <p>PO3 - c (ii) developing a sustainable, climate resilient, intelligent, secure and intermodal TEN-T;</p> <p>Interreg SO A safer and more secure Europe (ii) actions in the fields of border crossing management and mobility and migration management, Including the protection of migrants.</p>
3.4.2 The existing economic infrastructure (accessibility and energetics)	Missing links and service deficiencies in the railway system on macro-regional level.	Harmonisation of rail infrastructure/ service quality standards.	PA1b	<p>PO1 - a (i) enhancing research and innovation capacities and the uptake of advanced technologies</p> <p>PO2 - b (i) promoting energy efficiency measures</p> <p>PO3 (iii) developing sustainable, climate resilient, Intelligent and Intermodal national, regional and local mobility, Including Improved access to TEN-T and cross-border mobility</p> <p>PO3 - c (ii) developing a sustainable, climate resilient, intelligent, secure and intermodal TEN-T;</p> <p>Interreg SO A safer and more secure Europe (ii) actions in the fields of border crossing management and mobility and migration management, Including the protection of migrants.</p>
3.4.2 The existing economic infrastructure (accessibility and energetics)	Lack of system approach leading to poor connectedness of different transport nodes and modes.	Support for transnational policy and strategy development with a special focus on interoperability and multimodality.	PA1a, PA1b	<p>PO3 (iii) developing sustainable, climate resilient, Intelligent and Intermodal national, regional and local mobility, Including Improved access to TEN-T and cross-border mobility</p>

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.2 The existing economic infrastructure (accessibility and energetics)	Uncoordinated development of port infrastructure.	Support for transnational, environmental-friendly harmonisation of intermodal port development.	PA1a	PO3 - c (ii) developing a sustainable, climate resilient, intelligent, secure and intermodal TEN-T; (iii) developing sustainable, climate resilient, Intelligent and Intermodal national, regional and local mobility, Including Improved access to TEN-T and cross-border mobility
3.4.2 The existing economic infrastructure (accessibility and energetics)	Missing coordination of major trans-European freight transport and related logistical capacities.	Transnational coordination of logistics, development of information, investment and management capacities for the macro-region.	PA1a & PA1b	PO3 - c (iii) developing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility;
3.4.2 The existing economic infrastructure (accessibility and energetics)	Macro-regional differences experienced in the field of ICT.	Supporting e-innovation, transnational ICT systems and cooperation.	PA7,PA8	PO3 (i) enhancing digital connectivity;
3.4.2 The existing economic infrastructure (accessibility and energetics)	Missing coordination of ICT systems in the region.	Identifying ICT development needs on a transnational level, coordination of macro-regional systems.	PA7, PA8	PO3 (i) enhancing digital connectivity;
3.4.2 The existing economic infrastructure (accessibility and energetics)	Lack of sufficient development and macro-regional integration of different energy networks and of the internal market in order to have more favourable prices.	Support for exploring the energy landscape and framework for a better combination of existing and new energy systems in the macro-regions with a special focus on RES.	PA2	PO2 - b (iii) developing smart energy systems, grids and storage at local level;

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.4.2 The existing economic infrastructure (accessibility and energetics)	Significant energy-dependency on external (e.g. Russian natural gas) energy sources.	Policy and networking support for an increased use of renewable energy resources, encouraging the development of sustainable energy production and transfer systems.	PA2	PO2 - b (iii) developing smart energy systems, grids and storage at local level;
3.4.2 The existing economic infrastructure (accessibility and energetics)	Underdeveloped smart grids and storage capacities.	Support for discovering innovative smart and sustainable solutions, technologies.	PA2	PO2 - b (iii) developing smart energy systems, grids and storage at local level;
3.4.2 The existing economic infrastructure (accessibility and energetics)	High level of energy consumption and low energy efficiency.	Support for harmonised actions and transnational cooperation in order to decarbonise the buildings' heating and cooling system.	PA2	PO2 - b (ii) promoting renewable energy;
3.3.1 Landscape and environment factors, climate change, hydrography	Still relatively high GHG emissions by the transport sector.	Introduction of alternative fuels and new technologies in transportation.	PA1a, PA1b, PA2, PA8	PO1 – a (i) enhancing research and innovation capacities and the uptake of advanced technologies PO3 - c (iii) developing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility; PO2 - b (ii) promoting renewable energy;

2.3 Social cohesion

When analysing social cohesion, internal and external migration, brain drain, ageing, low skilled and disadvantaged groups, (un)employment, labour shortage, education and cultural diversity are targeted in a macro-regional framework, where **western-eastern and urban-rural differences** are highly presented.

Some of the above mentioned matters are strongly interconnected with mainly economic, but also with territorial factors; their social relations are in the focus here. Nevertheless, in some cases (e.g. education and labour shortage), these challenges are difficult to address by clearly social measures, instead a **complex, integrated approach** is required. It can also happen; that some of the social problems may be managed as side-effects of other, mainly economic interventions.

As a main conclusion, **social innovation**, where the main aim is to improve the social care system by applying new solutions and involving new stakeholders (such as social enterprises) could have an important role in the development of the macro-region.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.1 Demographic conditions	Need for evidence-based policymaking and mitigation of the effects of internal migration. Intensification of internal migration causing challenges in both population gaining (western and urban) and population losing (eastern and rural) regions. Over- and depopulating regions. Call for better service provision regarding life events connected to migration.	Support for better coordinated policies to enhance the circular movement and smooth sociocultural and economic integration of migrants coming from another Danube state (e.g. information and service provision related to administration such as residence permit, social benefits, and other life events).	PA9, PA10	PO4 (iii) increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services Interreg SO e) promoting social Inclusion and tackling poverty, including by enhancing equal opportunities and combating discrimination across borders.

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.1 Demographic conditions	Unmanaged influx and integration of immigrants.	Transnational cooperation in the field of border control systems and capacities	PA11	Interreg Regulation Article 14.5 - actions in the fields of border crossing management and mobility and migration management, including the protection of migrants.
3.5.1 Demographic conditions	One-way migration of (highly) skilled workforce towards the western and urban parts of the macro-region, as well as outmigration of skilled labour from the macro-region.	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.	PA9, PA10	PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure; (ii) improving access to inclusive and quality services in education, training and life-long learning through developing infrastructure Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders
3.5.1 Demographic conditions	Severe ageing is a global problem in the macro-region.	Coordinated strategies to find best practices for active ageing (e.g. social entrepreneurship) and family friendly functional regional planning policies considering the urban-rural differences.	PA9, PA10	PO4 (ii) improving access to inclusive and quality services in education, training and life-long learning through developing infrastructure; Interreg SO b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.1 Demographic conditions	Deficient social care system.	Support for joint testing of new or re-organized social services and transnational experience exchange with a special focus on solutions which would be capable of complementing the public social care networks (social innovation, social enterprises).	PA9, PA10	<p>PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure;</p> <p>(ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure;</p> <p>(iii) increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services;</p> <p>Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders</p> <p>b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders</p> <p>e) promoting social Inclusion and tackling poverty, including by enhancing equal opportunities and combating discrimination across borders.</p> <p>PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas</p> <p>(ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'</p>

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.3 Labour force migration, training and employment	Low educational attainment and thus low social mobility of some specific groups (e.g. unemployed and Roma people).	Cooperation of 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), focus on the quality aspect of education.	PA9 (PA8)	PO4 (ii) improving access to inclusive and quality services in education, training and life-long learning through developing infrastructure; Interreg SO b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders
3.5.2 Social disparities	Need for transnational antipoverty actions that decrease the inequalities and the characteristics of poverty.	Social innovation (Addressing specific groups/fields e.g. ageing society, youth unemployment, minorities, disabled persons, education for all, active labour market policy, social entrepreneurs/SMEs).	PA9	PO4 - (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure; (ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure; (iii) increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services; (iv) ensuring equal access to health care through developing infrastructure, including primary care; Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders e) promoting social Inclusion and tackling poverty, including by enhancing equal opportunities and combating discrimination across borders. PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.2 Social disparities	Need for development of basic public infrastructure in less developed parts of the programme area.	Promotion of cooperation between the relevant infrastructure development organisations both in east-west and rural-urban dimension.	PA10	this challenge could fit several PO
3.5.2 Social disparities	Still high presence of black economy.	Promotion of integrated regulatory and control mechanisms, legal cross-border labour movements.	PA8, PA11	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs;
3.5.3 Labour force migration, training and employment	Dependence of the labour market on few particular economic sectors. Need for restructuring and diversification of employment.	Implementation of territorially integrated action plans for employment with a special focus on enhancing the spreading of innovation structures targeting mono-functional (e.g. industrial, tourist) regions in particular.	PA8,PA9	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs; PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure; Interreg SO: a) enhancing the effectiveness of labour markets and improving access to quality employment across borders PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas (ii) fostering the sustainable and integrated development of urban, rural and coastal areas and local initiatives'

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.3 Labour force migration, training and employment	Insufficient development in labour cooperation in tackling long-term unemployment, unemployment for low qualified people.	Support for transnational cooperation and coordination of education/ academia, labour market (supply and demand of professional qualifications coordination)	PA8,PA9	<p>PO1 (i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship;</p> <p>PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure;</p> <p>(ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure;</p> <p>Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders</p> <p>b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders</p>
3.5.3 Labour force migration, training and employment	Uncoordinated mass migration from Ukraine serving private interest, still untapped potentials in guest worker systems.	Danube Region level employment services and labour market integration solutions for employees coming from non-Member States.	PA9	<p>PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure;</p> <p>(ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure; (iii) increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services;</p> <p>Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders</p> <p>b) improving access to and the quality of education, training and lifelong learning across borders with a view to</p>

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
				increasing the educational attainment and skills levels thereof as to be recognised across borders e) promoting social inclusion and tackling poverty, including by enhancing equal opportunities and combating discrimination across borders
3.5.3 Labour force migration, training and employment	Lack of employable active age workers, particularly in the eastern and rural parts of the macro-region.	Joint coordination of policies aiming to re-integrate elderly people to the labour market and of less labour-intensive technology developments.	PA8, PA9	PO1 (ii) reaping the benefits of digitisation for citizens, companies and governments; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship; PO4 (i) enhancing the effectiveness of labour markets and access to quality employment through developing social innovation and infrastructure; (ii) improving access to inclusive and quality services in education, training and life long learning through developing infrastructure; Interreg SO a) enhancing the effectiveness of labour markets and improving access to quality employment across borders b) improving access to and the quality of education, training and lifelong learning across borders with a view to increasing the educational attainment and skills levels thereof as to be recognised across borders
3.5.4 Interethnic conditions and cultural relations	Underutilised potentials in cultural diversity of the Danube Region and unsettled antipathies inherited from the past.	Support for joint actions promoting and advancing cultural diversity for economic development. Valorisation of cultural values.	PA3	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development

References	Main challenges	Transnational cooperation needs	Fit to the EUSDR Action Plan	Fit to the programming regulations
3.5.4 Interethnic conditions and cultural relations	Underutilised linguistic identities and cultural proximities to create cooperation within the region.	Promoting multilingualism between cultures for economic growth.	PA3	PO5 (i) fostering the integrated social, economic and environmental development, cultural heritage and security in urban areas; (ii) fostering the integrated social, economic and environmental local development, cultural heritage and security, including for rural and coastal areas also through community-led local development
3.5.4 Interethnic conditions and cultural relations	Poor integration of disadvantaged groups (e.g. Roma, elderly employed, youth unemployed people, in the Danube Region and missing improvements of their social conditions.	Elaboration and implementation of joint comprehensive programmes, actions for their integration.	PA9, PA10	PO4 (iii) increasing the socioeconomic integration of marginalised communities, migrants and disadvantaged groups, through integrated measures including housing and social services; Interreg SO e) promoting social inclusion and tackling poverty, including by enhancing equal opportunities and combating discrimination across borders

3. ANNEX 1. – DETAILED TERRITORIAL ANALYSIS

3.1 Glossary¹

Circular economy	An economic system aimed at eliminating waste and the continual use of resources. Circular systems employ different solutions such as reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a close-loop system, minimising the use of resource inputs and the creation of waste, pollution and carbon emissions
Creative industries	UNESCO defines cultural and creative industries as “sectors of organised activity whose principal purpose is the production or reproduction, promotion, distribution and/or commercialisation of goods, services and activities of a cultural, artistic or heritage-related nature.” This approach emphasises more than just the industrially made products of human creativity, it makes relevant the entire productive chain, as well as the specific functions of each sector involved in bringing these creations to the public. http://www.unesco.org/new/en/santiago/culture/creativeindustries/ (United Nations Organization for Education, Science and Culture (UNESCO))
Danube Region	The exact territory covered by the EU Strategy for the Danube Region affecting 9 EU Member States (Austria, Bulgaria, Croatia, Czech Republic, Germany - Baden-Württemberg and Bavaria - , Hungary, Romania, Slovakia, Slovenia) 3 accession countries (Bosnia and Herzegovina, Montenegro, Serbia - Kosovo and Metohija excluded) and 2 neighbouring countries (Moldova, Ukraine - Chernivetska Oblast, Ivano-Frankiviska Oblast, Zakarpatska Oblast and Odessa Oblast). In the text the Danube Region is often referred as ‘macro-region’ meaning the same Danube Transnational Programme Area
Dual economy	Dual economy refers to the existence of two separate economic sectors within one country, divided by different levels of development, technology, and different patterns of demand
European Groupings of Territorial Cooperation (EGTC)	Introduced by the Regulation (EC) No. 1082/2006 European Groupings of Territorial Cooperation (EGTCs) are special and still rather innovative type of governance and regional development tools for strengthening territorial cohesion, among others

¹ Where possible the glossary verbatim reflects the Danube Transnational Programme’s glossary published on their website:
<http://www.interreg-danube.eu/relevant-documents/programme-main-documents>.

EU15	Abbreviated term for the following European Union Member States: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom
EU28	Abbreviated term for all the current Member States of the European Union: Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, United Kingdom
Foreign Direct Investment (FDI)	An investment made by a firm or individual in one country into business interests located in another country. Generally, FDI takes place when an investor establishes foreign business operations or acquires foreign business assets in a foreign company
Human Development Index (HDI)	A statistical tool developed and compiled by the United Nations to measure various countries' levels of social and economic development based on mean years of schooling, expected years of schooling, life expectancy at birth, and gross national income per capita
Industry 4.0	It refers to a technological shift in manufacturing and service provision where it employs the means of automation and data exchange including Cyber-Physical Systems, Internet of Things, big data and analytics, augmented reality, additive manufacturing, simulation, horizontal and vertical system integration, autonomous robots as well as cloud computing. Its main purpose is to integrate and combine the intelligent machines, human actors, physical objects, manufacturing lines and processes across organizational stages in order to build new types of technical data, systematic and high agility value chains
Information and communication technologies (ICT)	The assembly of all the devices, networking components, applications and systems that allow people and organizations (i.e., businesses, nonprofit agencies, governments and criminal enterprises) to interact in the digital world
Multimodal transport	The carriage of freight or passengers, or both, using two or more modes of transport. Regulation (EU) 1315/2013 of the European Parliament and of the Council of 11 December on Union guidelines
Quadruple helix	Quadruple helix is an innovation cooperation model or innovation environment in which users, firms, universities and public authorities cooperate in order to produce innovations. The Quadruple Helix refers to the interaction of four pillars in innovation ecosystems: knowledge institutions, enterprises, government and civil society. These

innovations can be anything that is considered useful for innovation cooperation partners; they can be, for example, technological, social, product, service, commercial and non-commercial innovations.

http://www.researchgate.net/publication/265065297_Exploring_the_Quadruple_Helix (PDF Exploring Quadruple Helix report)

Research, development and innovation (RDI)

Activities undertaken by corporations or governments in developing new services or products, or improving existing services or products

Smart city

A smart city is an urban settlement aiming to enhance the quality of living of its citizens through the employment of smart technology, information and communication technologies (ICT) and thus improving the quality and performance of urban services such as energy, transportation

SME (Micro, Small or medium-sized enterprise)

The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro. http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_en.pdf (SME definition User guide and model declaration)

Social enterprise

A business dedicated for improving a certain, pre-defined social objective and thus serving the common good

TEN-T Multimodal Core Network

The strategically most important parts of the road, rail, inland waterways, maritime and air infrastructure network components, as well as the connecting points between the modes, identified according to a specific methodology, transparently and coherently applied and on which project development and implementation will be supported with priority European Commission – The Core Network Corridors – Trans European Transport Networks – 2013

Water exploitation index (WEI)

The indicator presents i) the annual total fresh water abstraction in a country as a percentage of its long-term annual average (LTAA) available water from renewable fresh water resources; ii) the annual groundwater abstraction as a percentage of the country's long-term annual average groundwater available for abstraction; and iii) the annual surface water abstraction as a percentage of the country's long-term annual average surface water resources available for abstraction. The latter is calculated as the total fresh water resources (external inflow plus precipitation less evapotranspiration) less groundwater available for abstraction.

3.2 Methodology

The main objective is to carry out a comprehensive territorial analysis of the Danube Region area that should serve for the strategic preparation of the ETC Danube Transnational Programme in the period 2021 to 2027 (DTP2).

The aims are twofold:

- To carry out a territorial and socio-economic analysis identifying the main challenges, needs and potentials characterising the Danube Region cooperation area as well as the actors holding such needs and/or being able to unfold such potentials;
- To provide contributions for identifying strategic topics that could be addressed by the DTP2 ETC programme through its transnational projects, according to the proposed legislative package for the new Cohesion Policy 2021-2027 and further developments that became available during the first half of 2019, in line with the revision of the European Union Strategy for the Danube Region (EUSDR) Action Plan.

For carrying out the Territorial Analysis, we will follow CESCI's cohesion-based transnational planning model.

The complexity of challenges regarding transnational development and cooperation asks for an analogically complex mix of answer-tools. One of these tools is addressing the design of a transnational strategy. It is clear that we need a different way of thinking compared to usual 'inland' planning since the understanding of the concerned space is entirely different. 'Container logic' of spatial understanding is insufficient at borderlands and transnational areas; these territories cannot be considered as the aggregation of several different 'containers' with clear development goals and governmental competencies. (Berzi 2017) These territories are complex, with unique development problems and interests (Perkmann 2003) which necessitates the application of a special planning approach. The planning methodology developed by CESCI is not purely theoretical, since it has been put in use in the SKHU INTERREG V-A Programme 2014-2020, in the INTERREG Danube Transnational programme's Territorial Background Analysis 2014-2020 and in some strategies drafted for the operating EGTCs along the Hungarian borders such as Rába-Duna-Vág EGTC (HU-SK), Banat-Triplex Confinium EGTC (HU-RO-SRB), Gate to Europe EGTC (HU-RO), Tisza EGTC (HU-UA), Mura Region EGTC (HU-HR), etc. In this chapter we schematically introduce this planning methodology for transnational cases.

First, we have to point out that our work must have a clear territorial determination. In terms of transnational planning, a transnational region is a territory that is shared by several national, local or regional authorities, which are co-located in different nation states. The transnational region is both physical and soft space where environmental, social and economic processes

are flowing through the borders, where social and economic relationships of societies are frequently crossing the administrative barriers. A transnational region is highly defined by its given border regimes. This could be fully integrated on all sides, cooperative or co-existent (Martinez 1994).

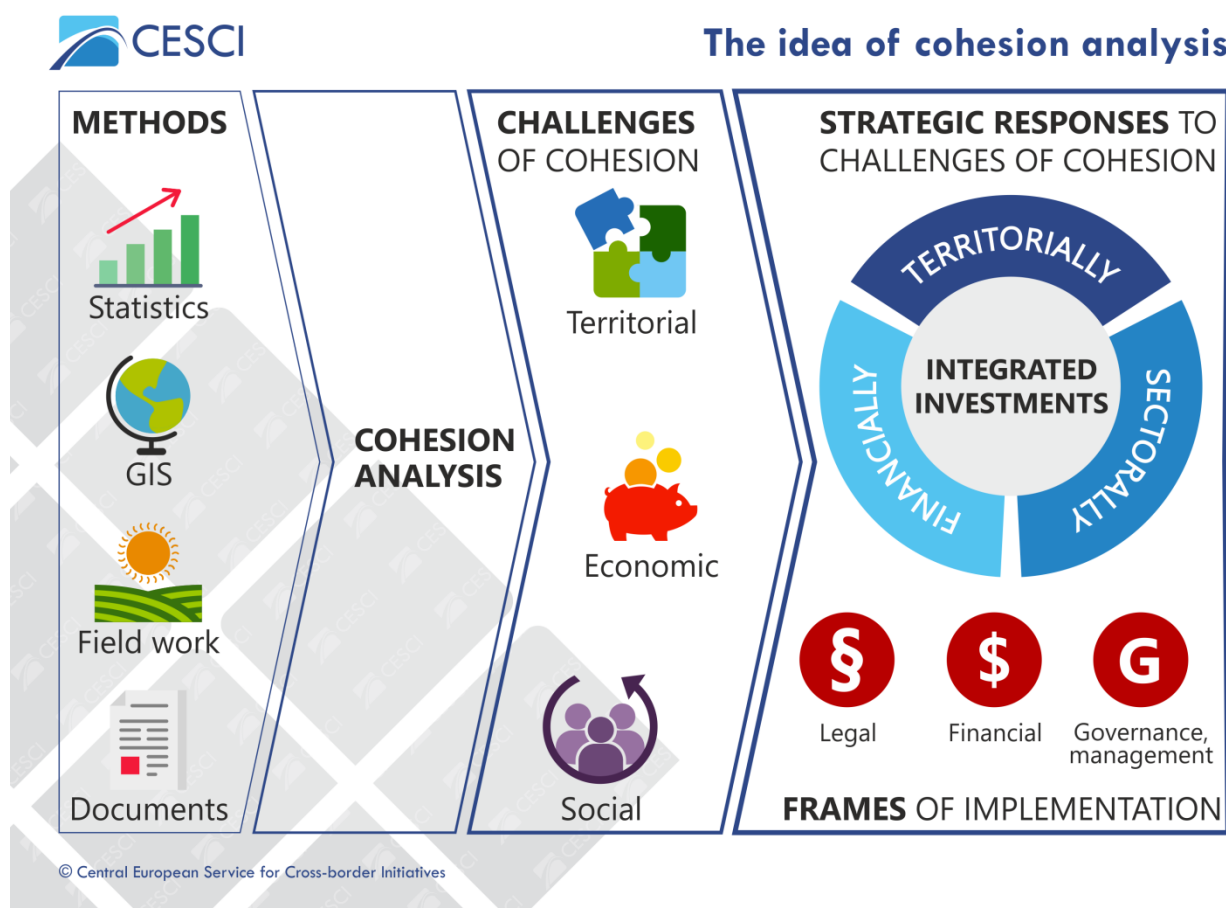


Figure 1: The idea of cohesion analysis

Cohesion analysis is an approach developed by CESCI, which provides a basis for transnational (and/or cross-border) planning and strategy making. It does not interpret the given border region along the traditional, 'container-based', administrative logic, but as a coherent unity and an independent planning entity. In the course of this type of situation analysis, the planner seeks to answer the main question of how the cohesion between the neighbouring areas could be intensified and what are the obstacles to this process of more dynamic internal spatial organisation. The main goal of our method is that the given transnational region is able to strengthen and tighten its internal, trans-boundary and inter-national relationships (based on its endogenous resources) so that its cohesion can be enhanced in a territorial, economic and social sense. Through this, our aim is to create a shared narrative on the transnational region itself where the administrative barriers play a much weaker role. For this purpose, the recommendations should lay the basis for developments creating situations equally beneficial for the people living on all sides of the borders. Hence the analysis of the situation is not based

on the traditional sectoral but on the cohesion logic presented above: the endogenous characteristics of the territorial (set of landscapes, density and capacity of border crossings, space organising tendencies and energies, settlement network conditions and potentials, governance and institutional cooperation), economic (infrastructure, shared and complementary economic conditions) and social cohesion (social situation, demographic conditions, interethnic relations, civil and institutional networks) are analysed. It means that many factors are not considered which are commonly analysed in other methodologies. As a starting point of the recommendations for transnational cooperation, the state-of-play analysis summarises exclusively the hindering or strengthening factors of each of three cohesion aspects, and identifies the challenges of an enhanced cohesion of the transnational region as a whole. In order to get access to the necessary information, we use the statistics available at European and national level but (taking into account the shortages of transnationally commensurable data available in the Danube Region) we also develop transnational regional statistics with the help of the local stakeholders. Besides, we analyse the available scientific and policy studies, as well as previously drafted strategies and plans. Below, for a clearer picture, we give a more detailed description of the methods applied, describing the state-of-play of territorial, economic and social cohesion of a transnational area.

First, with the cohesion analysis, the planner tries to interpret, and territorially understand the region in a wider context. Not only are the internal spatial relations examined, but also references are made to the main trends and development orientations created by the changes of the last decades. In the course of the analysis, we examine the typical landscape and environmental factors (such as landscape structures, climate conditions, water regime, soil conditions, land cover, etc.); characteristics of the urban network (based on gravity models and function analysis: where are the major infrastructural assets and institutions [e.g. schools, ports, transport hubs, etc.] located in the region; the status and permeability of the borders (the type of the border regime; the density and capacity of border crossings); existing cooperation structures and their governance frames.

In order to get a realistic picture on the status of the economic cohesion of a given region, it is worth conducting an economic analysis focusing on cohesion rather than on sectoral taxonomy. All economic sectors are analysed (primary, secondary, tertiary) by applying traditional methods – however the induction is shaped differently when emphasising the factors of economic cohesion of the Danube Region. The focus of the examination is given to the common and complementary economic characteristics (presence of parallel or complementary economic sectors; development potential of vertical integration; set of economic infrastructure, etc.) of the macro-region.

The third cohesion pillar of the analysis is the social one. The success of transnational cooperation is fundamentally determined by how local actors are involved in its

implementation, how they can rephrase the narrative which might once have been hostile. With a view to describing the level of social cohesion of a transnational area, we analyse its demographic characteristics, the features of migration, social differences, labour force supply and its mobility, level of education and employment, interethnic and cultural relations.

All the above analyses are framed by the existing planning documents (national, macro-regional strategies, plans, sectoral analyses and related EU policy documents) of the target area, since eventually these are the documents to designate possible (fundable) development directions. Therefore the related materials and regulations of EU and national levels are evaluated accordingly.

Each chapter of the cohesion analysis contains abundance of maps and figures. The analysis ends with a summary (SWOT), listing the factors strengthening and those weakening territorial, economic and social cohesion within the examined transnational region. These summaries constitute the basis for the identification of (territorial, economic and social) cohesion challenges.

3.3 Territorial cohesion

3.3.1 Landscape and environment factors, climate change, hydrography

There are as many as 7 **biogeographical regions** within the Danube Region, all of them having 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 only country which can be considered homogeneous is Hungary (Pannonian region only). Continental as the most widespread region type forges the macro-region into a sort of unity, it can be found in all related states except for Slovakia, Hungary and Montenegro. 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.

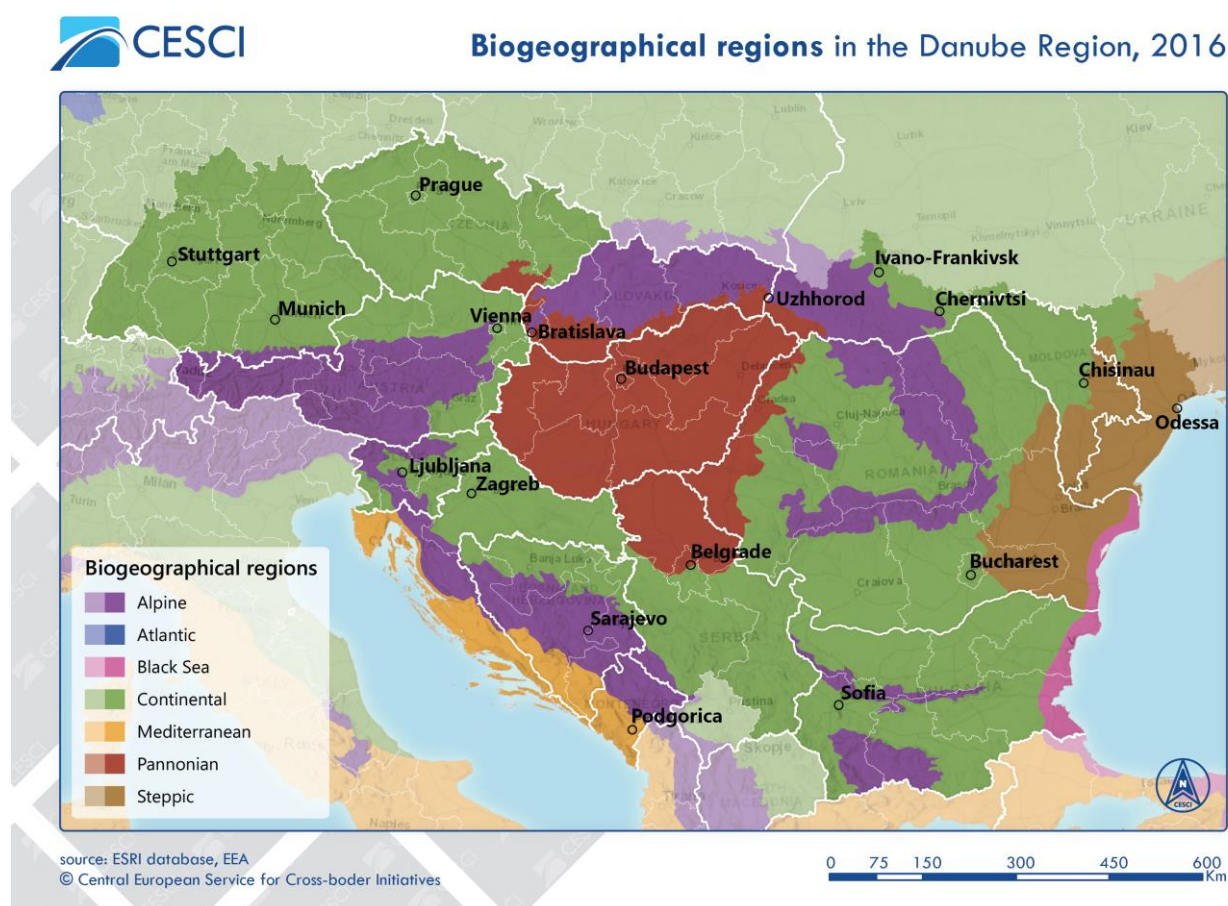


Figure 2: Biogeographical regions in the Danube Region

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. There is no single type which would unite the whole macro-region. However, as it can be seen on the map, 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). East European forest steppe (Ukraine, Moldova, Romania, Bulgaria), The most homogeneous countries are Hungary (only Pannonian mixed forests), Slovakia (Carpathian montane coniferous forests and Pannonian mixed forests), Bulgaria (mostly Balkan mixed forests and Rodope montane mixed forests), Serbia (mostly Pannonian mixed forests and Balkan mixed forests) and Montenegro (mostly Illyrian deciduous forests and Dinaric Mountains mixed forests), but the majority of the land is very mosaic in terms of natural flora. It is enough to take a look at Romania or small countries such as Slovenia, which has huge variety of eco-regions despite of its size. This transboundary diversity gives special attention to the transnational protection and management of the natural environment.



Figure 3: Ecological regions in the Danube Region

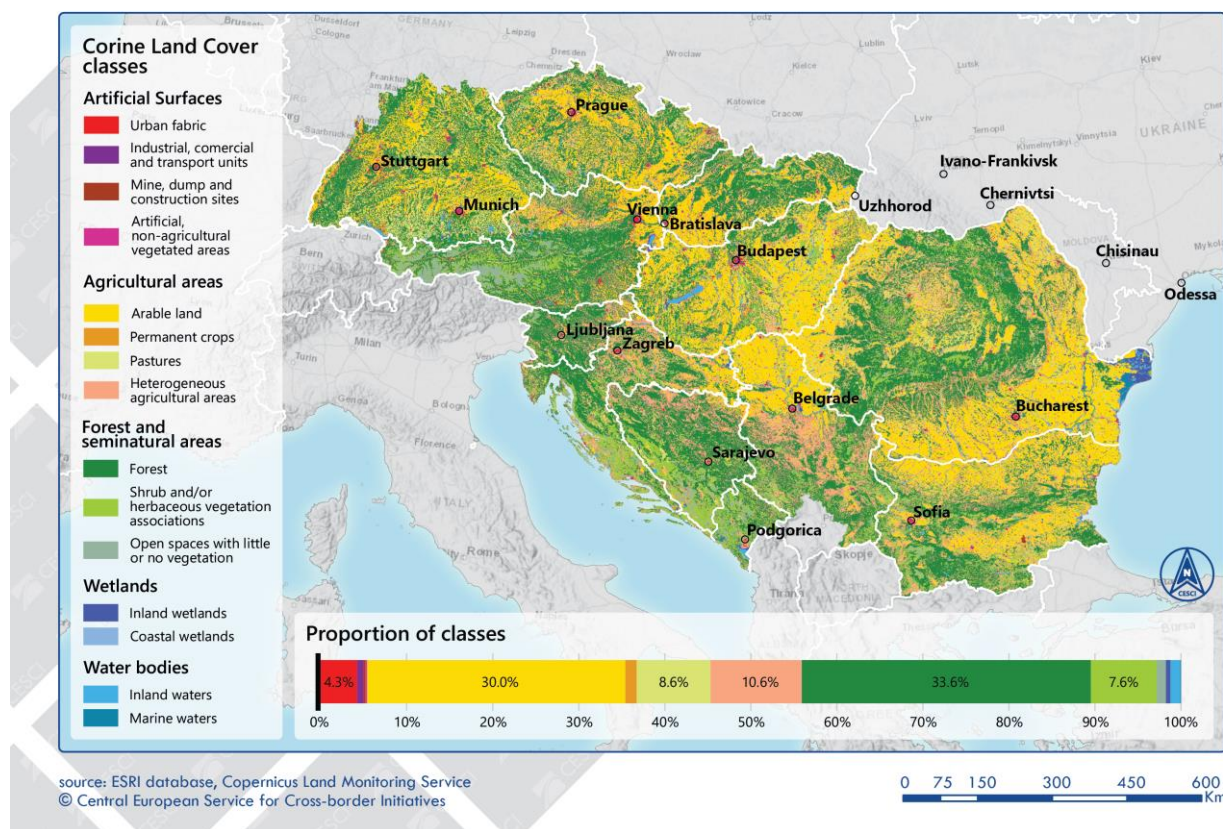


Figure 4: Land cover in the Danube Region

The Danube Region is highly characterised by arable land (33.6%) and forest (30%). These dominate the **land cover**, and cover the two-third of the macro-region. Agricultural areas altogether make up slightly more than half of the territory (50.5%), and surpass forest and semi-natural areas (42.3%). The spatial configuration of land use varies across the macro-region. Arable land is dominant in vast territories in Hungary (e.g. Hungarian Great Plain) and Romania (e.g. Wallachian Plain) especially, but major agricultural areas exist also in Serbia (Vojvodina), Bulgaria (Danubian Plain) and some other countries. A high share of plains is situated along the Danube giving them a transnational character. Forests are representing high proportions in countries like Austria and Slovenia, but extensive forest can also be found connected to high mountain ranges such as the Alps or the Carpathians. While on the western part of the macro-region including the western Balkans the land cover is more heterogeneous and mosaic-like, some other parts have a much simpler spatial structure with more monolithic structures.

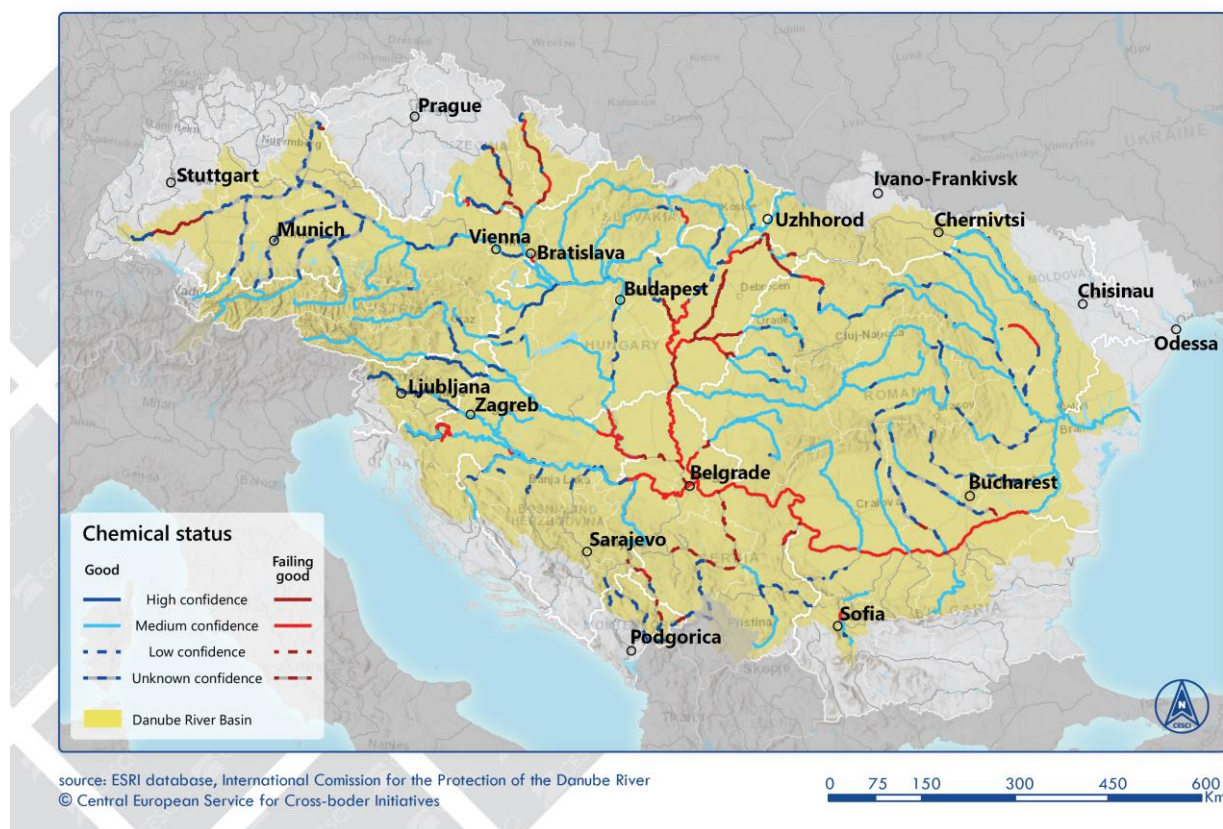








Figure 5: Chemical status of the rivers in the Danube River Basin

The **chemical status of the rivers** in the Danube River Basin varies from river section to river section. Transnational intervention would be needed in the case of Tisza/Tisa and many of its transboundary tributaries (Someş, Körös) in particular besides the Danube. The chemical status of the Danube is failing on long shared border sections in Serbia, Romania and Bulgaria. From the Budapest–Sarajevo line the status of the rivers is considerably better than on the eastern part of the macro-region.


















Table 1: Transboundary water supplies²

NAME OF THE GROUNDWATER BODY	SIZE (km ²)			AQUIFER TYPE ³	UTILISATION ⁴	OVERLYING STRATA (m)
	TOTAL	COUNTRIES AFFECTED	AREA PER COUNTRY			
Deep Thermal	5 900		1 650	K	SPA, CAL	100–1000
			4 250			
Upper Jurassic – Lower Cretaceous	24 184		12 844	F, K	DRW, AGR, IND	0–600
			11 340			
Middle Sarmatian - Pontian	22 308		9 662	P	DRW, AGR, IND	0–150
			12 646			

² source: International Commission for the Protection of the Danube River

³ Predominantly: P = porous; K = karst; F = fissured

⁴ DRW = drinking water; AGR = agriculture; IRR = irrigation; IND = Industry; SPA = balneology; CAL = caloric energy; OTH = other

NAME OF THE GROUNDWATER BODY	SIZE (km ²)			AQUIFER TYPE ³	UTILISATION ⁴	OVERLYING STRATA (m)
	TOTAL	COUNTRIES AFFECTED	AREA PER COUNTRY			
Sarmatian	5 412		3 225	K, F-P	DRW, AGR, IND	0–10
			2 187			
Mures / Maros	7 216		4 989	P	DRW, IRR, IND	2–30
			2 227			
Somes / Szamos	2 493		1 034	P	DRW, AGR, IRR	5–30
			1 459			
Upper PannonianLower Pleistocene / Vojvodina / Duna-Tisza köze déli r.	28 959		7 098	P	DRW, AGR, IND, IRR	0–125
			11 355			
			10 506			
Podunajska Basin, Zitny Ostrov / Szigetköz, Hanság Rábca	3 363		1 152	P	DRW, IRR, AGR, IND	2–5
			2 211			
Bodrog	2 216		750	P	DRW, IRR	2–10
			1 466			
Slovensky kras / Aggteleki-hegység	1 091		493	K	DRW, OTH	0–500
			598	K, F		
Komarnanska Vysoka Kryha / Dunántúli-khg északi r.	3 741		3 178	K	DRW, SPA, CAL	0–2500
			563	F, K		

Transnational coordination in the field of water supply management in the frames of a river basin management system is required in relation to many water bodies, including **groundwater**. Such bodies cover almost the same size of area as Bulgaria (106 883 km²). As many as 11 groundwater bodies exist which have a transnational relevance. There are significant similarities and differences according to the aquifer type, the utilisation and the overlying strata.

As it can be seen on the map, the **groundwater bodies of basin-wide importance** are situated in different parts of the Danube Region. 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. The most of them are stretching to Hungary, Slovakia and Romania. Nature protection, the decrease of pollution is extremely relevant in relation to some of the water bodies (indicated by red colour).

Chemical Status of Groundwater Bodies of Basin-wide Importance

DRBM Plan - Update 2015 - MAP 24



Figure 6: Transboundary water supplies of the Danube River Basin and their chemical status⁵

Soil types in the Danube Region

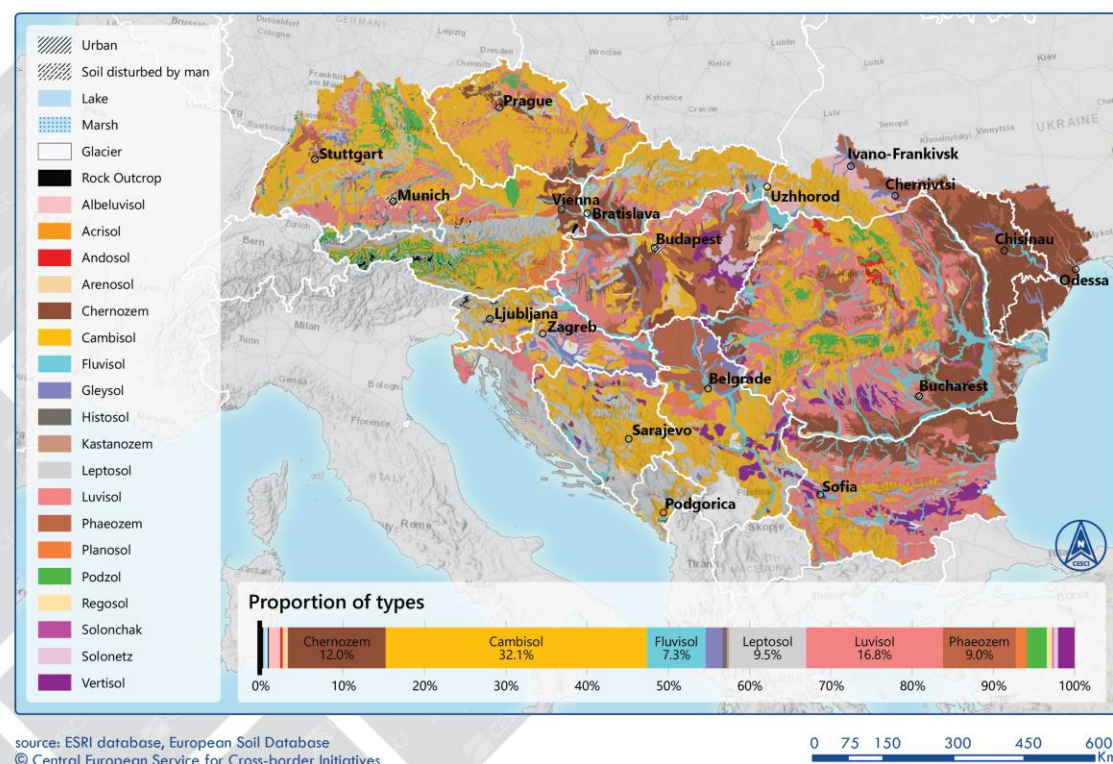


Figure 7: Soil types in the Danube Region

⁵ source: ICPDR

The Danube Region is rich in fertile **soils** and soils suitable for (intensive) agricultural cultivation (Chernozem with high humus content 12%, Phaeozem 9%, Cambisol 32.1%, Luvisol 16.8%, Fluvisol 7.3%). The share of less fertile or unfavourable soils (e.g. Leptosol, Podzol, Solonetz) for production is relatively low.

Climate change was expected to have the largest impact on the temperature between 1990 and 2015 in Europe, within the central and eastern regions of the macro-region, apart from some region of Spain, Italy etc. By the extension of the territorial coverage of the highest growing temperatures the Danube Region really stands out of all macro-regions. According to the **trends in temperature** the macro-region will be hit by increasing temperatures. Thus, global warming has to be tackled and mitigated on a transnational scale, and transboundary cooperation is needed in order to reach better efficiency in preparing for climate change and to decrease the negative impacts.

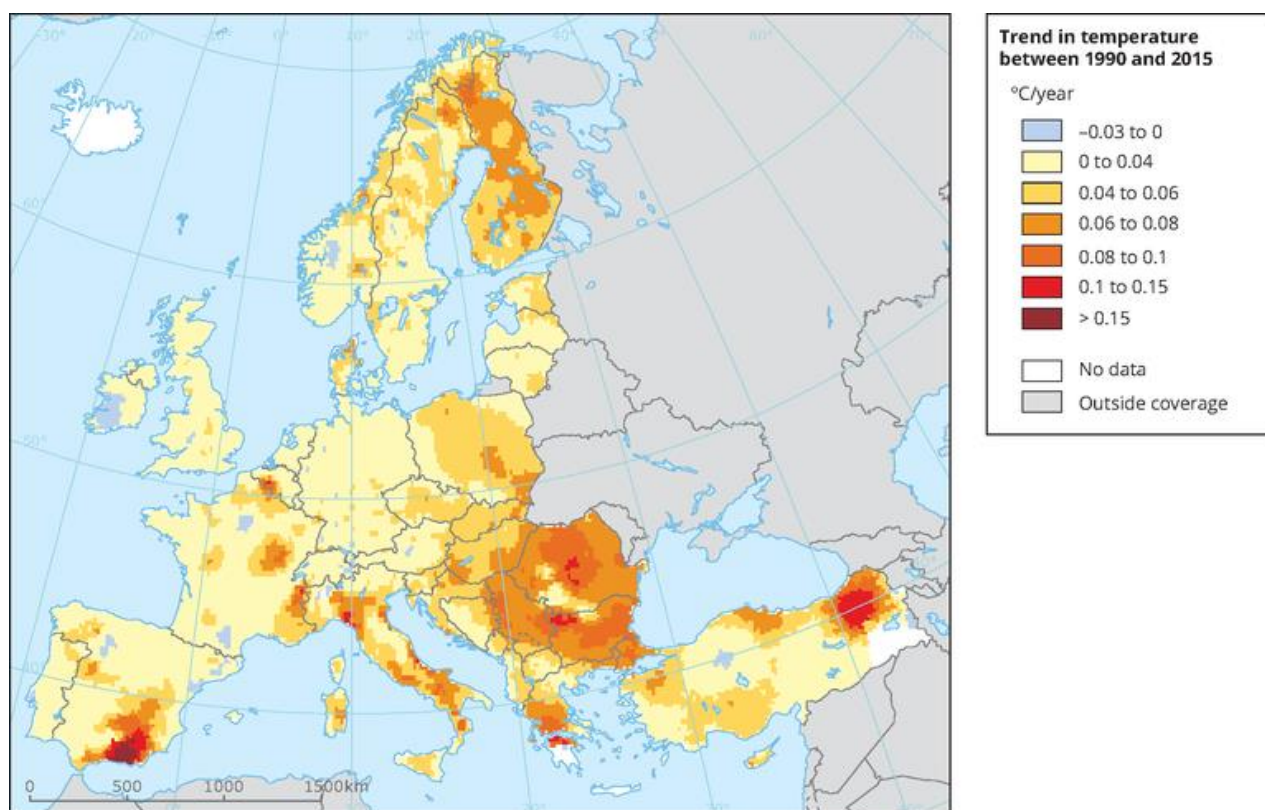


Figure 8: Trends in mean near-surface temperature between 1990 and 2015 in Europe⁶

⁶ source: European Environment Agency

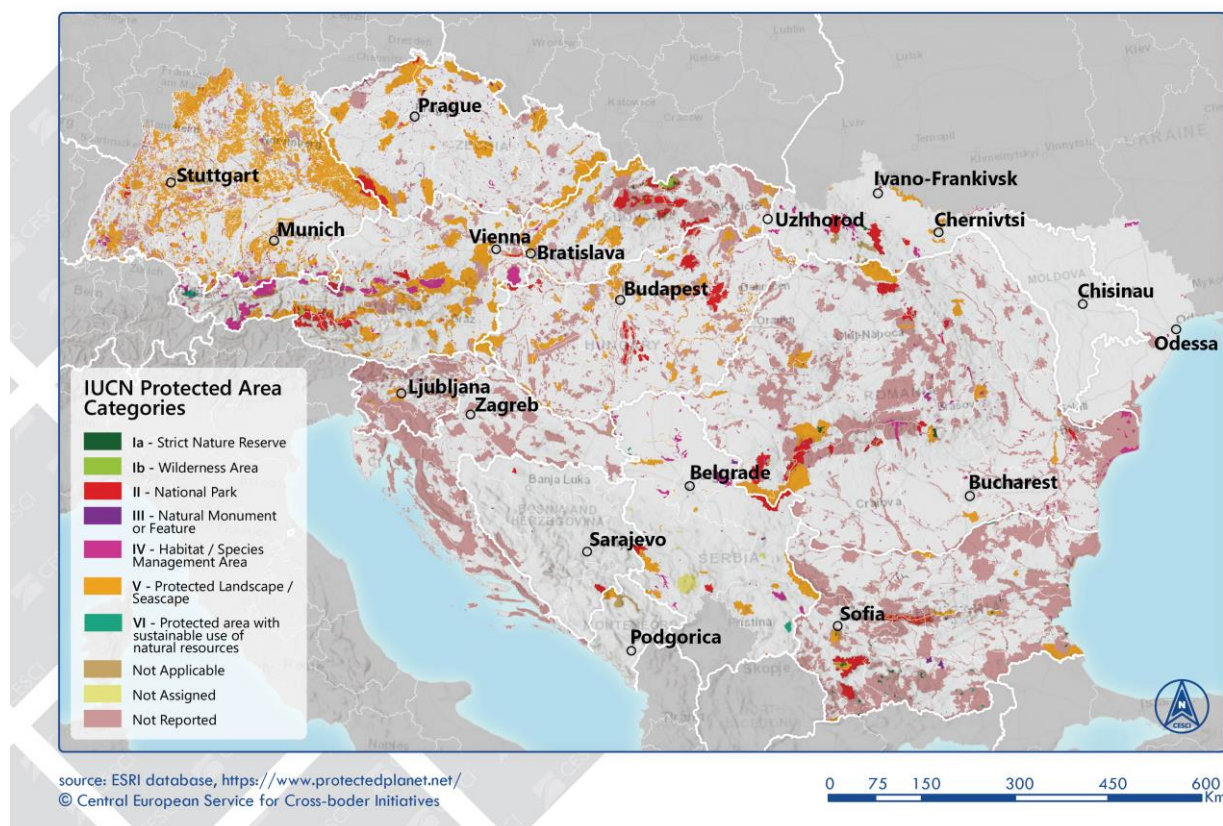


Figure 9: Protected areas in the Danube Region

The Danube Region is rich in different categories of **protected areas** including transboundary regions of high biodiversity from lowlands and gorges (e.g. the Danube Delta, Iron Gates) to hilly and mountainous landscapes (e.g. Dynaric Alps, Balkan Mountains, Czech Forest-Bavarian Forest). 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, and human and financial resources etc. 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 a transnational level, thus state borders fragment even the otherwise similar environments by hard artificial borders.

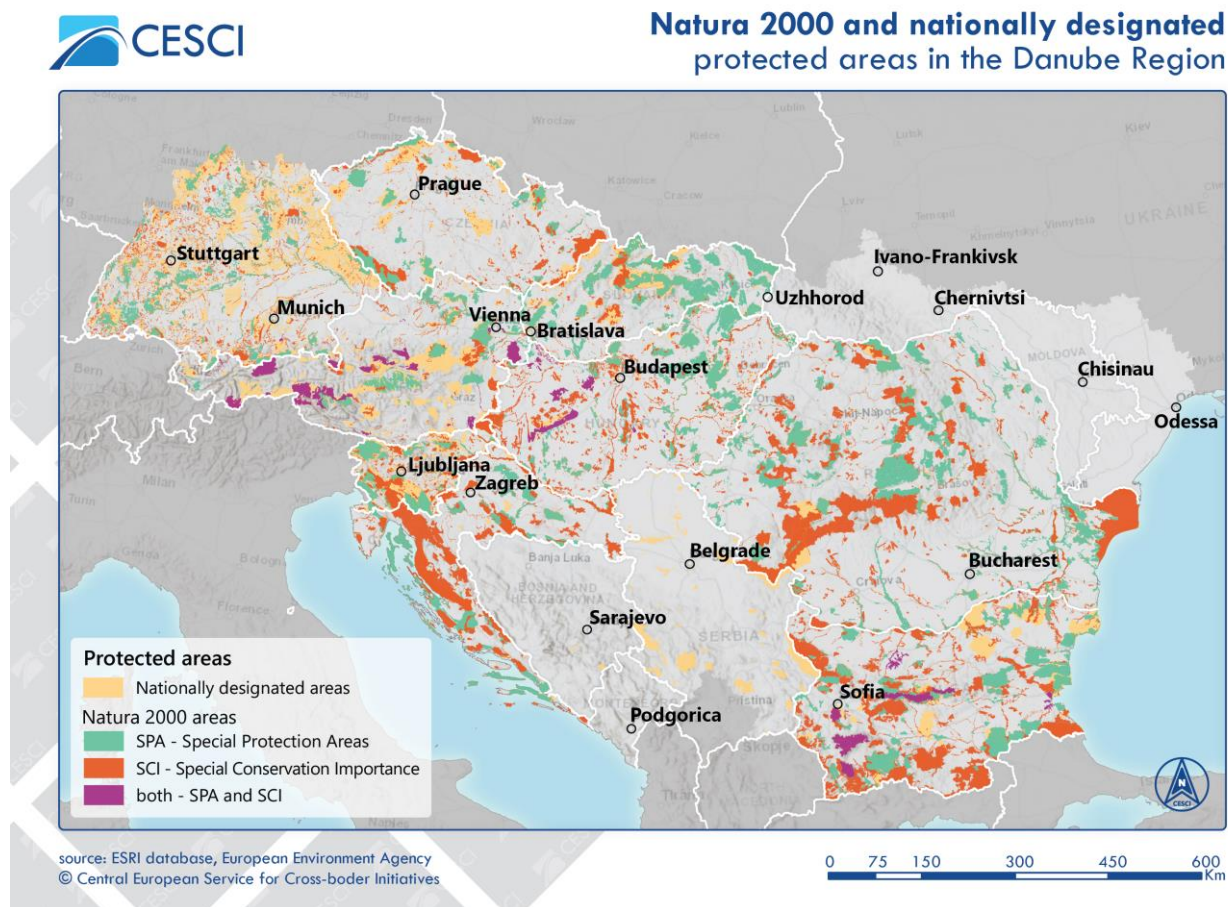


Figure 10: Natura 2000 and nationally designated areas in the Danube Region

Based on other categorisation, which divides areas according to **nationally, or Natura 2000 designated areas**, the same heterogeneity of protected areas stands out. Still, it is apparent that many and large areas have transboundary relevance in terms of nature protection such as major mountain ranges and wetland habitats of which the Danube Basin is of outstanding importance.

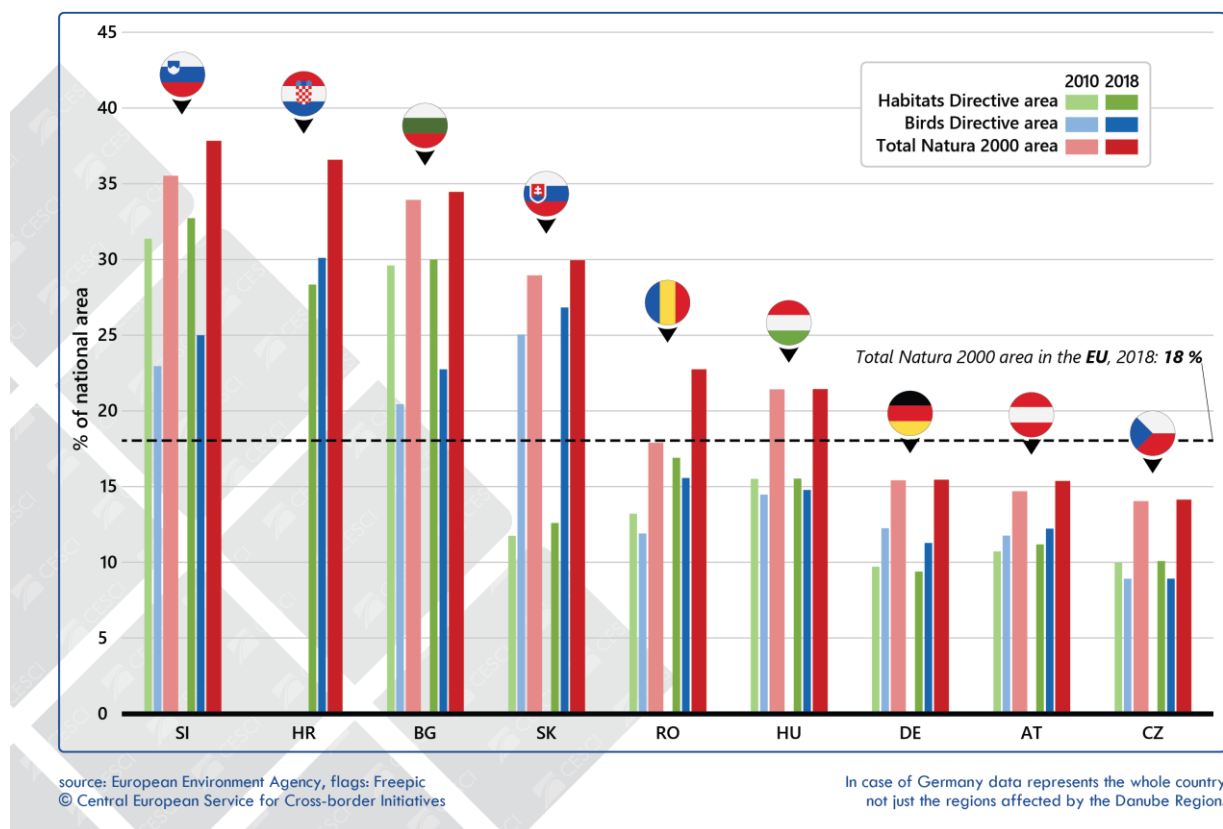


Figure 11: Ratio of Natura 2000 areas in the Danube Region

The **ratio of Natura 2000 areas** in the Danube Region can be considered high, and is significantly higher in almost all states (for which there is data) compared to the EU average (18%). The leading countries with the most extensive protected areas are Slovenia (38%), Croatia (37%), Bulgaria (34%) and Slovakia (30%). Another group of states are formed by Romania (23%) and Hungary (21%). Only Germany (15%), Austria (15%) and Czech Republic (14%) remain under the EU average. However, except for Romania almost exclusively, no significant increase in protected areas took place in the examined period.

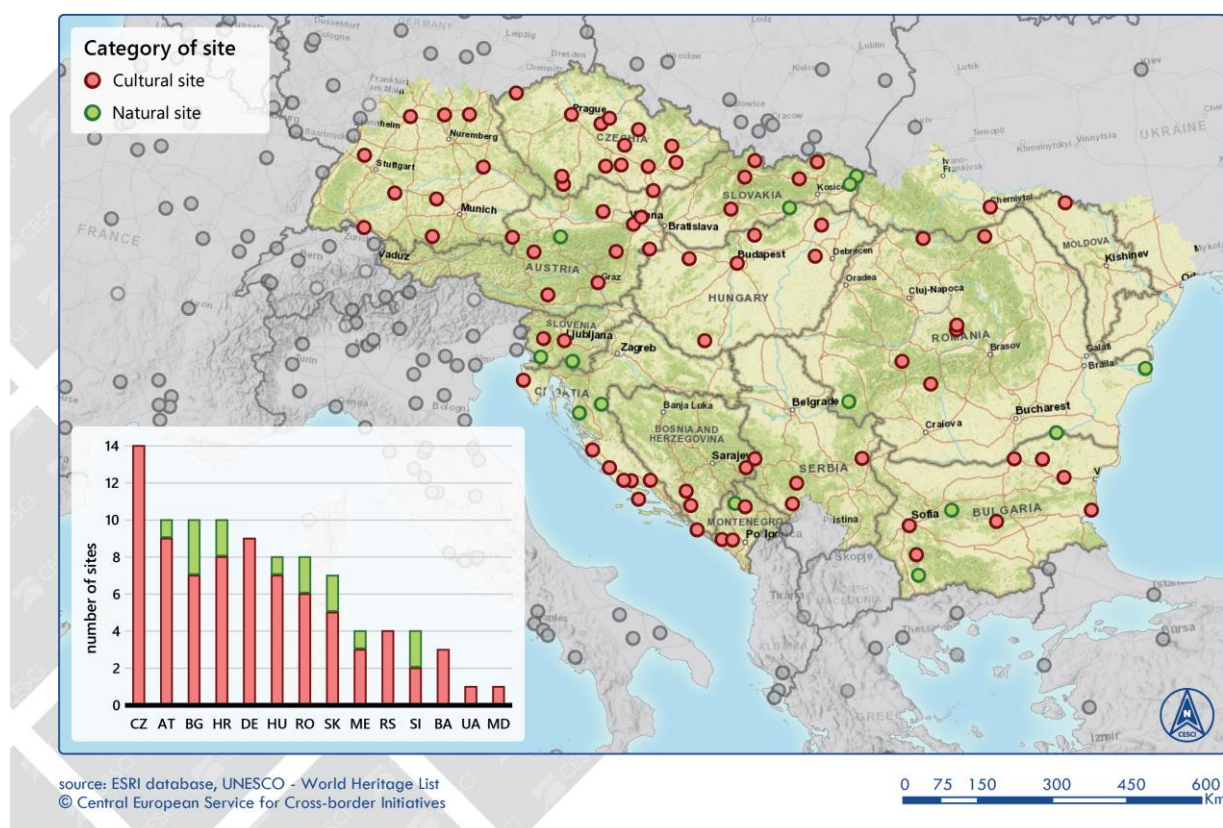


Figure 12: World Heritage Sites in the Danube Region

The Danube Region is rich in UNESCO **World Heritage Sites**. The highest number of sites can be found in Czech Republic, Austria, Bulgaria and Croatia, while in Bosnia, Ukraine and Moldova their number is low. The majority of sites are cultural sites (including cultural landscapes). A significant proportion of the areas rich in cultural and natural heritage are having a transnational character, or situated in the vicinity of a state border. The listed ones are shared by at least two countries of the macro-region (countries from the macro-region are written in parentheses):

- Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe: (Austria, Bulgaria, Croatia, Germany, Romania, Slovakia, Slovenia, Ukraine);
- Prehistoric Pile Dwellings around the Alps: (Austria, Germany, Slovenia);
- Fertő / Neusiedlersee Cultural Landscape (Austria, Hungary);
- Struve Geodetic Arc (Moldova, Ukraine);
- Stećci Medieval Tombstone Graveyards (Bosnia and Herzegovina, Croatia, Serbia, Montenegro);
- Venetian Works of Defence between the 16th and 17th centuries: Stato da Terra – western Stato da Mar (Croatia, Montenegro);
- Caves of Aggtelek Karst and Slovak Karst (Slovakia, Hungary).

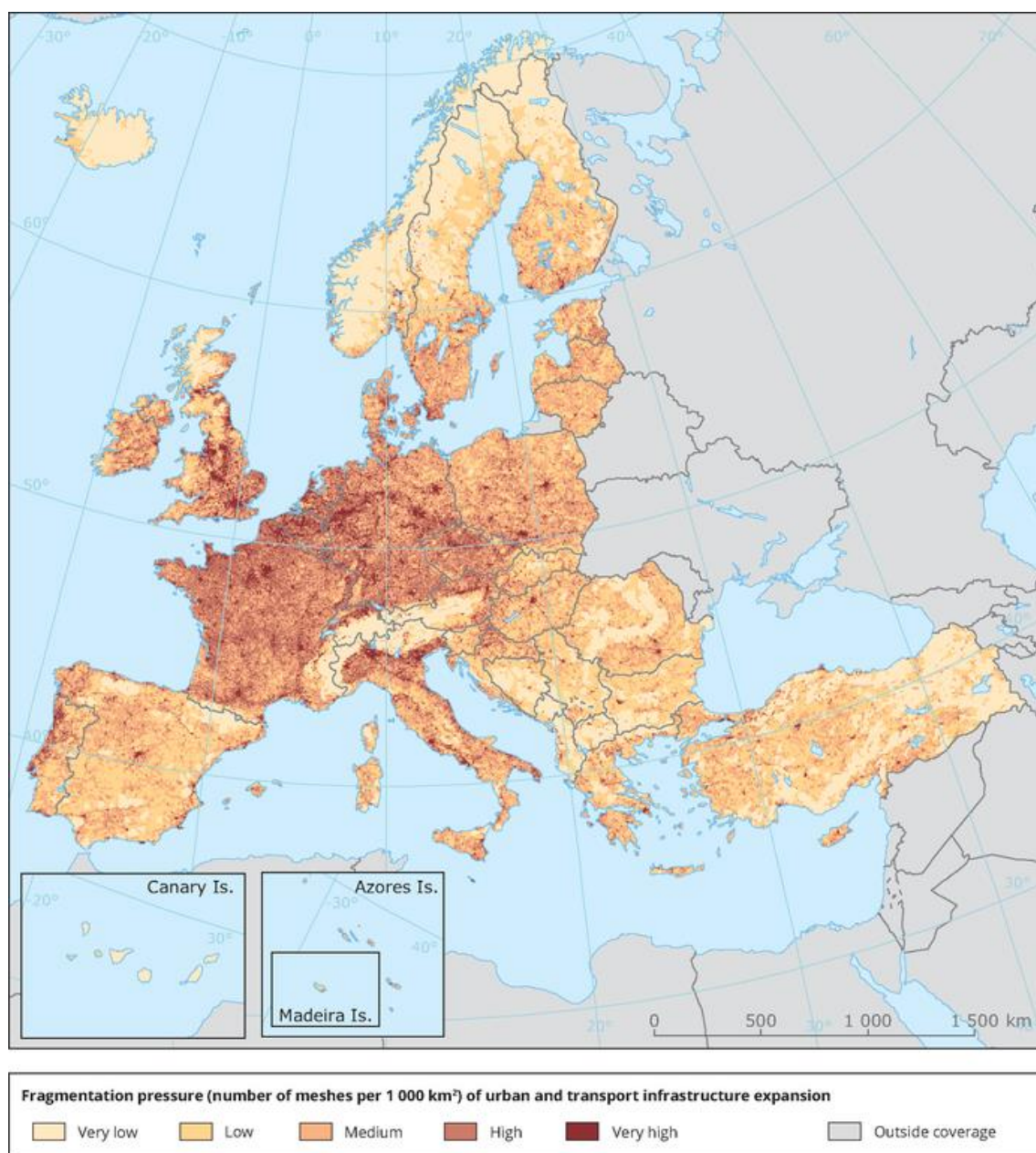


Figure 13: Fragmentation pressure (number of meshes per 1 000 km²) of urban and transport infrastructure expansion⁷

Considering that light colours mean less **fragmentation pressure** and dark colours mean higher fragmentation pressure of urban and transport infrastructure expansion it can be said that the macro-region is situated in the midrange in Europe. The southern parts of the macro-region are affected by relatively low fragmentation levels especially in comparison to the Benelux States. Apart from the mountainous regions (mostly in the related parts of the Alps but also the Carpathian range) the infrastructural and economic developments of the past couple of decades left a visible mark especially on the western part of the Danube Region (see Germany, Czech Republic, or some parts of Austria for example). However, in the case of the majority of the territory this level of fragmentation has not yet caused irreversible deterioration

⁷ source: European Environment Agency

of biodiversity and natural habitats. There is still room – notably at the eastern and southern regions – for the urbanisation and industrialisation drive to be channelled into sustainable, green infrastructural solutions preserving the still close-to-nature character of landscapes and eco-regions rich in natural heritage.

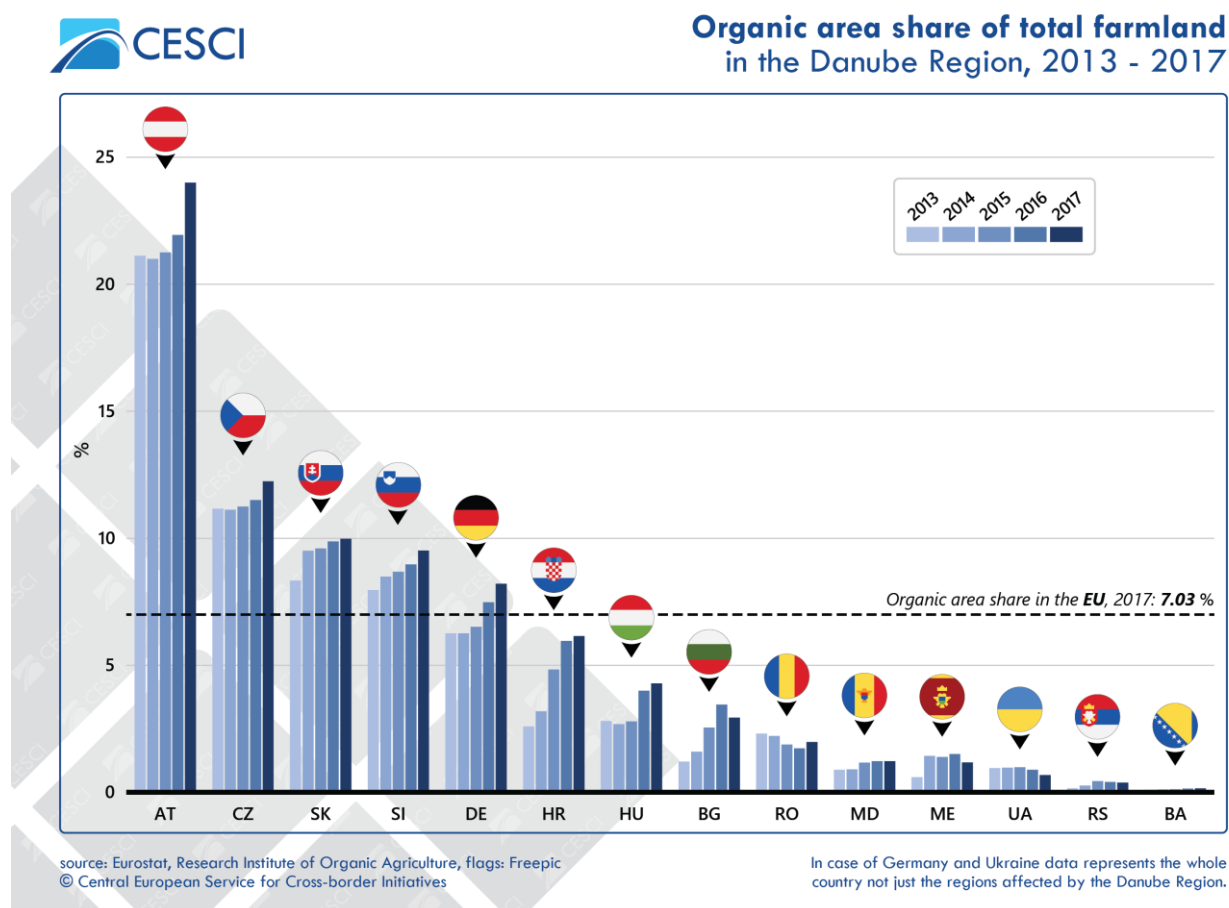


Figure 14: Organic area share of total farmland in the Danube Region

The Danube Region covers large areas of agricultural land, thus it is important to know how the cultivation of farmlands is exercised. The macro-region (6.3%) performs worse than the EU average (7%) mainly because of eastern and south-eastern states with low **organic area of total farmland**. There are high proportion of intensive farmlands in Croatia (the share of organic is only as low as 6.2%), Hungary (4.3%), Bulgaria (2.9%), Romania (2%), Moldova (1.2%), Montenegro (1.5% in 2016), Ukraine (0.7%), Serbia (0.4%), and Bosnia and Herzegovina (0.1%). It is highly problematic since high proportion of intensive farmlands with a small share of organic farming is experienced in the less adaptive south-eastern territories. Mainly due to concentration and centralisation of agricultural properties in the hands of few economic players, it is difficult to extend organic farming. Intensive agriculture continues to play an important role in many countries. Thus, in eco-friendly agricultural developments it hegemony of intensive farming should be taken into account. Favourable and increasing data in relation

to organic farmlands can be found in the case of Austria (24%) in particular, followed by Czech Republic (12.2%), Slovakia (10%), Slovenia (9.5%) and Germany (8.2%).

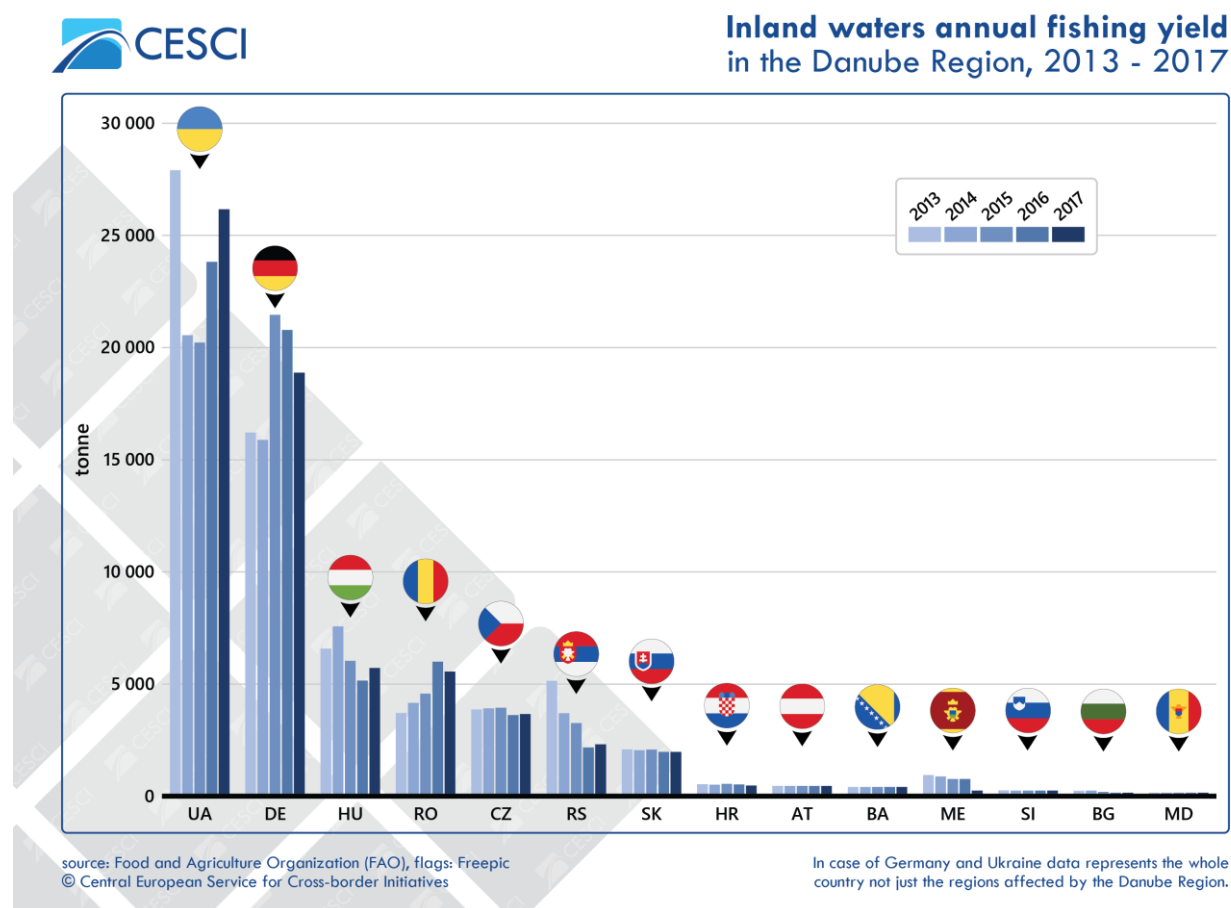


Figure 15: Inland waters annual fishing yield in the Danube Region

Apart from agricultural lands inland waters also play a role in catering. Ukraine (26 053) and Germany (18 773) lead the chart owing to their size and number of large rivers and lakes. These two are followed by Hungary (5 607), Romania (5 445), Czech Republic (3 557), Serbia (2 209) and Slovakia (1 870) as other relevant countries with notable **annual fishing yield from inland waters**. It can be said that apart from Ukraine and Romania the north-western part of the Danube Basin stands out in yield numbers. Except for Romania (+51.3%), Germany (+16.6%) in all related countries the yields have dropped from the level of 2013 (e.g. by 82.7% Montenegro, by 61.5% in Bulgaria or by 56.2% in Serbia).

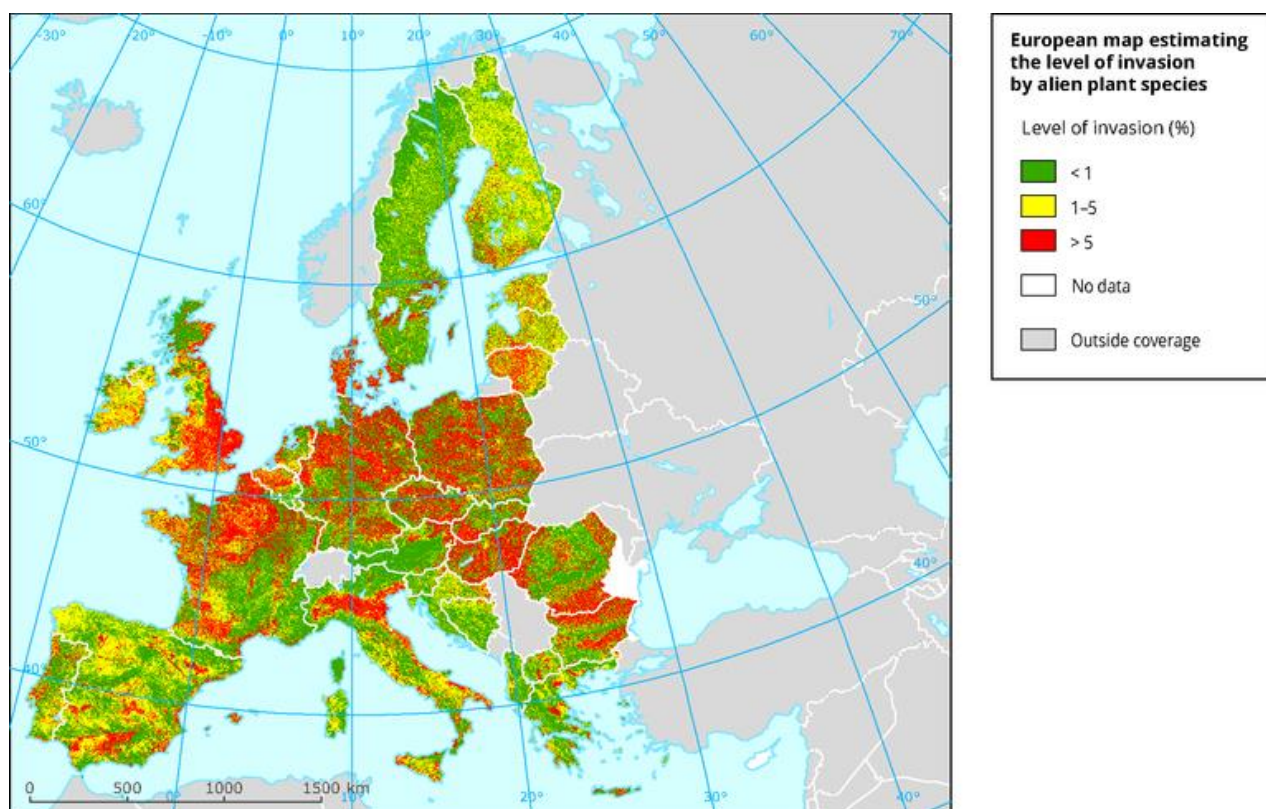


Figure 16: European map estimating the level of invasion by alien plant species⁸

The map represents an estimation of the **level of invasion by invasive (alien) plant species**, based on the mean percentage of neophytes in vegetation. Several crucial observations can be made (even though that information is missing for some related countries). First of all, compared to the Scandinavian or the Iberian Peninsula, in the Danube Region the level of invasion by alien plant species is considerably higher, and represents a challenge to be tackled on a transnational scale. Secondly, the map also reveals that the concentration of these neophytes are higher in the central parts of the macro-region; almost everywhere in Hungary it surpasses 5%, but towards the externalities of the territory this ratio is somewhat decreasing in a way that the Carpathian range and the western side of the Balkan Peninsula offers habitat for the least number of alien plant species. Finally, a slightly isolated zone of high level of alien species is present at the Romanian-Bulgarian border, which also has a transboundary character.

At the same time in the Danube Region's context the invasive, alien species (including e.g. fish, crab, shellfish populations) living in the Danube and its tributaries represent a major threat to the native biodiversity. Due to mostly the intensive water freight transport in the past decade, six species of neophytes, 19 alien macroinvertebrates and 15 non-native fish species were recorded during the Joint Danube Survey 2. Already the report from 2007 mentions that the total number of alien species recorded, as well as their frequency and abundance indicate a

⁸ source: European Environment Agency

high level of biological contamination whose exact size and nature is not even exactly mapped out due to missing data. Detection, monitoring, impact assessment and management are necessary on the transnational level for the phenomena to be handled efficiently in order to protect autochthonous ecosystems.

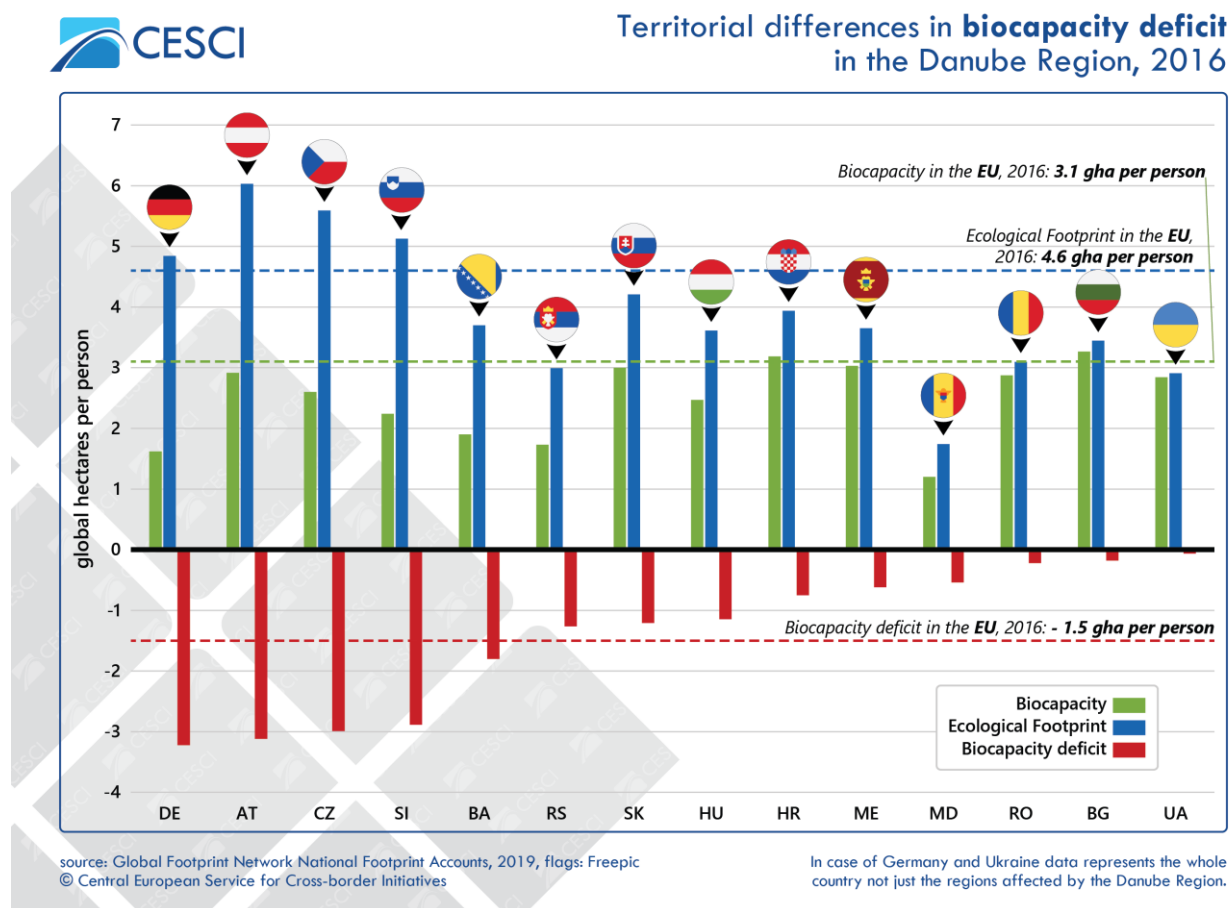


Figure 17: Territorial differences in biocapacity deficit in the Danube Region

Sustainability is a major issue in the Danube Region especially knowing that **biocapacity** is under the EU average, while ecological footprint is higher than of the EU28 in the majority of states. In all countries ecological footprint exceeds biocapacity resulting in biocapacity deficit. The largest deficit is created in Germany (-3.22 global hectares per person) followed by Austria (-3.12), Czech Republic (-2.99) and Slovenia (-2.89). On the other hand, eastern economies and societies such as Moldova (-0.54), Romania (-0.22), Bulgaria (-0.18) or Ukraine (-0.07), the deficit is very low.

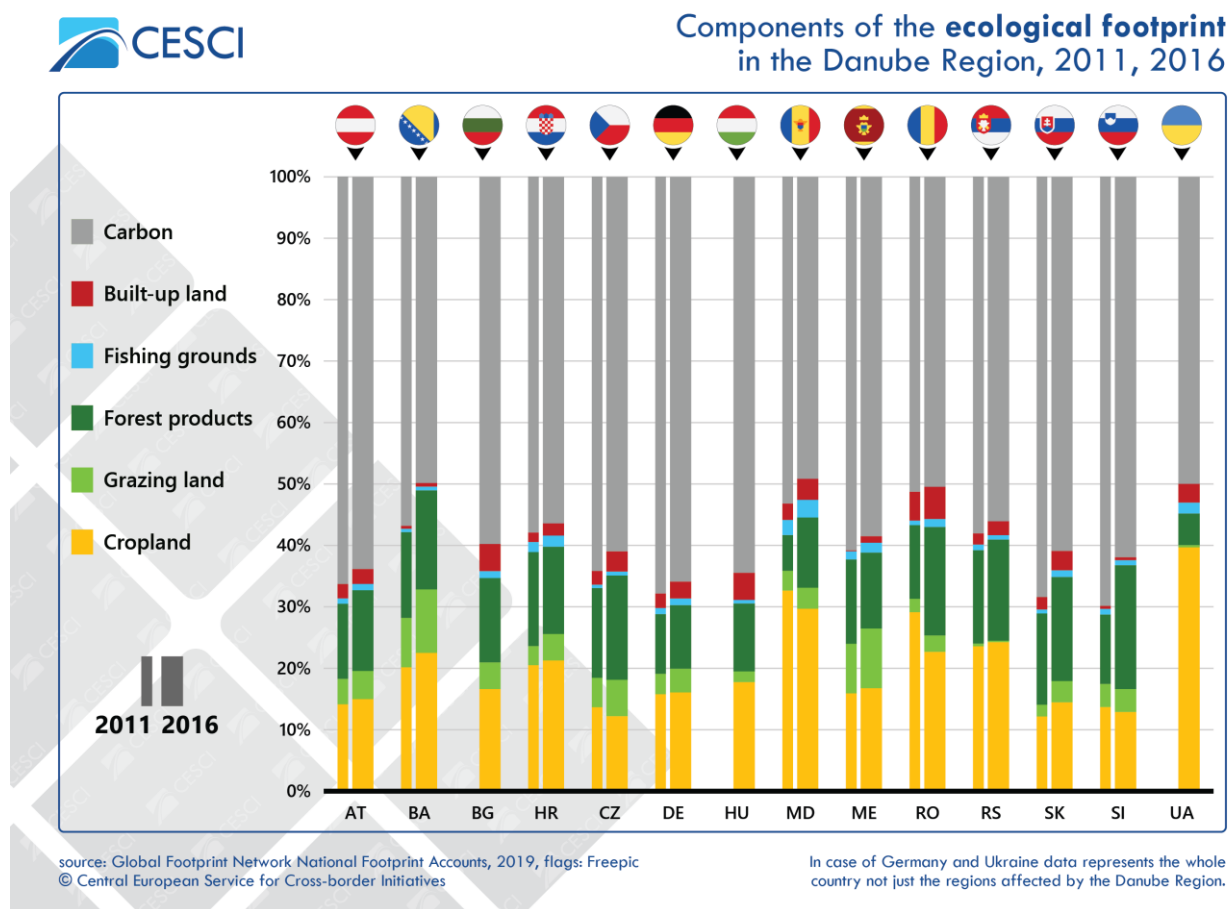


Figure 18: Components of the ecological footprint in the Danube Region

When it comes to the **components of the ecological footprint**, except for Moldova, more than the half of the footprint derives from carbon in each country. Carbon has extremely high share behind the footprint in Austria, Czech Republic, Germany and Slovenia. Besides carbon the macro-region has a lot to do in decreasing cropland as well as forest footprint. Sustainability could be improved a lot in relation to Ukraine, Moldova, Romania, Serbia, Bosnia and Herzegovina and Croatia owing to high contribution of crops to the footprint. Thus, more eco-friendly agriculture and forestry would be well advised.

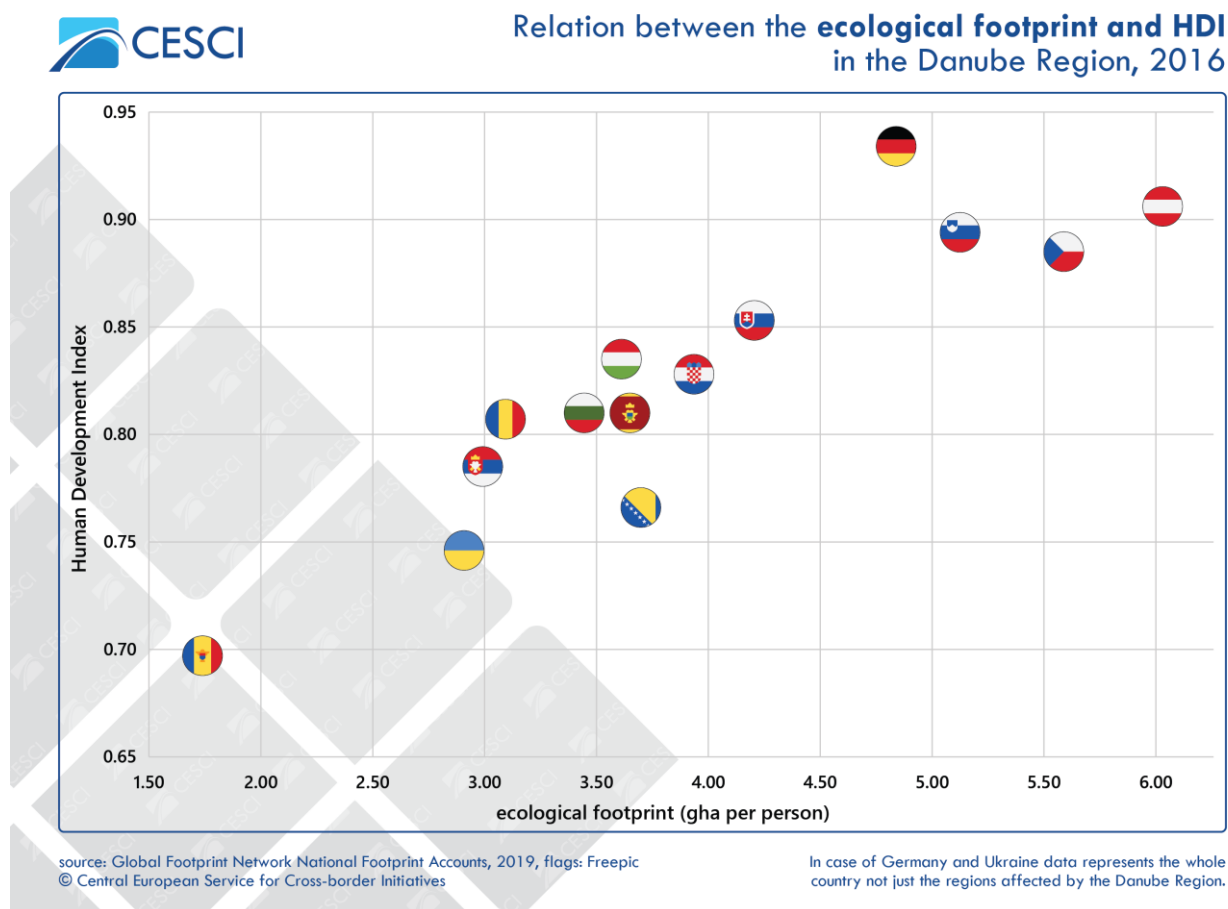


Figure 19: Relation between the ecological footprint and HDI in the Danube Region

As it can be seen on the figure showing the **relation between the ecological footprint and HDI**, three distinctly different groups of countries can be defined at pairing ecological footprint with the Human Development Index. Austria, Czech Republic, Germany and Slovenia are developed countries with outstandingly high footprint. The majority of countries, which are heterogeneous themselves too, are part of those states which can be characterised by medium level of human development comparing them to the other Danube Region states, and also by medium level of ecological footprint. Moldova (as well as Ukraine and slightly Serbia) are countries with relatively low HDI and with low ecological footprint as well.

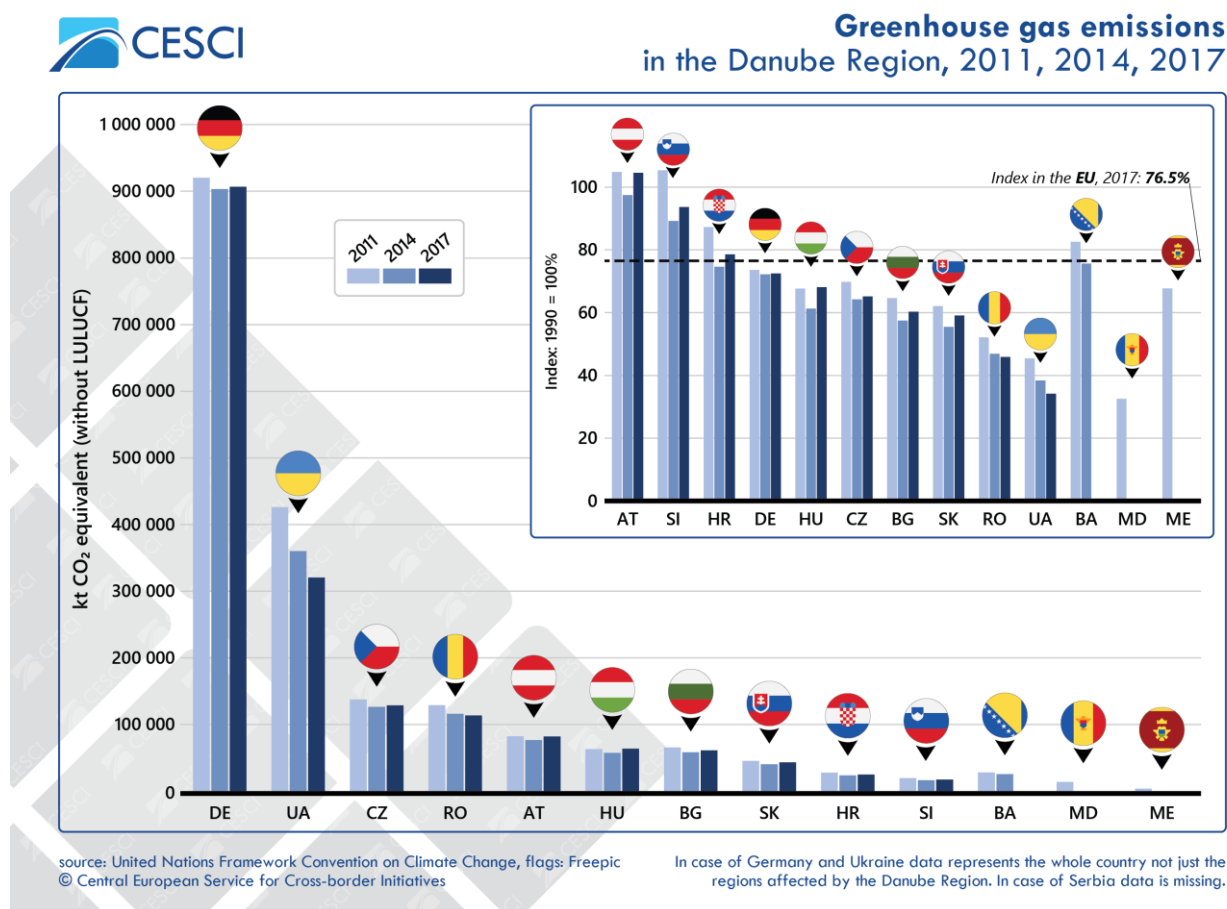


Figure 20: Greenhouse gas emissions in the Danube Region

In the Danube Region Germany (906 611 kt CO₂ equivalent) and Ukraine (320 626) are by far the largest polluters when it comes to **greenhouse gas emissions**. Compared to its size Czech Republic (128 675) and Austria (82 261) can be regarded as highly emitting countries. Owing to their size and development of their economies Slovenia, Bosnia and Herzegovina, Moldova and Montenegro are less relevant emission sources. In comparison with the 1990 levels, Austria, Slovenia and Croatia are emitting more gases to the air, while the majority of the national economies have performed better in GHG reduction. However, it has to be noted that the largest part of reduction took place already in the 1990s and early 2000s in the former Easter Block mainly because of the collapse of the inherited socialist polluting heavy industry and not because of successful measures in fighting climate change. From this perspective the data of some former socialist Yugoslavian states such as Bosnia and Montenegro seems still high. There is no clear sign of decreasing emission levels except for very few countries. Comparing emission figures of 2011 and 2017, Slovenia (-24.8%), Ukraine (-11.1%) and Romania (-10%) have managed to significantly decrease the emission, while many countries have been known for slight decrease or, even increase (Czech Republic +0.7%). GHG reduction is thus still a relevant measure to fight global warming.

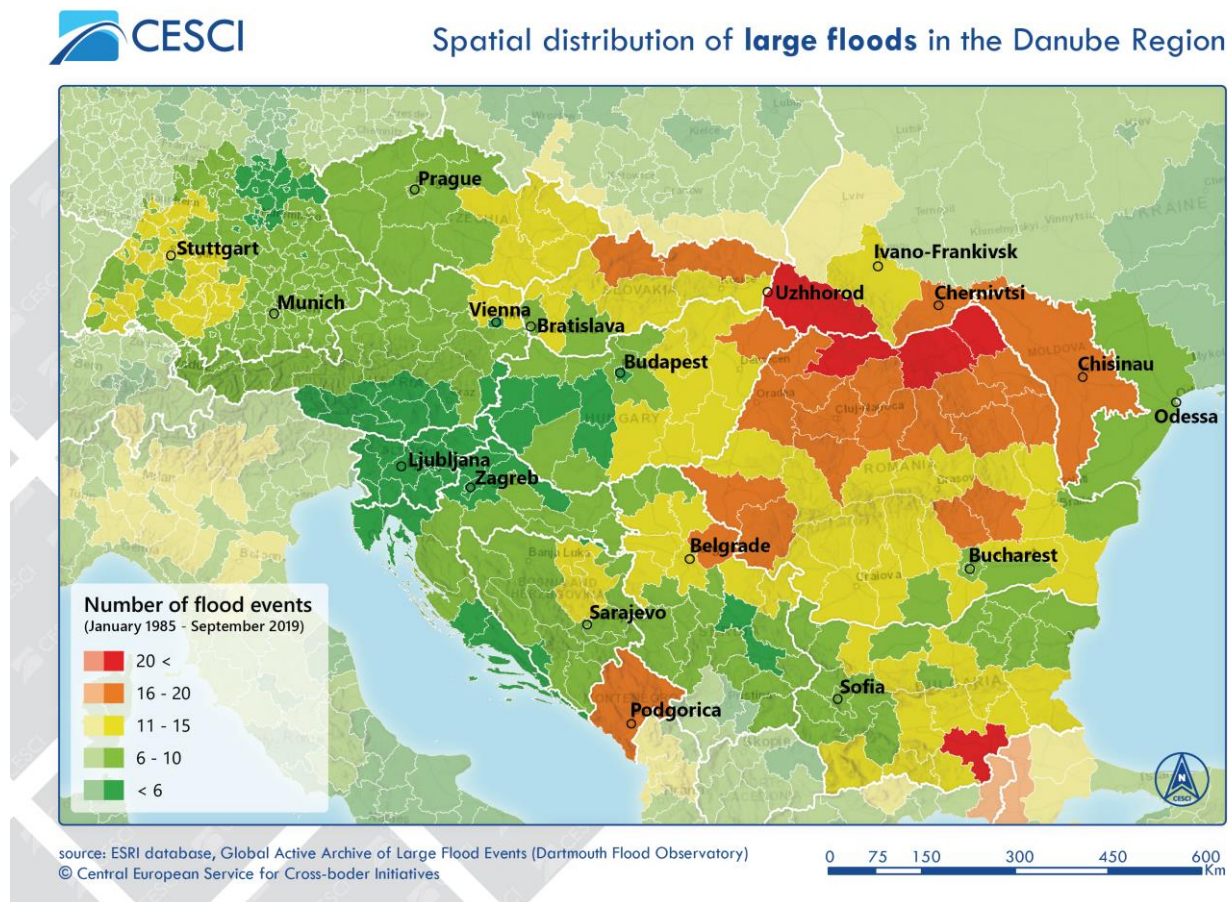


Figure 21: Spatial distribution of large floods in the Danube Region

The Danube Region is a part of continental Europe which is heavily exposed to **large floods**. Owing to the geographical features of having both upstream and downstream areas with a transboundary character, the macro-region has been experiencing frequent floods. The number of flood events is very high, and thus environmental risks and potential damage can be high as well, in many regions. Neighbouring regions with high number of flood events are situated on the north-eastern part of the macro-region. Such regions cover the catchment area of the Upper Tisa and the Dniester with its tributaries in particular. These regions incorporate and group around the joint border areas of Ukraine (e.g. Zakarpattia Oblast), Romania (e.g. Maramureş County, Suceava and Botoşani Counties) Slovakia (e.g. Prešov Region), Hungary (mainly Szabolcs-Szatmár-Bereg County) and Moldova. Another highly flood hazardous region can be found on the Lower Tisa, close to the trinational border of Romania, Hungary and Serbia. There is a need for an even more efficient coordination of river basin and water management with special emphasis on flood risk (e.g. monitoring), and joint actions serving disaster response.

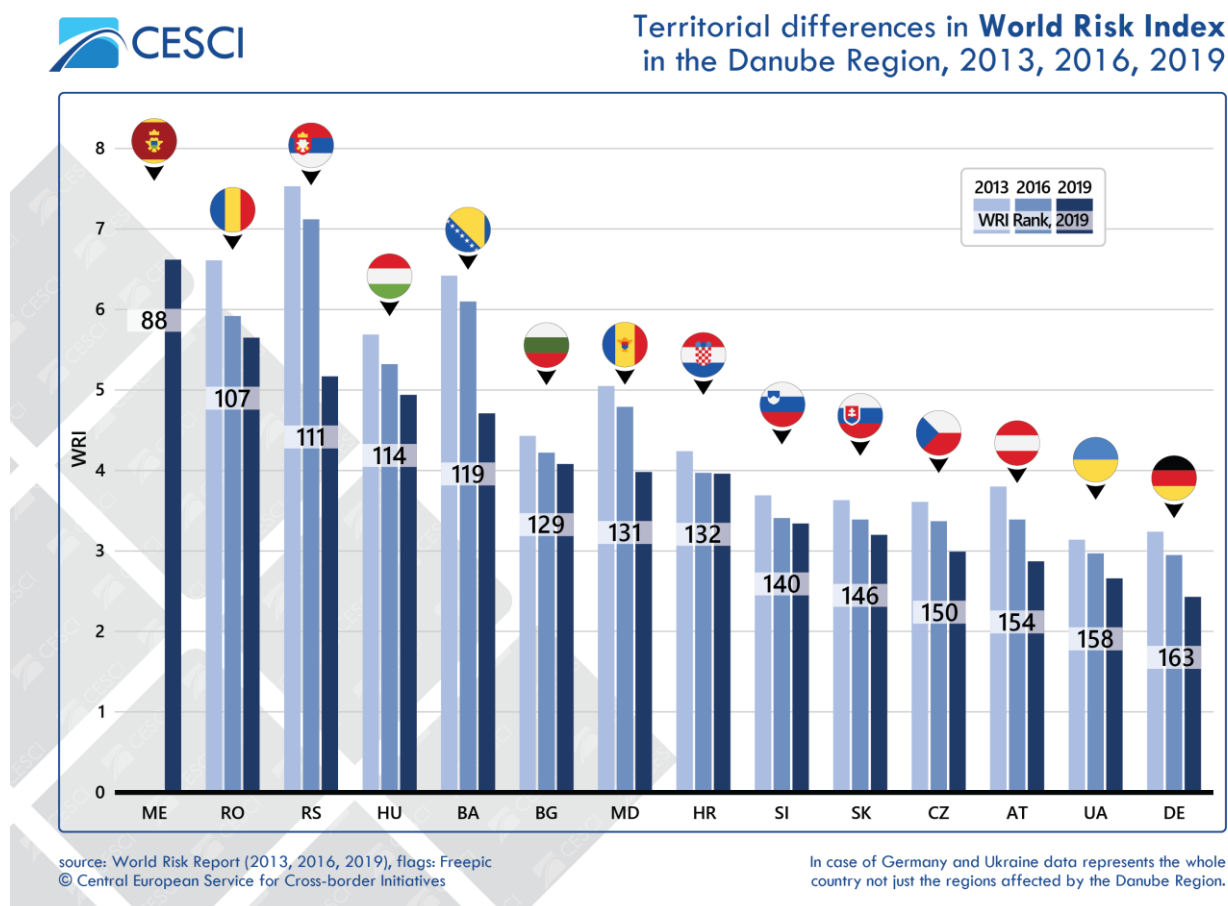


Figure 22: Territorial differences in World Risk Index in the Danube Region

With the help of the **World Risk Index**⁹ one can better account for similarities of countries in terms of hazard exposure and vulnerability profiles. For better coordination of risk reduction and adaptation strategies, it can be stated that Montenegro (6.62), Romania (5.65), Serbia (5.17) and Hungary (4.94) are the countries with the highest exposure and potential damage. The majority of countries with relatively high risk levels are from the south-eastern part of the macro-region mostly. On the other hand, Czech Republic (2.99), Austria (2.87), Ukraine (2.66) and Germany (2.43) are among the less exposed and impacted countries in terms of natural hazards not simply in Europe but worldwide too.

⁹ WRI evaluates the exposure to natural hazards faced by 171 countries and assesses the inherent vulnerability in the countries towards suffering from impacts when facing these hazards.

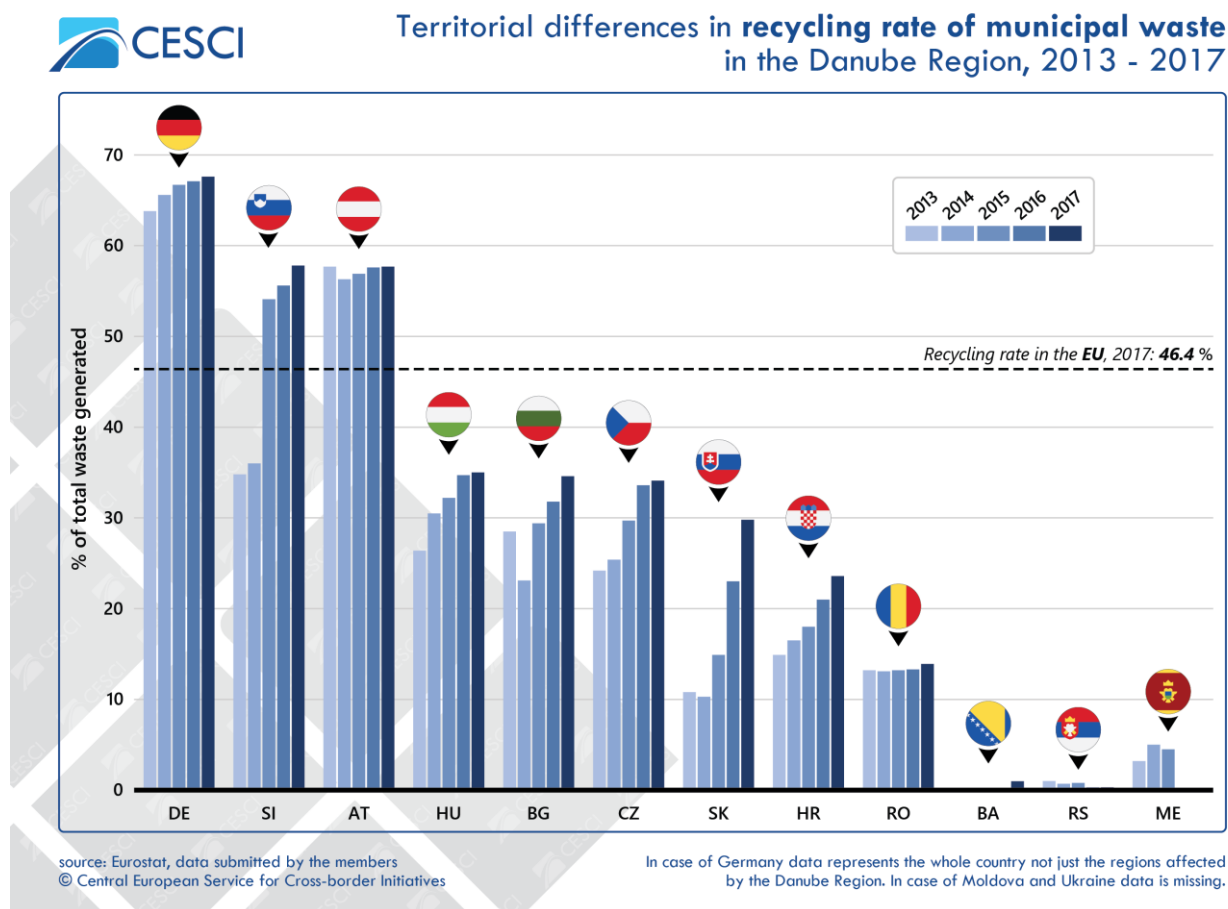


Figure 23: Territorial differences in recycling rate of municipal waste in the Danube Region

A high percentage of the generated **municipal waste** in the macro-region is not recycled. Compared to the EU average (46.4%) only Germany (67.6%), Slovenia (57.8%) and Austria (57.7%) performs well. The majority of waste remains non-recycled in all the other countries. The majority of them is capable of recycling as low as the one-third (Hungary 35%, Bulgaria 34.6%, Czech Republic 34.1%, Slovakia 29.8%) or even less (Croatia 23.6%, Romania 13.9%, Montenegro 4.5% in 2015, Bosnia and Herzegovina 1%, Serbia 0.3%) of the total municipal waste. Except for Serbia (decrease by 0.7% points) and Austria (stagnation) in all related countries the share of recycled municipal waste has been improved.

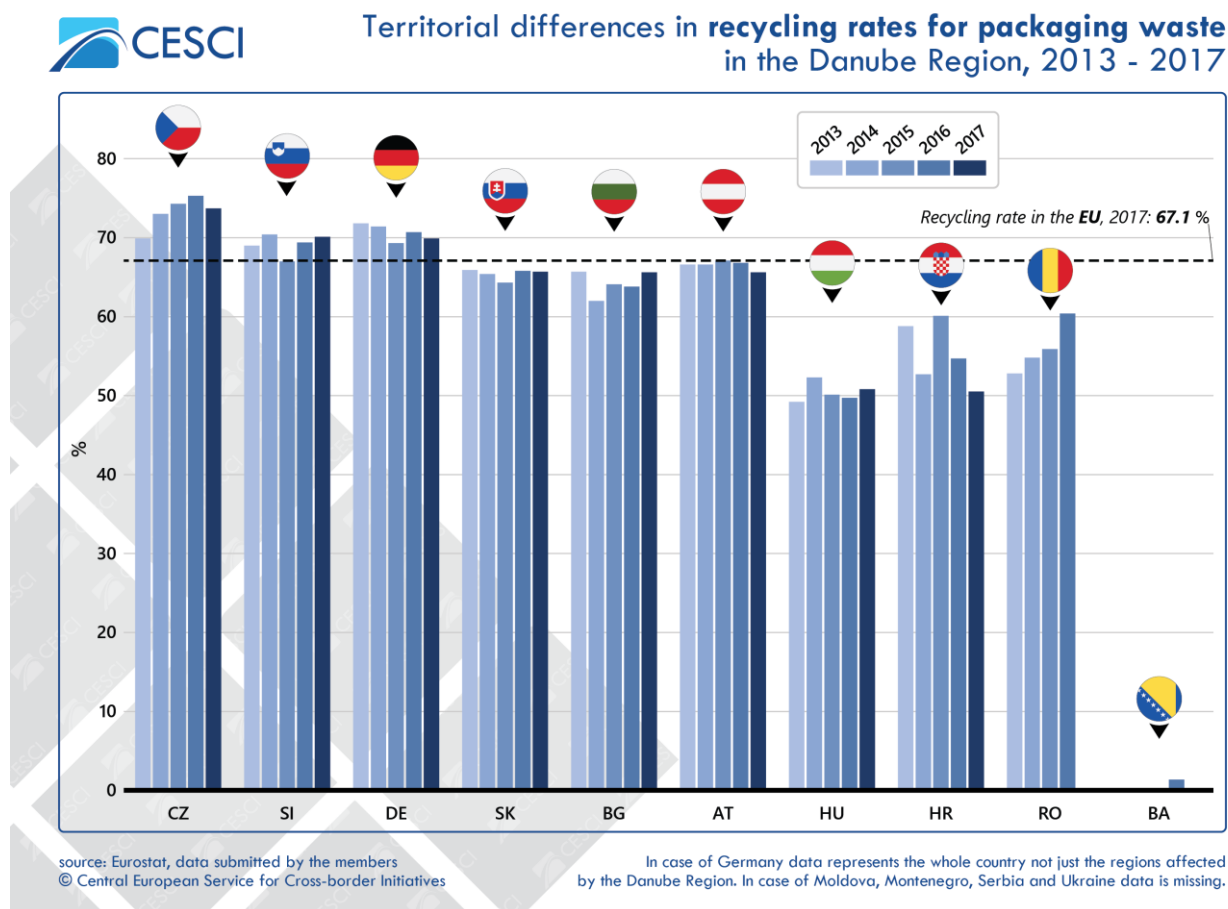


Figure 24: Territorial differences in recycling rates for packaging waste in the Danube Region

Recycling rate for packaging waste can be regarded more or less sufficient if it is compared to EU28 (67.1%). But, regarding non-Member States there is a lack of data. Presumably, similarly to Bosnia and Herzegovina, the recycling systems in eastern European and Balkan countries have weak and missing related infrastructure. Furthermore, regardless positive changes in Romania (increase by 7.5% points) there are more countries where the figures got worse between 2013 and 2017 (most obviously in Croatia, decrease of 8.3% points), when the EU managed to increase the rate (by 1.8% points).

Generation of waste by category in the Danube Region, 2016

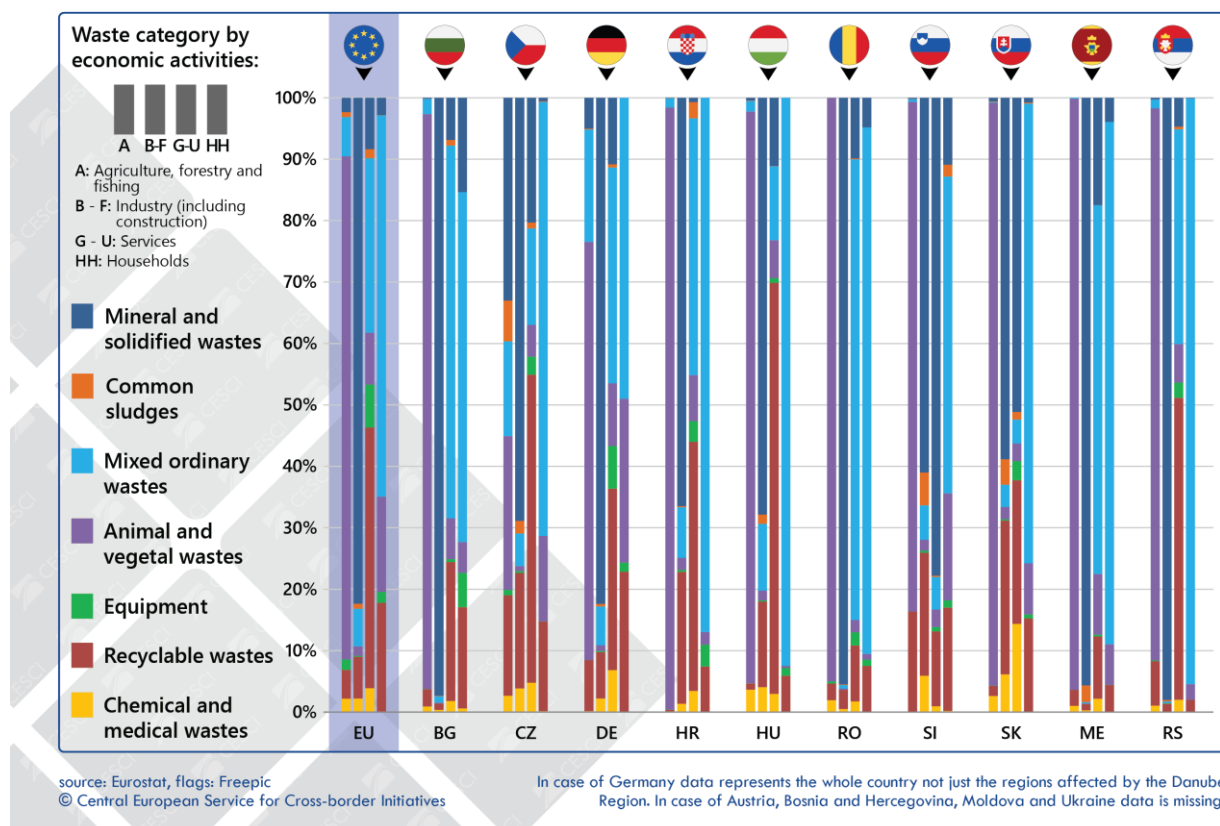


Figure 25: Generation of waste by category in the Danube Region

In relation to agriculture, forestry and fishing animal and vegetable wastes represent a much higher share among all **waste categories**, compared to the EU28 average (81.9%), while all the others represent lower shares. Only in Germany and Czech Republic the share of animal and vegetal wastes stays below the EU average. In industry mineral and solidified wastes are the most significant, but compared to the EU28 average (82.3%) two distinctively different group of states can be detected: in Czech Republic (68.9%), Croatia (66.5%), Hungary (67.8%), Slovenia (61%) and Slovakia (58.8%) this rate is below average, but in Bulgaria (97.3%), Germany (82.3%), Romania (95.5%), Montenegro (95.7%) and Serbia (98%) the rate is above average, mainly because of differences in recyclable wastes. In the service sector the sources of waste are rather diverse; recyclable wastes, mixed ordinary wastes, and mineral and solidified wastes are the most responsible for waste generation. In the case of household waste, recyclable wastes represent lower shares compared to the EU28 (17.7%) except for Germany (22.8%). Recycled household waste is very low in many countries, and is below even 10% in Croatia (7.4%), Hungary (5.9%), Romania (7.5%), Montenegro (4.4%) and Serbia (2%). Mixed ordinary waste is, however, by far exceeds the EU average (62.1%), and because of this there is a room for improvement to increase recycled wastes.

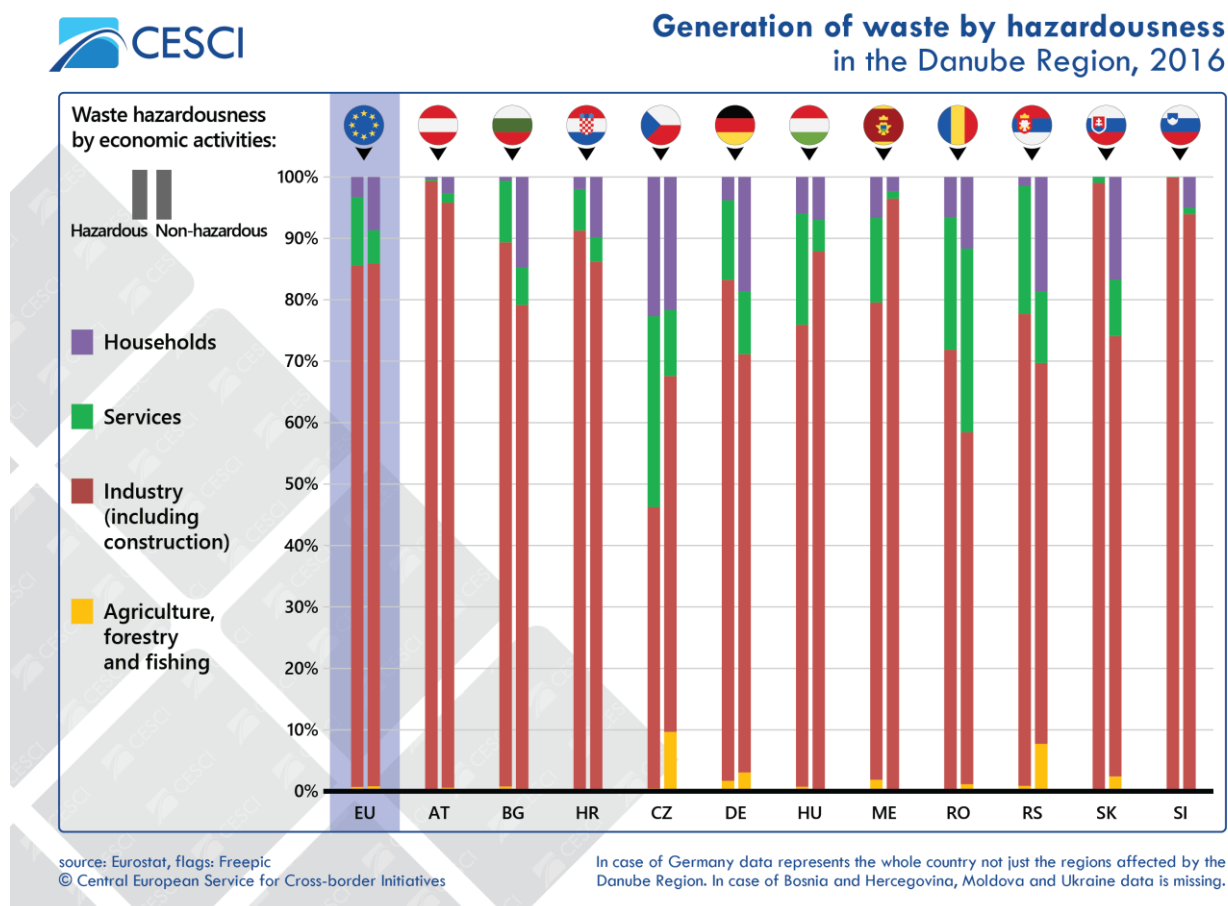


Figure 26: Generation of waste by hazardousness in the Danube Region

The vast majority of **hazardous and non-hazardous waste** as well is generated by industry in the macro-region similarly to the EU. While in the EU agriculture is not really a factor in such waste production, in the macro-region, Czech Republic, Germany, Montenegro, Serbia and Slovakia generate relevant amount of waste in agriculture. Households (and in many cases services) are responsible for larger shares of hazardous waste compared to the EU28. Therefore, in relation to households and/or services almost all related countries have a lot to do in decreasing hazardous waste.

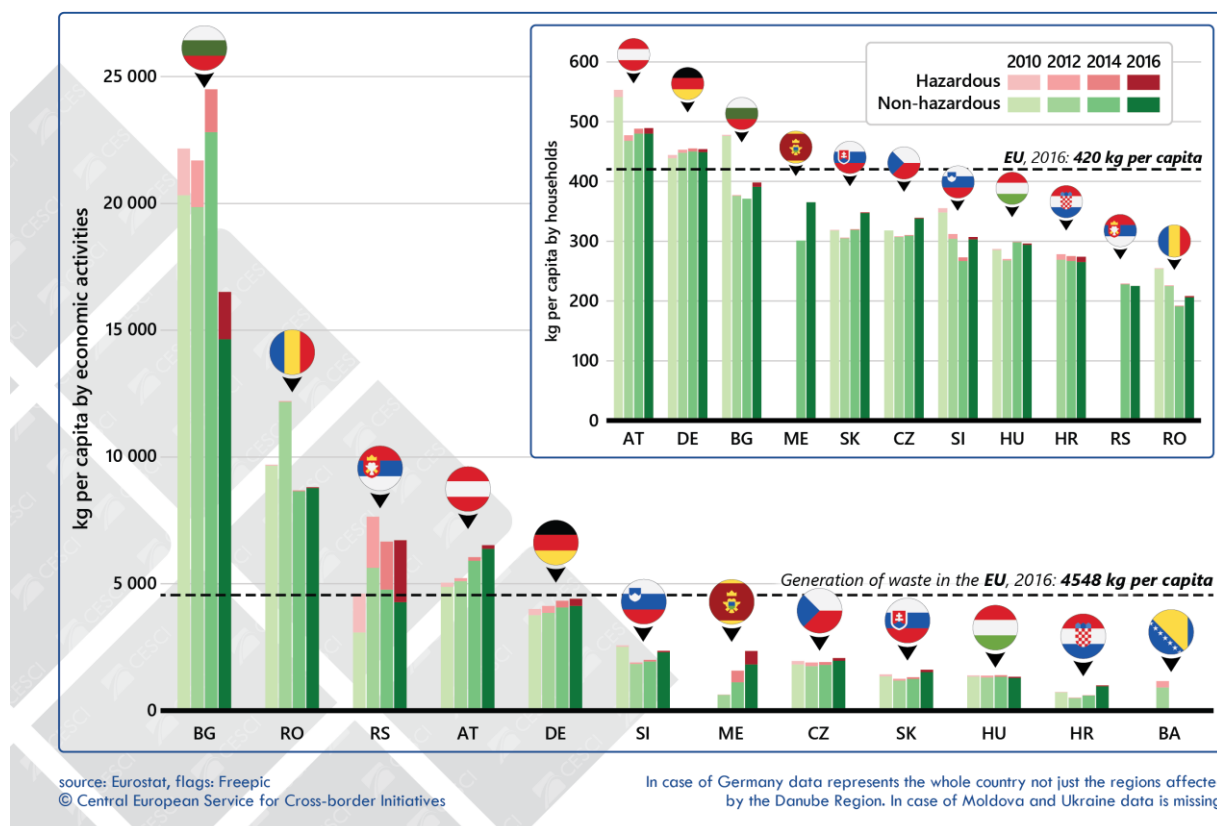


Figure 27: Generation of waste in the Danube Region

Circular economy¹⁰ is in an early development stage on the eastern part of the Danube Region especially. Waste-free technologies need to be introduced considering the high values for generation of **waste per capita** by economic activities. On the other hand, in many states figures have remained under the EU average. The waste production by economic activities was stagnating or even increasing during recent years in the Danube Region. In a few countries households' waste reduction should be intensified. Except for very few countries waste generation has not decreased notably in households. Thus, waste reduction is a real challenge.

¹⁰ Regardless some indicators developed recently in some of the related countries, it is still difficult to analyse the status of circular economy within the Danube Region. It is mainly because of the lack of harmonised data deriving from the lack of a clear definition of the notion as well as a jointly agreed methodology of statistical measurement across the macro-region.

3.3.2 Characteristics of urban network

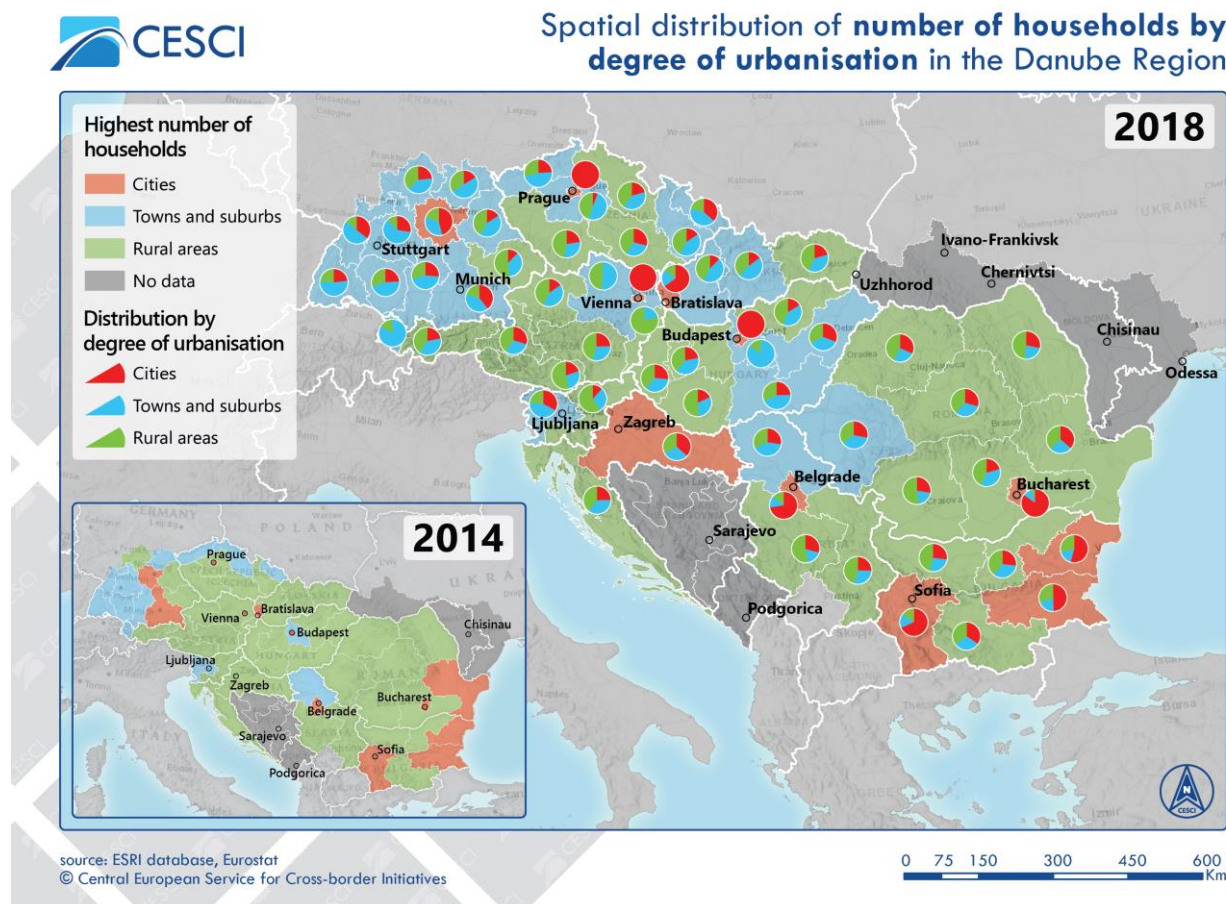


Figure 28: Spatial distribution of number of households by degree of urbanisation

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 have emerged in the form of two distinct development path, which is reflected in various elements of economic and social cohesion as well calling for different transnational cooperation needs. This kind of urban-rural 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 targets to major business investments and migrants, and have special challenges such as pollution, traffic congestions, challenges of social integration etc. Rural areas are often having a small range of functions for public provision, depopulation effects, less educated and ageing population thus weak competitiveness as well as accessibility, less favourable situation for economy of scale and deploying new infrastructure.

The westernmost parts of the macro-region along with some central European exceptions mostly, are more urbanised, while large areas of the south-eastern regions are rural, also

because of geographic reasons (e.g. the Alps, the Carpathians, Dinaric Alps). Urban and rural regions are still largely separated from each other creating distinct extensive urban, suburban (in Germany, Czech Republic, around Vienna, Bratislava and Budapest, etc.) and rural areas (majority of Romania, southern Serbia, and Alpine Austria, etc.). Urbanisation is not necessarily connected to administrative boundaries, and in the last years urbanisation processes created even more towns and suburbs. Thus, the degree of urbanisation has increased between 2014 and 2018 making the previously rather simple picture and massively rural settlements more heterogeneous. In the last decade the urbanisation not just increased but created transboundary suburban areas (e.g. around Bratislava), 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.

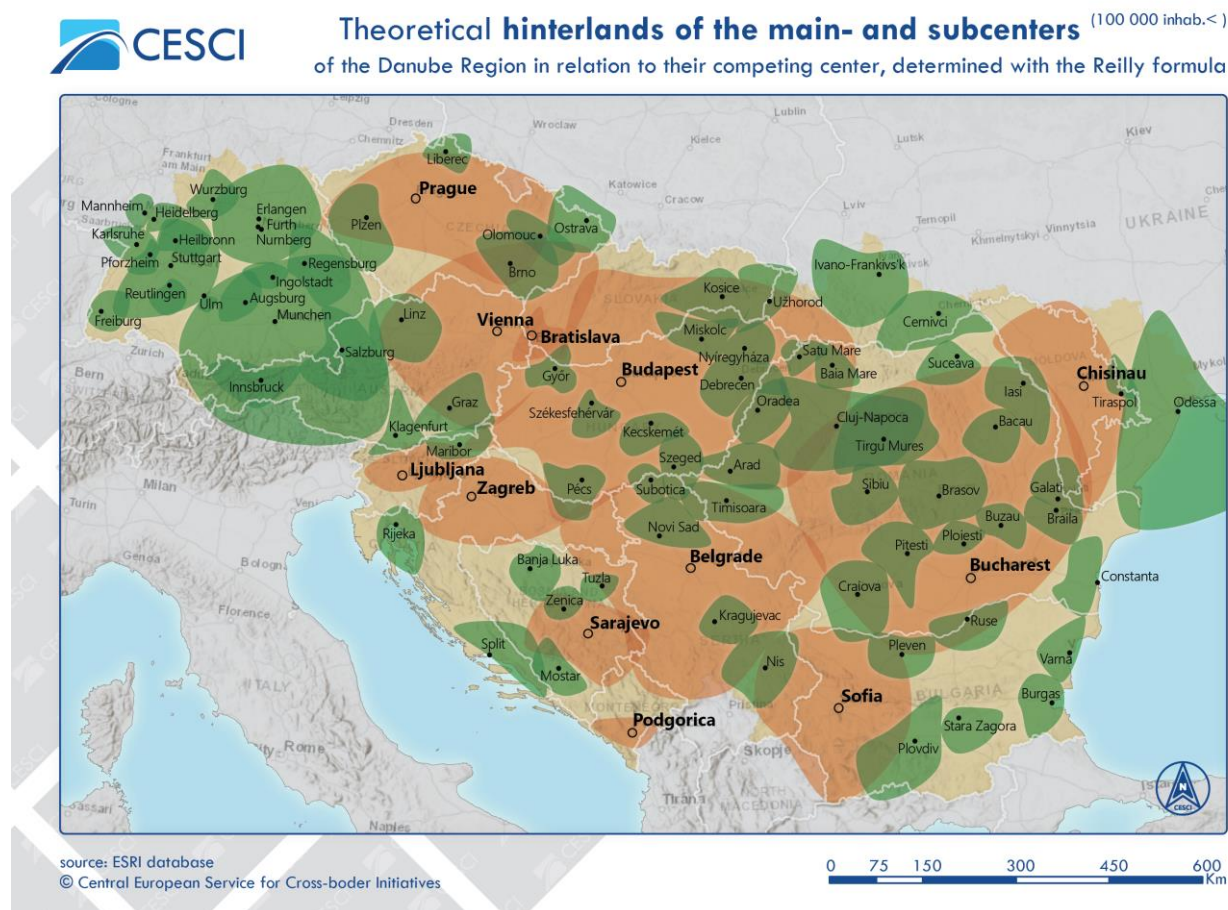


Figure 29: Theoretical hinterlands of the main and subcenters of the Danube Region

The urban network can be assessed based on the spatial distribution of major cities (with population over 100 thousand inhabitants). There is a high density of urban centres in Germany and Romania with numerous large cities creating more polycentric inland urban settlement networks. However, the lack of centres on high hierarchy levels is apparent in

extensive areas of various territories (e.g. in the area defined by Prague, Bratislava, Novi Sad, Zagreb, Vienna, or territories between Zagreb and Split). In Moldova, Slovakia, Czech Republic, Slovenia, Croatia, and Serbia the network of such cities is less dense. These states are known for a much more monocentric, one-sided urban hierarchy and network.

In recent years the **theoretic hinterlands** are being realised in actual settlement relations, and as it can be seen on the map, 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 case 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 strengthening 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 rankings¹¹, German and Austrian cities are among the "smartest" ones (e.g. Vienna, the 12th among top smart cities in the World¹²), 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

¹¹ <http://www.smart-cities.eu/ranking.html>

¹² https://static1.squarespace.com/static/5b3c517fec4eb767a04e73ff/t/5b513c57aa4a99f62d168e60/1532050650562/Eden-OXD_Top+50+Smart+City+Governments.pdf

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, while London, Helsinki, Barcelona, Amsterdam, Stockholm, Copenhagen, Berlin, Dublin, Reykjavik and Paris are on the list. 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 a better quality of life for the citizens as well.

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) 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 supports transboundary developments, institutionalisation and knowledge sharing in the field of settlement networks.

3.3.3 Status of the borders

The status of borders has a decisive role on the overall cohesion of the Danube Region by affecting all major elements of cohesion, including territorial, economic as well as social since the Danube Region is the macro-region of borders. The rate of border areas is very high: not less than 44.7% of the territories within the Danube Region are situated closer than 30 km to at least one state border. There are countries where border areas make up extensive parts of the given states, the majority of their land even (e.g. Slovenia, Croatia, Montenegro, Moldova, Slovakia). In almost all related states large number of citizens and cities with high population are in fact border people and towns on which the state borders have positive and negative impacts, and imply special needs and potentials. Consequently, in the highly fragmented space of the Danube Region practically no major developments can be carried out without having at least indirect transboundary impacts covering several national territories in general. Therefore, transnational coordination of such developments with transboundary relevance in the case of affected border areas is worth consideration.

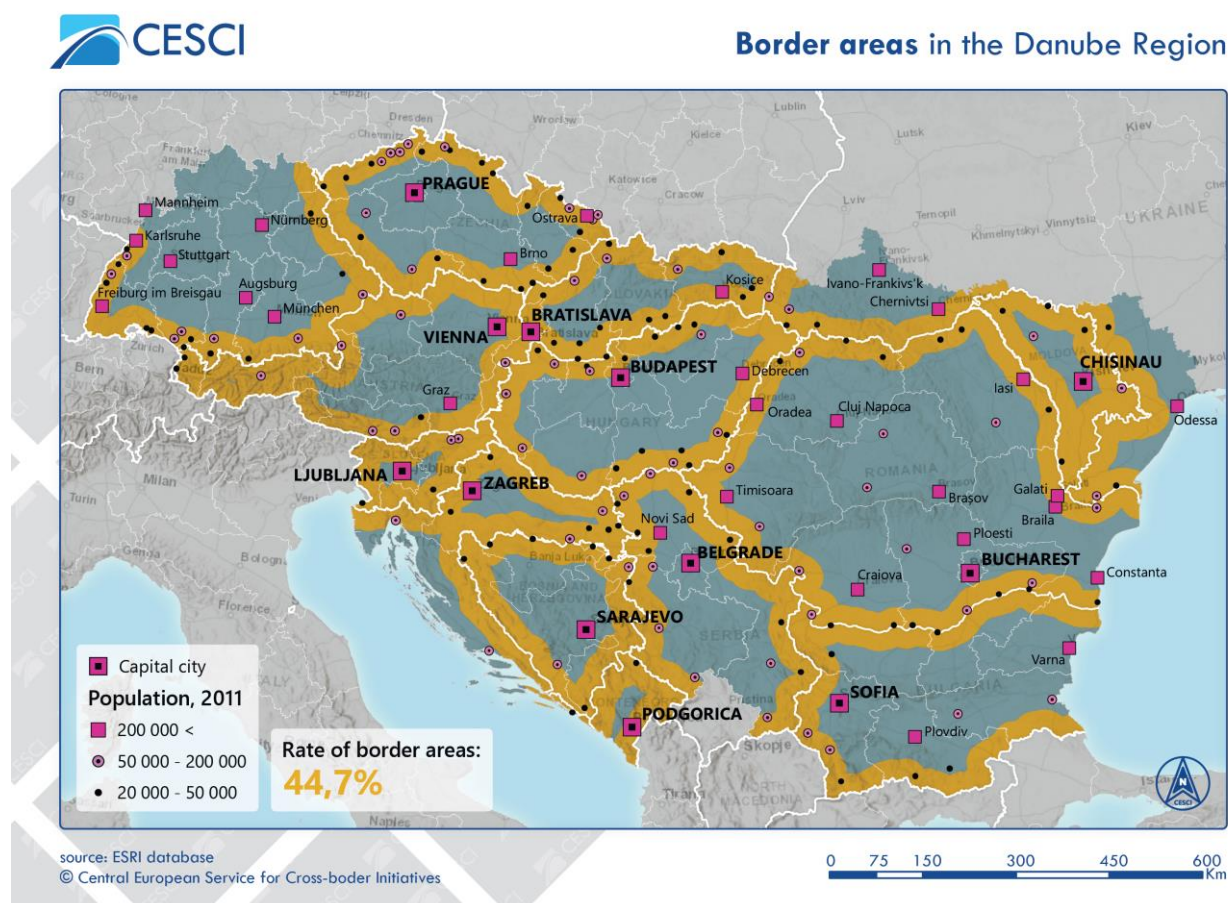


Figure 30: Border areas in the Danube Region

The Danube Region has long been a macro-region of (geo)political divide. The Danube Basin was cut by the Iron Curtain for decades of separation and distinctively different socio-

economic and state development path. Due to disintegration processes on the majority of its territory, secession took place especially on the central and eastern part of the macro-region (see the breaking up of the Soviet Union and the Eastern Bloc, Yugoslavia and Czechoslovakia) in the first half of the 1990s, while on the western part Germany had already been part of the European project, and Austria got a Member State status in 1995. New states and long new border sections emerged on the map making the status of borders a significant topic in international relations. Consequently, the status of borders became a major issue in relation to EU integration which got new impetus with the fifth – and so far most extensive – so called eastern enlargement of the European Union. This process and direction of integration has not stopped (see e.g. the accession of Croatia or the on-going accession negotiations on certain chapters); and so creates a historical chance for the whole Danube space. The Danube Region is right in the focal point to deepen accession and neighbourhood policies by facilitating transnational cooperation on overcoming the high fragmentation.

The macro-region is very heterogeneous in terms of the level of European integration as well as openness and permeability of state borders, to which the former has a decisive influence. The macro-region consists of old Member States (Germany, which is one of the founding states; Austria, joined in 1995), new Member States (2004: Czech Republic, Hungary, Slovakia, Slovenia; 2007: Bulgaria and Romania; 2013: Croatia), candidate countries (Montenegro¹³ and Serbia¹⁴), a potential candidate (Bosnia and Herzegovina¹⁵) and other countries targeted by mostly the Eastern Partnership of the European Neighbourhood Policy (Moldova¹⁶ and Ukraine¹⁷). Thus, there are still major differences in applying and implementing the Community *acquis* (*acquis communautaire*) of the European Union. There are still a lot to cooperate in the field of legal accessibility even within the EU, not to mention non-Member States, regardless notable improvements in terms of the four freedoms. According to the DG REGIO initiative "Cross-Border Review" and the related study¹⁸ most of the remaining obstacles stem from diverging national legislations on either side of the border (national legislation is "border-blind"), incompatible administrative processes, or simply lack of joint (or at least harmonised) territorial planning.

¹³ Montenegro: 01-05-2010, entry into force of the Stabilisation and Association Agreement; 17-12-2010 Council confirms Montenegro as candidate country

¹⁴ Serbia: 01-03-2012, the European Council confirms Serbia as a candidate country; 01-09-2013, Entry into force of the EU-Serbia Stabilisation and Association Agreement

¹⁵ Bosnia and Herzegovina: 01-06-2015, the Stabilisation and Association Agreement with Bosnia and Herzegovina enters into force

¹⁶ Moldova: 1-07-2016, the Association Agreement (AA) between the European Union and the Republic of Moldova fully came into force

¹⁷ Ukraine: 01-09-2017, the Association Agreement came into force

¹⁸ Easing legal and administrative obstacles in EU border regions Final Report:

https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/obstacle_border/final_report.pdf

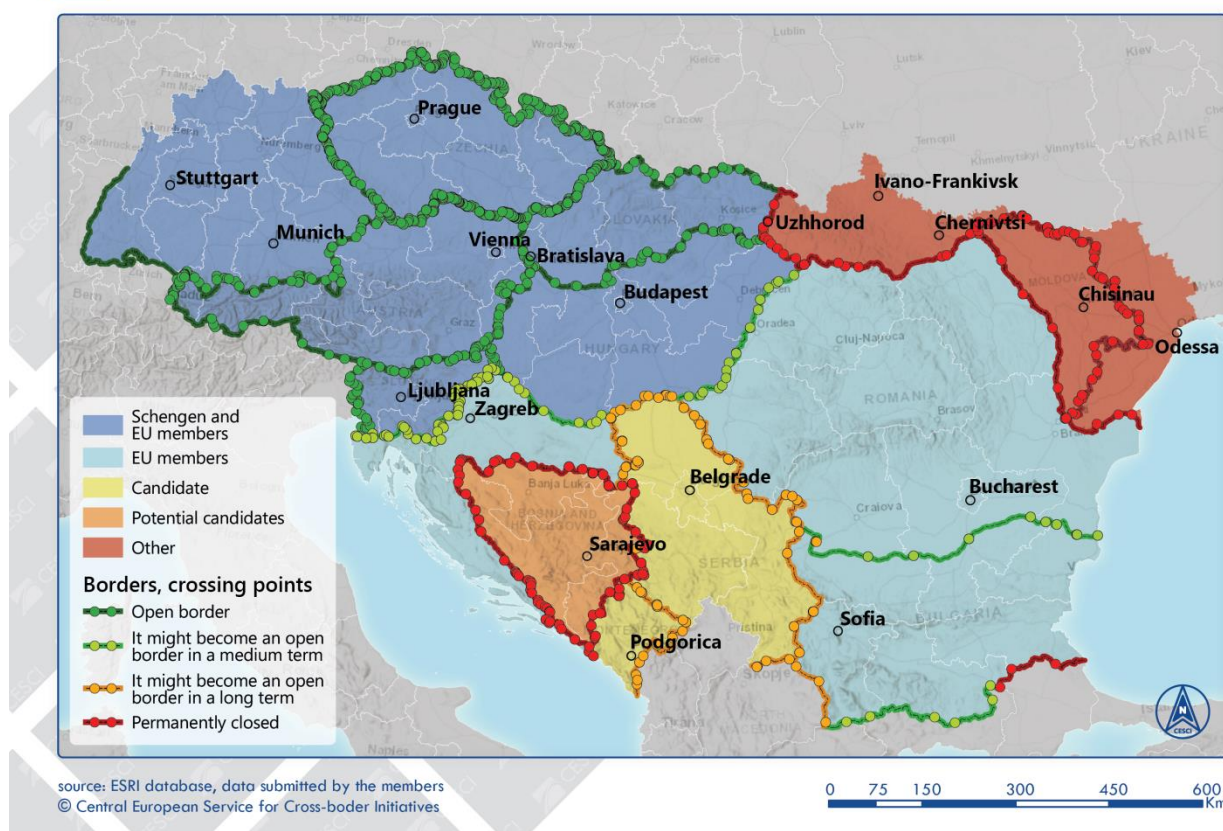


Figure 31: Status of the borders in the Danube Programme Area

Along with legal and administrative barriers to cooperation state border represent varying border regimes, sometimes strict ones too (indicated by red colour on the figure). On the western, north-western part of the macro-region significant de-bordering has taken place, and the border can be considered (relatively) open also because of being incorporated in the Schengen Area (Austria, Czech Republic, Germany, Hungary, Slovakia, Slovenia). On the other hand, permanently closed borders along with borders which might become open on a long term are situated on the southern and eastern edges of the macro-region mostly. Besides the positive changes regarding the free movement of goods, capital, services, and labour along internal borders of Member States as well as the abolition of visa requirement and the cancellation of other travel restrictions, especially towards non-EU member states and along external borders, the reinforces separation role of external EU borders has to be highlighted. Many countries abolished all passport and all other types of border control at their mutual borders, but on the other hand the Schengen Area enlargement strengthened border control along the EU's external borders, thus creating a strong separating role within the Danube Region. The macro-region is still suffering from weak coordination of border infrastructure development.

The density of border crossings have increased within the macro-region significantly thanks to EU funds mostly in the budgetary periods of 2007-2013 and 2014-2020. Still, there are border sections with poor throughput of the given border infrastructure due to insufficient number and capacity of border crossings, apart from slow changes in the direction of loosening border regimes. Lack of border infrastructure is very notable in relation to border sections which are also joint river sections of the Danube and its tributaries (e.g. the rivers of Tisza, Prut, Drava and Sava). In general, the density of crossings is higher on the north-western part and the lowest on the south-eastern part of the macro-region.

Differences and deficiencies in border regimes, border controls and capacities of authorities and infrastructure often lead to traffic jams, long travelling and waiting times, and so have a negative impact on many aspects of cohesion in the Danube Region.

Furthermore, migration crisis has brought up transnational conflicts of interest within the macro-region too, as the Balkan migration route crosses the given states. Signs of re-bordering is apparent across the region; e.g. the temporarily reintroducing border control by Austria and Germany have become more or less permanent, while the Hungarian border barrier has been erected. Delayed Schengen enlargement to Romania, Bulgaria and Croatia is also an issue to tackle. To sum up, in recent years there is a valid transnational cooperation need of great importance in the topic of border controls and management since uncoordinated border policies could lead to further disintegration.

3.3.4 Territorial cooperation and governance framework

In the background of the majority of economic and social processes factors such as the type of (territorial) governance have a great effect. The strength and perception of authorities or the level of transparency play a crucial, albeit hardly quantifiable role. Good governance is reflected in the form of public trust. Thus, the citizens' trust in the European Union can function as a symptomatic indicator to measure the general attitude and atmosphere. According to the 2019 Standard Eurobarometer's findings, the percentage of citizens who tend to **trust in the EU is highest in the central part of the Danube Region** where the highest ranking countries are Bulgaria (55.6%), Hungary (54.9%), Austria (51.6%) and Romania (51.6%), while the ranking is low in the case of Serbia (32.8%), Czech Republic (35.3%) and Slovakia (43.6%). Taking into consideration EU Member States, only among Czech citizens the level of trust is lower than the EU average of 28 countries. In all countries which have data, except for Serbia but including Montenegro, the public trust is relatively high. Thus, a generally high trust on what the state and regional governance can rely across the Danube Region.

It is important to note that these values and tendencies are prone to relatively quick and significant changes as citizens react to the economic and political events in their member countries as well as on the European level. Comparing the level of trust between 2015 and 2019 it can be found that in only a handful of countries the values managed to grow (in Austria with 18.8%, in Germany with 9% and in Slovenia with 3.6%), but in every other cases the level of trust had deteriorated in the past four years. The deepest decline by far has been experienced in Romania (-16.8%), but Serbians (-9.9%), Czechs (-7.2%) and Croatians (-5.1%) also lost some of their support in the EU.

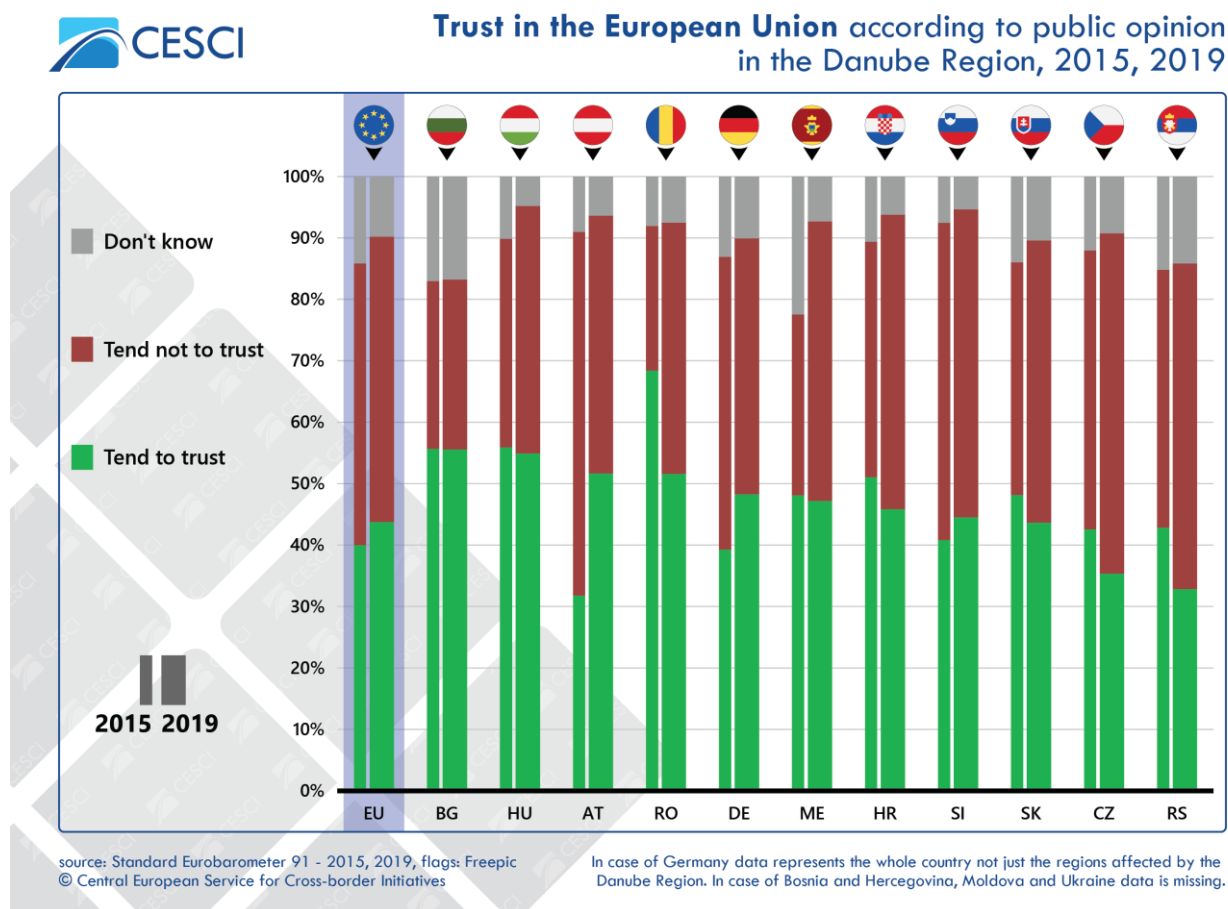


Figure 32: Trust in the European Union according to public opinion in the Danube Region

In the data of eastern Member States related to the trust in the European Union it is not the fear of the EU as a project of European integration but the fear of becoming marginalised, peripheral is reflected. The political communication deriving from the heartland of the EU about pushing forward “European values” (without a shared definition) and putting the related topics in the forefront of European policies was contra-productive when eastern new Member States were told to be “less European”. Critical voices from the Brussels centre amplified these fears in the post-Soviet and post-communist space where a single Moscow-based ideology had been forced on a transnational level. The communication on focusing on such values has been effective and rewarded with trust (partly) restored in core countries and old Member States, but resulted in the opposite in new Member States in the analysed period.

In contrast to this, according to the Flash Eurobarometer’s publication on the citizens’ awareness and perceptions of EU regional policy in 2019 already four in ten respondents were familiar with EU co-financed projects in their local area and the vast majority, over eight in ten of these considered that these projects had a positive impact on the development of their city or region which constitutes a five percentage point increase since 2017. Eastern Member States’ citizens rather perceive the EU as a form of solidarity from the western countries, and Cohesion Policy is a useful tool which they support and where EU can have an added value.

They can identify with such policies, and feel ownership, thus policies underlying positive achievements which support the idea of belonging together and the connection between the eastern and western parts are of great trust-building importance such as the free movement of people. Consequently, it cannot be stated that there is a lack of trust in the case of eastern Member States, the challenge is the wrong narrative on being European and a member of the union on the level of citizens. Furthermore, the current exercise felt by the eastern public as a forced discourse on living in the EU is worth to be revised since a clear disintegration of public trust along the line of the former Iron Curtain can be detected in recent years.

The simultaneous interpretation of these data shows that regional governance and policy can also function as a prime tool for increasing in general the level of trust towards the European Union. The Danube Transnational Programme can support the EU integration, strengthen the visibility and close-to-people character of the Regional Policy as well. There is a need on a transnational level to maintain the generally high trust in Central Europe and to increase the positive perception and trust in relation to Associated States in particular. Trust can be built if justified territorial needs of regional public are taken into account, on which a more effective strategy can be based.



Figure 33: State models in Europe¹⁹

The European countries can be classified according to their state models. Even though the distribution of the different models is not homogenous, some patterns can be observed: in the western part²⁰ regionalised unitary, in the central part²¹ federal, in the south-eastern part²² centralised unitary and in the northern parts²³ decentralised unitary is the current state model. The main dividing logic behind the models lies in the concentration of the power; while in a unitary state one central government holds all the power (albeit it can be organised in a

¹⁹ source: ESPON

²⁰ except of Portugal and the Republic of Ireland, but including Poland

²¹ Belgium, Germany, Switzerland and Austria

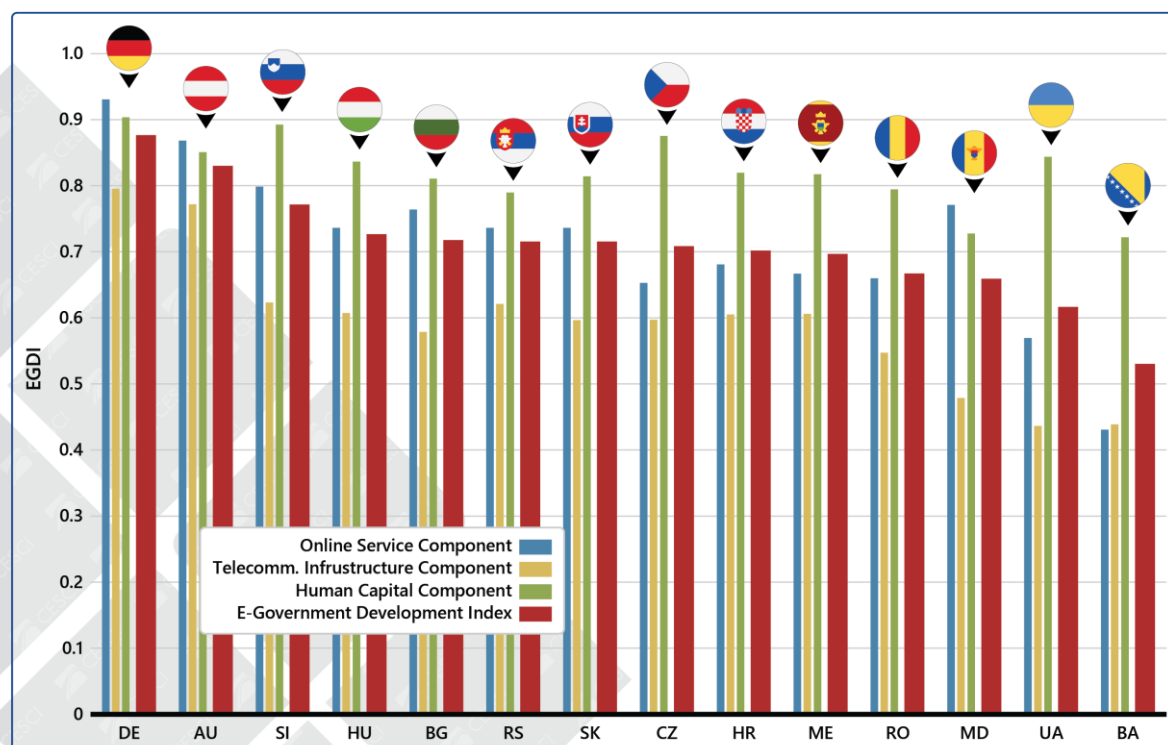
²² from Slovenia to the east, but also including Portugal, the Republic of Ireland, Lithuania and Estonia

²³ apart from Scandinavia also including Slovakia, the Czech Republic and Latvia

centralised, decentralised or regional way), in the case of a federal system the power is divided between national and local forms of government.

Regarding the Danube Region it is observable that the macro-region comprises all the four different types of state models. Furthermore there are affected regions which have a shared administrative past such as Serbia and Montenegro were known between 2003 and 2006 as the State Union of Serbia and Montenegro and before that both were part of the Socialist Federal Republic of Yugoslavia together with North Macedonia, Croatia, Slovenia and Bosnia and Herzegovina. The picture is further complicated by the unique situation of this latter one where there are several levels of political structuring. According to the Dayton Agreement the country is divided into two entities: Republika Srpska and the Federation of Bosnia and Herzegovina. Even though since 1996, the power of the entities relative to the State government has decreased significantly, they still have numerous powers to themselves. Secondly, in 2000 the Brčko District in the north of the country was also created out of land from both entities in a way that it officially belongs to both, but is governed by neither, and functions under a decentralized system of local government. Moldova also has its specificities being a unitary parliamentary representative democratic republic officially including the breakaway state of Transnistria with its five districts.

The countries not only differ in their political and administrative systems but also in the direction and speed of their changing tendencies. In certain countries of the macro-region the past few years has seen a centralizing intention (for example in Hungary), while elsewhere the regionalising processes are flowing quite slowly (such as in Romania). Subsequently, from the public administration's point of view there is no homogeneity between the countries which can render regional cooperation challenging and at the same time offering room for projects aiming to enhance legal harmonisation. Hence, high diversity in public administration and governance can be challenging to overcome, and there are multiple legislative barriers to cooperation on a transnational level. Initiatives supporting governance solutions with inter-institutional and institutionalised cooperation forms thus have high importance in this part of Europe. Knowing the high level of political fragmentation and the existence of several challenges having transnational and multi-level character better and **new models of governance, inter-institutional cooperation and transnational institutions are needed** (even at some relevant fields) in order to manage the related issues.



source: United Nations E-Government Survey 2018, flags: Freepic
© Central European Service for Cross-border Initiatives

In case of Germany and Ukraine data represents the whole country not just the regions affected by the Danube Region.

Figure 34: Territorial differences in E-Government Development Index in the Danube Region

In terms of **e-governance** the macro-region performs badly. Insufficient measures have been taken in order to support the development of e-governance within the macro-region. Except for Germany (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 worst performing states are situated on the eastern, north-eastern edge of the macro-region, namely Romania (0.67), Moldova (0.66) and Ukraine (0.62). The index is the lowest in Bosnia and Herzegovina (0.53). When the E-Government Development Index is broken down to its components, it can be stated that the large differences in performance comes from the very weak Online Service Component and Telecommunication Infrastructure Component of the majority of the macro-region. The backwardness is the most reflected in the huge gap between leading and lagging behind countries in the case of online services; while the index is 0.93 for Germany and 0.87 for Austria, the same figures are as low as 0.57 in Ukraine and 0.43 in Bosnia and Herzegovina.

Introduced by the Regulation (EC) No. 1082/2006 **European Groupings of Territorial Cooperation** (EGTCs) are special and still rather innovative type of governance and regional development tools for strengthening territorial cohesion, among others. The Regulation (EU) No. 1302/2013 of the European Parliament and of the Council amending Regulation (EC) No.

1082/2006 on a European Grouping of Territorial Cooperation (EGTC) as regards the clarification, simplification and improvement of the establishment and functioning of such groupings was enacted as a result of the review, which introduced some amendments and facilitations concerning several points of the regulation.²⁴

Before the time of appearance of EGTCs on the maps, the cooperation in relation to many central and eastern European borderlands were mainly based on activities with no territorially integrated approach, ad hoc partnerships and personal connections. Thus, EGTCs are important stakeholders in taking a direction towards a cohesion-based, territoriality integrated planning irrespectively from projects and funds. Nowadays, EGTCs are subject to multi-level governance as well.

So EGTCs can function as 'integrating tools' or 'regional development agencies', and contribute to the success of cohesion policies. What is even more important for this chapter is that EGTCs gained a rather cross-border governance role of local and regional municipalities located in border regions with a special focus on trans-border institutional cooperation and territorial developments. This means that the emphasis could be put on the joint management of the territorial and institutional assets of the given region by the municipalities. By participating in EGTCs the municipalities and regional stakeholders have not only elaborated and implemented projects together but moved towards a more institutionalised cooperation. With the help of establishing an EGTC, the grouping can have its own personnel, budget, and can maintain its institutions and services created (e.g. hospital or a tourism destination management office). However, institutional innovation related to governance is rare among EGTCs from the central and eastern part of the macro-region.

There are huge inequalities among EGTCs in terms of size, governance capacities, financial power, and socio-economic situation etc. Some EGTCs are more project-based ones and grant seekers, while best practices include e.g. GO EGTC, which managed to implement an Integrated Territorial Investment (ITI). The spatial distribution is also uneven; the most number of EGTCs has formed with Hungarian participation also thanks to the support from the central government. Large number of groupings, or large areas are covered by quite often overlapping structures.

Based on the evidence along the seven joint Hungarian border sections, networking among existing EGTCs to learn from each other is important for boosting the project outcome and scope of activities. Both the legislative and policy environments need to be supportive of EGTC creation and their activities. In countries with similarly fragmented and financially weak local and regional governments, secure funding for basic operations is essential. Attention to transposition and the implementation of EGTC legislation are important, but it is not enough.

²⁴ For instance, the approval and registration process was simplified, and the scope of subjects was extended in accordance with social needs and economic processes.

Further harmonisation of legislation is needed with a view to overcoming transboundary obstacles and facilitating the groupings in fulfilling their mission of creating a new, shared space, across the borders.²⁵ However it is also important, that the EGTC legislation is missing at the moment in some non-EU countries of the region (for instance Serbian municipalities are currently having an observer status in BTC EGTC because of the lack of legal basis for being full members – see the lighter colour used on the map below).

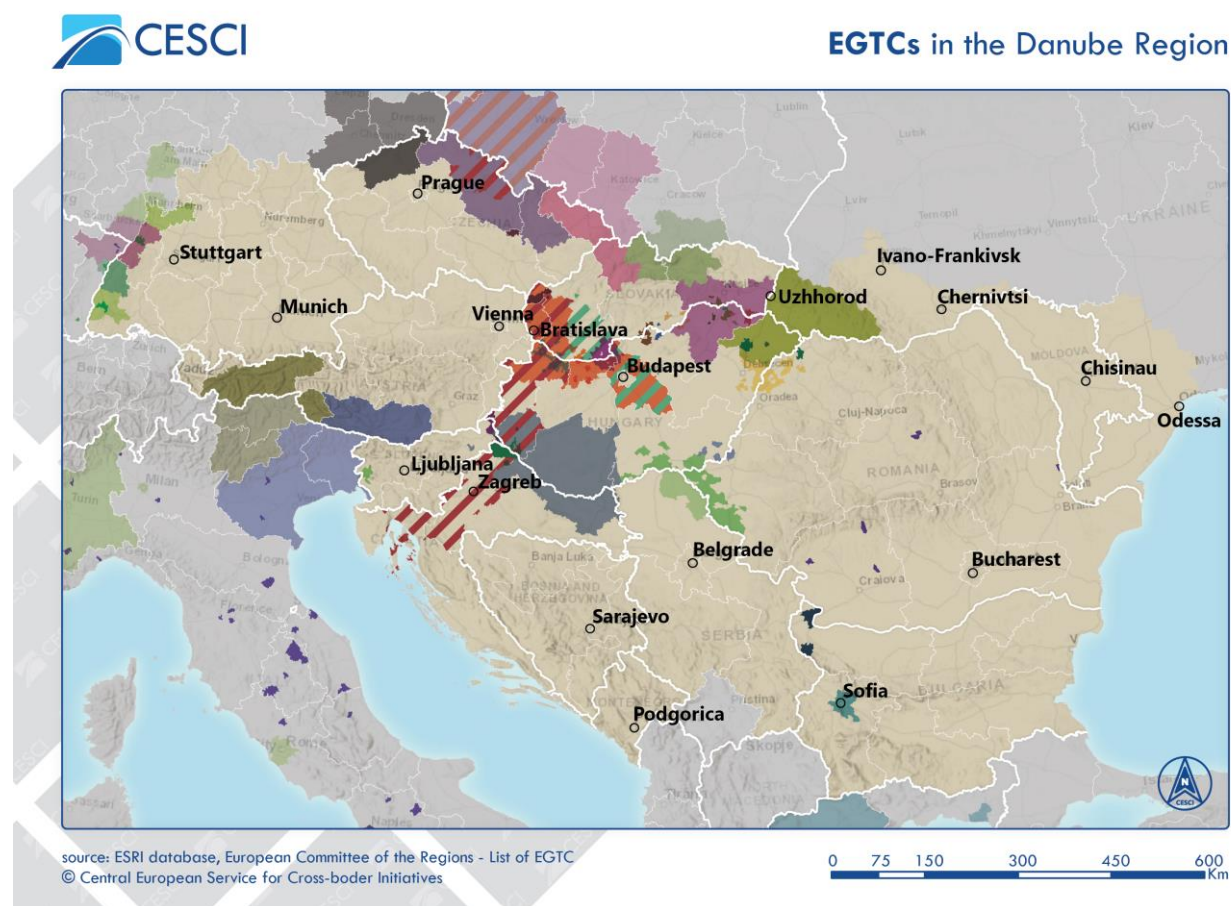


Figure 35: EGTCs in the Danube Region

²⁵ http://cesci-net.eu/tiny_mce/uploaded/EGTC_Overview_CESCI_.pdf

3.4 Economic cohesion

3.4.1 General Economic Picture of the Danube Region (The Danube Region in the EU and Internal Economic Relations)

In relation to **GDP per capita**, one of the first statements has to be about the above average development level **of the Danube Region**. Between 2002 and 2018 the rate increased by 30% within the macro-region, while in the EU15 (22%) and in the EU28 (increase by 25%) was notably lower. Compared to 2003 the annual growth rate increased by almost six times in the macro-region, in contrast to the EU15 where the data of 2018 was only a bit more than 1.5 times higher than the initial one. Despite the faster development pace in general, the macro-region is still known as a catching-up economic zone. The GDP per capita of the Danube Region based on constant prices reached only 62% of the EU-15 and 71 of the EU-28 in 2018. Still, in recent years considerable convergence has taken place in this region that was formerly lagging behind, taking into account that the macro-region's output was even lower in earlier years. In 2003, its GDP per capita was 53% of the EU-15 and 63% of the EU-28, and increased to 57% of EU-15 and 67% of EU-28 by 2010.

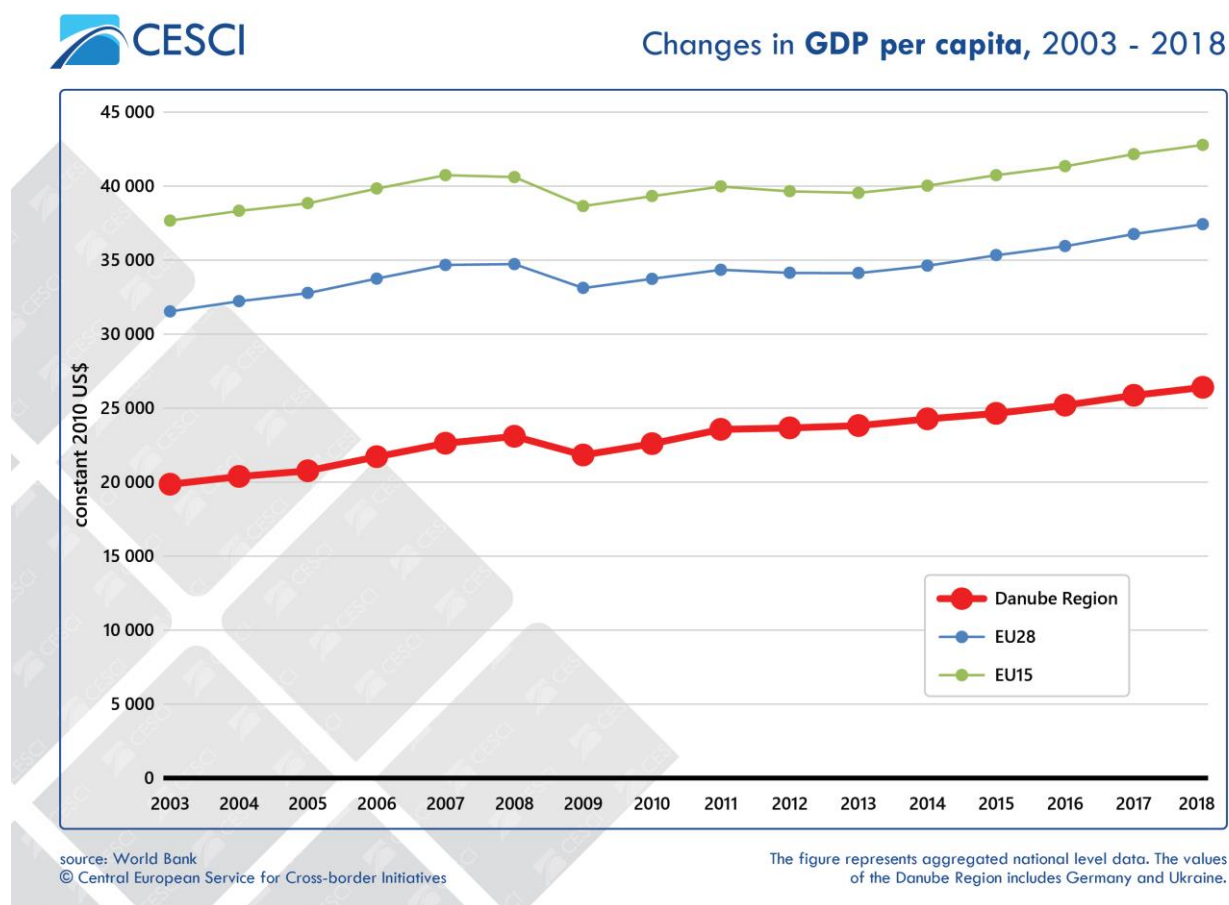


Figure 36: Changes in GDP per capita

The macro-region is one of the most heterogeneous parts of Europe in terms of **GDP per capita** compared to the large, similarly performing areas in many neighbouring western and northern European regions. It consists of highly developed, competitive regions as well as less developed, convergence regions. The macro-region unites parts of the economic backbone or core areas of the EU with regions in transition, and historically lagging behind regions of eastern and south-eastern Europe. Thus, regional economies with distinctly different development paths and potentials are situated in a close vicinity to each other. The region incorporates regions with the lowest GDP per capita, namely Ukrainian and Bulgarian regions, furthermore Moldova. On the other hand, Ingolstadt City is the 4th most highly ranked, and reaches an almost 158 times higher value than the least developed, which is Chernivtsi Oblast. The macro-region is bordered with economically prosperous axes on the west and economically less productive ones in the form of eastern European and Balkan countries.

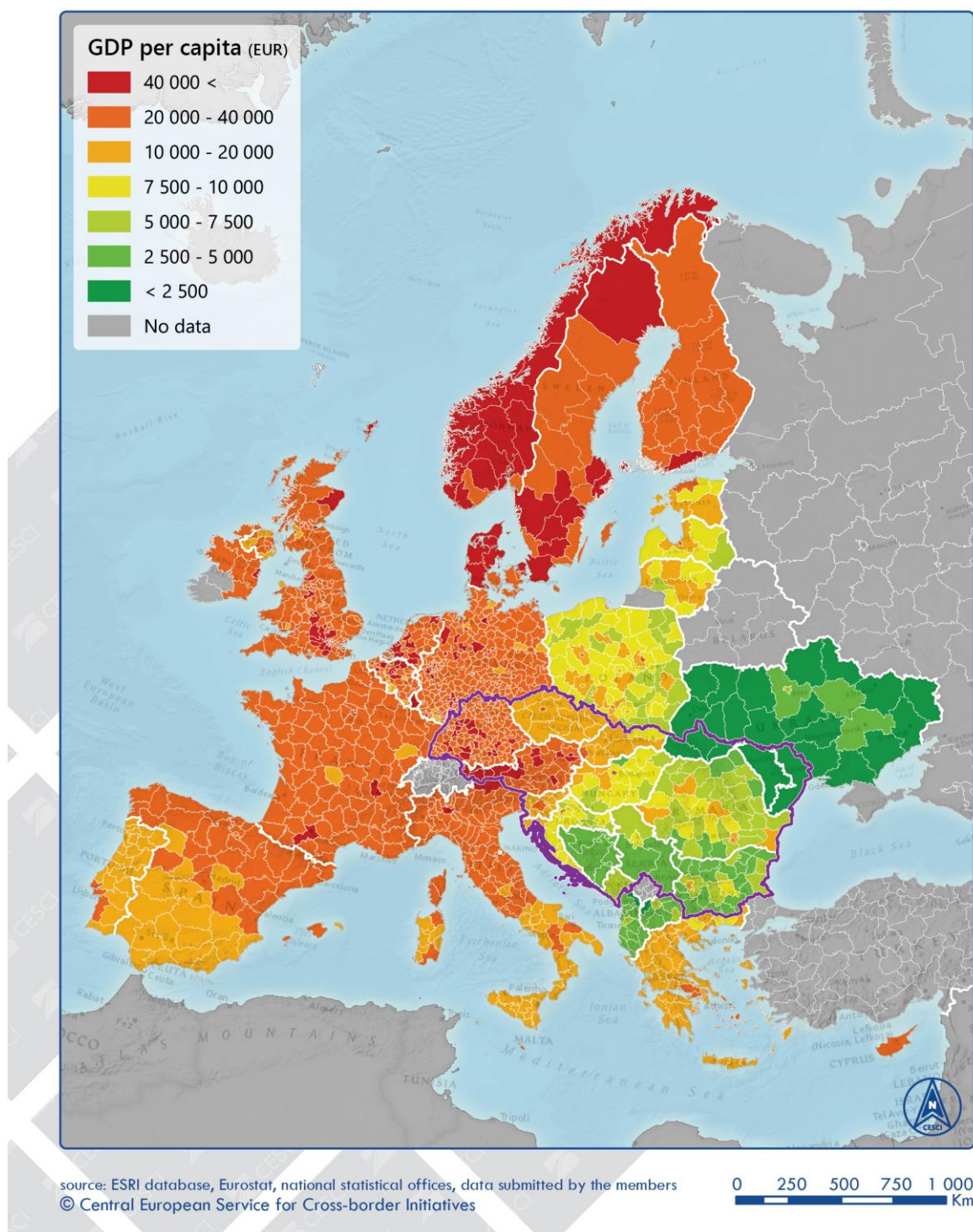


Figure 37: Spatial distribution of GDP per capita in Europe

The economic powerhouse of Europe is generally outside of the Danube Region. It consists of smaller regional economies compared to many other parts of the continent. In relation to the spatial distribution of GDP in million euros, the high concentration of GDP production can be underlined. In general, capital and major city regions stand out as engine of economic life in

the given countries. The number of regions with significant production is notably higher in the case of more western national economies, while in the east and south-east the urban-rural divide is even more relevant.

Spatial distribution of GDP in Europe, 2016

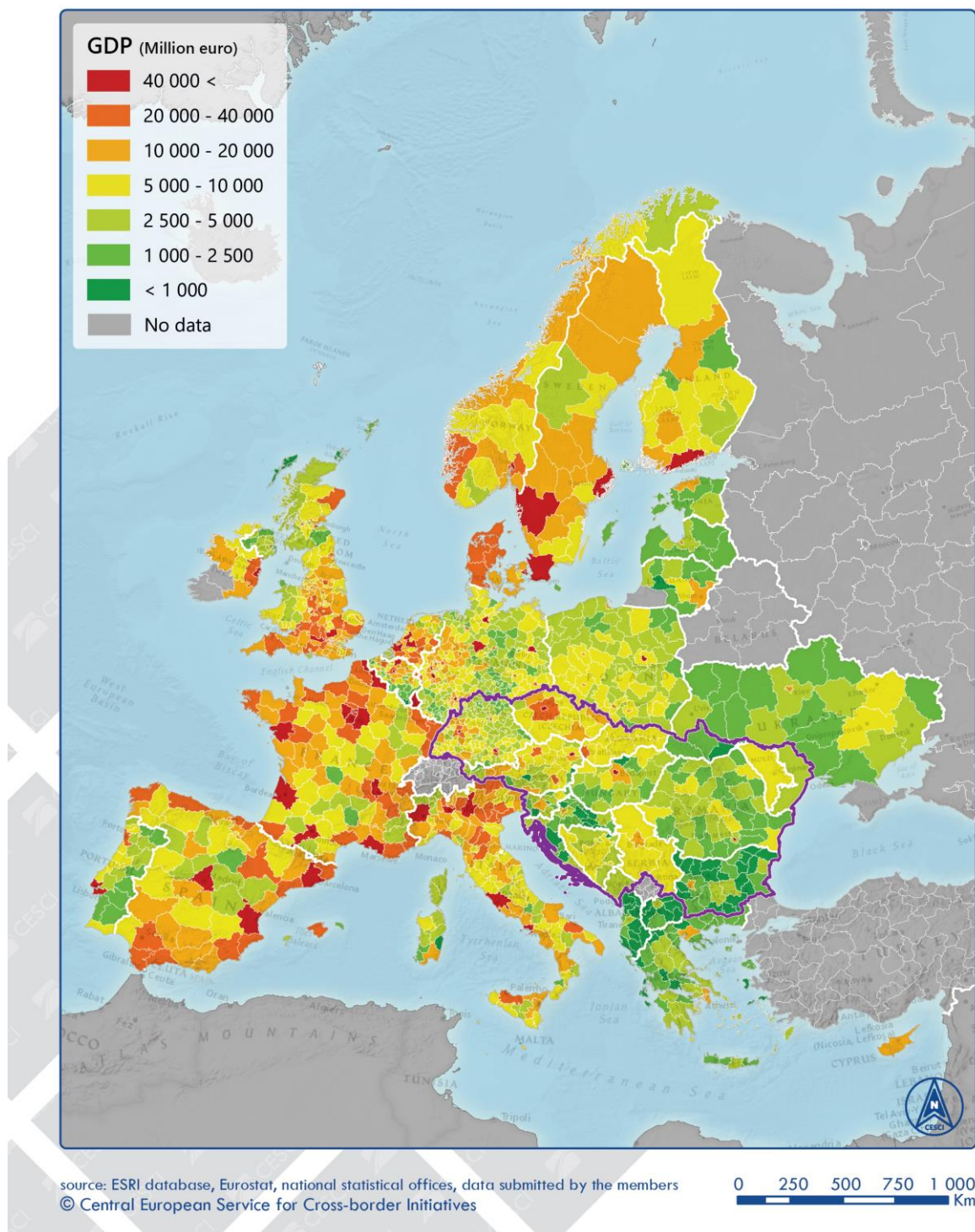


Figure 38: Spatial distribution of GDP in Europe

In the early 2000s, the macro-region was characterised by low **GDP growth**. Since 2006, the national economies of the Danube Region have been achieving higher annual growth rates compared to the European Union or its core countries apart from 2009 and 2015. Excluding 2009, the macro-region is performing economic growth and positive GDP change. Nevertheless, the macro-region, owing to the high level of fragmentation of national economies, was hit even more severely than the rest of the regions. The relatively low level of economic cohesion showed that many national economies are vulnerable to such recessions. After the low point of the global economic crisis, the development engine of the continent has been relocated to the territory of the macro-region in certain sense. Also thanks to the increasing level of integration the recovery and growth was faster than in other parts of Europe. The Danube Region had a recognisably different development path and growth pace in comparison with the more developed western European Member States. However, on a long term, economic fluctuation is an uncertainty factor for the Danube Region. It is still a question, whether the region could maintain sustainable growth, and how crisis-proof it would be in case of an upcoming economic downturn. A lot depends of the actual level of economic cohesion; the stronger the cohesion is the less vulnerable the related states are, and the more effective the concerning economies are in taking advantage of their development potentials on the long term.

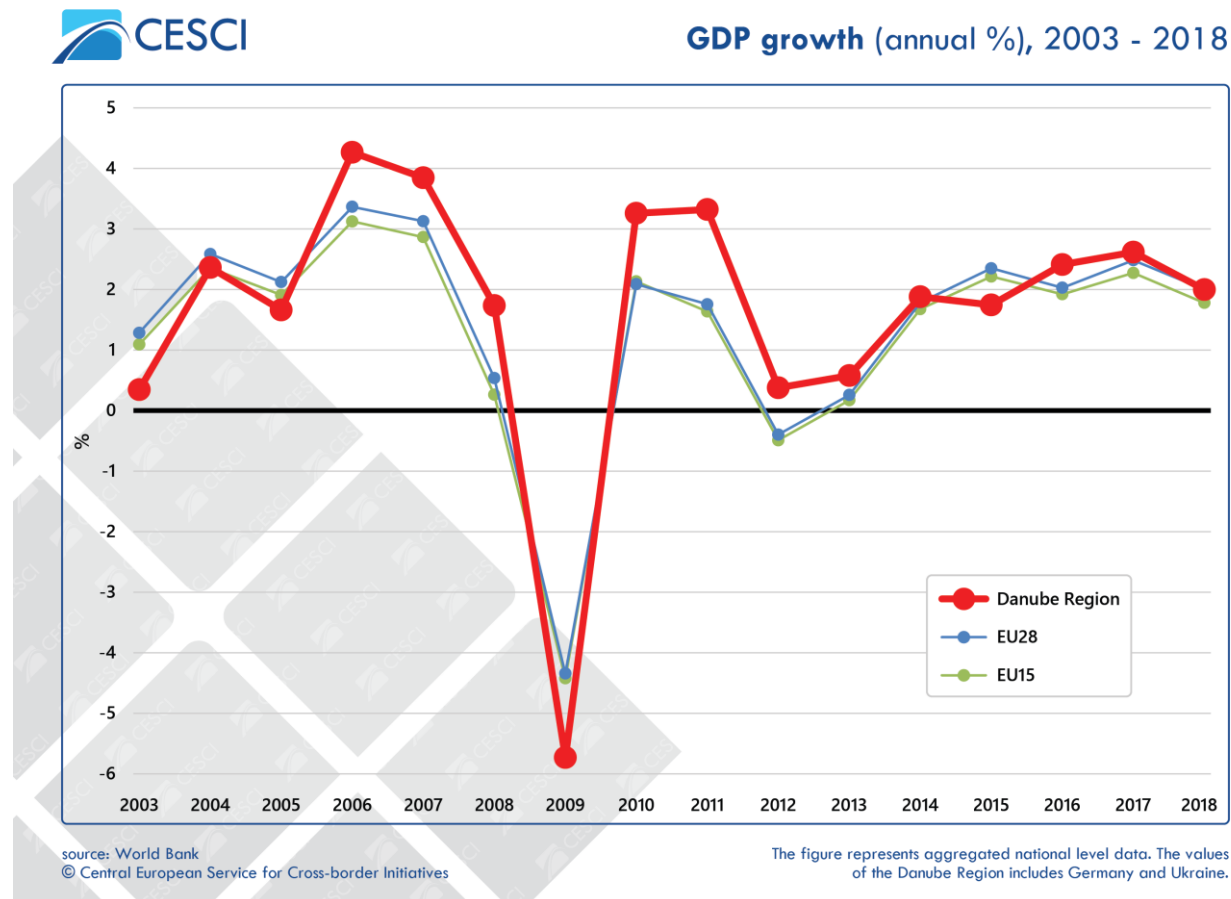


Figure 39: GDP growth (annual %)

As it can be seen on the related map, the **spatial distribution of the GDP** is very uneven **within the macro-region**. GDP production is still concentrated to major metropolitan areas, capital cities. Aside from Linz-Wels and Böblingen, all the NUTS3 regions with the highest GDP levels have at least half a million inhabitants. Thus, GDP production is in strong correlation with population distribution as well. In the last years, the regional differences have only changed slightly. The lists of leading²⁶ and lagging²⁷ regions have not changed significantly. Economic activity is low in Ukraine and Montenegro, in the case of many Bulgarian, Croatian, Romanian and due to their small sizes, Slovenian regions. Positive changes have taken place in dissolving the solid monocentric development pattern; however in many cases it appeared to be the surrounding agglomeration that could receive development impulses, not the peripheries. Except for Germany, Austria and the Czech Republic polycentric spatial structure of GDP production has not been realised.

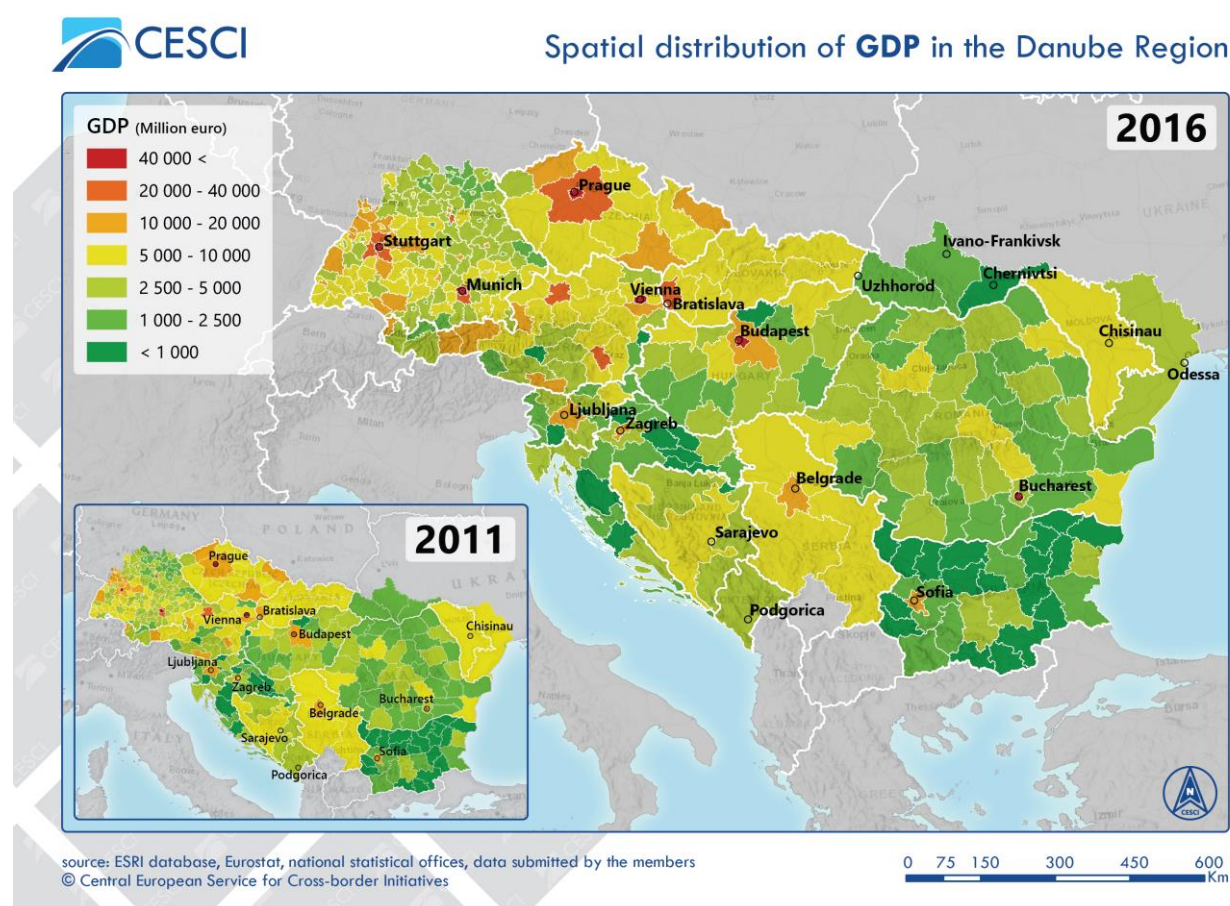


Figure 40: Spatial distribution of GDP in the Danube Region

²⁶ 2011: Munich City 87 085, Vienna 80 748, Stuttgart 44 183, Prague 40 819, Budapest 38 410, Bucharest 31 692, Munich (district), Linz-Wels 26 368, Nuremberg City 23 799, Bratislava County 19 597, Böblingen 19 778.

2017: Munich City 109 658 Vienna 91 222, Stuttgart 51 821, Prague 44 409, Bucharest 41 702, Budapest 41 472, Munich (district) 34 364, Linz-Wels 29 721, Nuremberg City 28 204, Böblingen 25 477, Bratislava County 22 914

²⁷ 2010: Vidin 283, Silistra 313, Targovishte 385, Razgrad 400, Yambol 417, Licko-Senjska County 422, Montana 430, Kardzhali 432, Pernik 438, Smolyan 439.

2016: Vidin 295, Silistra 350, Licko-Senjska County 400, Pernik 439, Pozesko-Slavonska County 456, Kyustendil 474, Smolyan 488, Viroviticko-Podravska County 489, Razgrad 498, Targovishte 519

The Danube Region is known for the high inequalities in GDP production. The former Iron Curtain and the border between the EU15 and the new Member States together with the neighbouring (potential) candidates are still visible on the map. Germany and Austria consist of only highly developed regions, while in the direction of the Balkans and eastern Europe the development patterns are more mosaic-like. The former Soviet Republics of Ukraine and Moldova have outstandingly bad situation. All regions with the lowest **GDP per capita**²⁸ are situated in Ukraine, Moldova and Bulgaria, while all the regions with the highest values²⁹ are in Bavaria or Baden-Württemberg, Germany. Bratislava County, which is surpassing all other regions as the most developed one from the less developed economies, could reach 27.6% just like Ingolstadt, the absolute leader within the macro-region. There are still few developed regions outside of the capital regions excluding Germany, Austria, Czech Republic, Slovenia and Slovakia. Regions with cities experiencing economic boom stand out, including non-capital regions, while extensive areas have medium or low level of economic output.

Between 2010 and 2016, one of the most relevant changes was the fast-paced catching-up of the Romanian counties. Eight out of the ten regions with the highest growth³⁰ was from Romania. The spread of economic dynamics towards Slovakia, Hungary and Romania was witnessed. The faster development that was reached in such regions resulted in a more heterogeneous picture than before. The formerly quite similar block on the eastern, south-eastern part of the macro-region broke up, and divergence emerged. Parallel with catching-up territories, many NUTS3 regions originally with weak economies did not manage to prosper. Ukrainian and Croatian regions were among those, which were lagging behind the most.³¹ Thus, the macro-region has to tackle with the sustainability of recent growth, the further spread of development impulses to less competitive regions and the catching-up and crisis management of some southernmost and easternmost regional economies.

²⁸ Least developed regions: Chernivtsi Oblast 823, Zakarpattia Oblast 906, Ivano-Frankivsk Oblast 1 311, Odessa Oblast 1 767, Moldova 2 059, Silistra Province 3 100, Vidin Province 3 300, Sliven 3 300, Kardzhali Province 3 500, Pernik Province 3 500.

²⁹ Most developed regions: Ingolstadt City 129 900, Munich (district) 100 600, Schweinfurt 100 000, Coburg City 84 300, Regensburg City 83 600, Stuttgart City 82 800. Ulm 75 300, Munich City 75 200, Aschaffenburg City 74 700, Dingolfing-Landau District 66 900.

³⁰ Regions with the highest GDP growth between 2010 and 2016: Prahova (+85%), Stara Zagora (+69%), Neamț (+64.5), Constanța (+64%), Ingolstadt (60%), Cluj (+56), Bucharest +54%, Ruse Province (+54%), Vaslui County (+54%), Brașov (51%).

³¹ Regions with the lowest GDP growth and economic decline between 2010 and 2016: Zakarpattia Oblast (-23%), Chernivtsi Oblast (-21%), Odessa Oblast (-18%), Ivano-Frankivsk Oblast (-7%), Zaslavsk Region (-3%), Požega-Slavonia County (-2%), Sisak-Moslavina County (-1%), Zagreb City (+1%), Altötting (+1%), Virovitica-Podravina County (+2%).

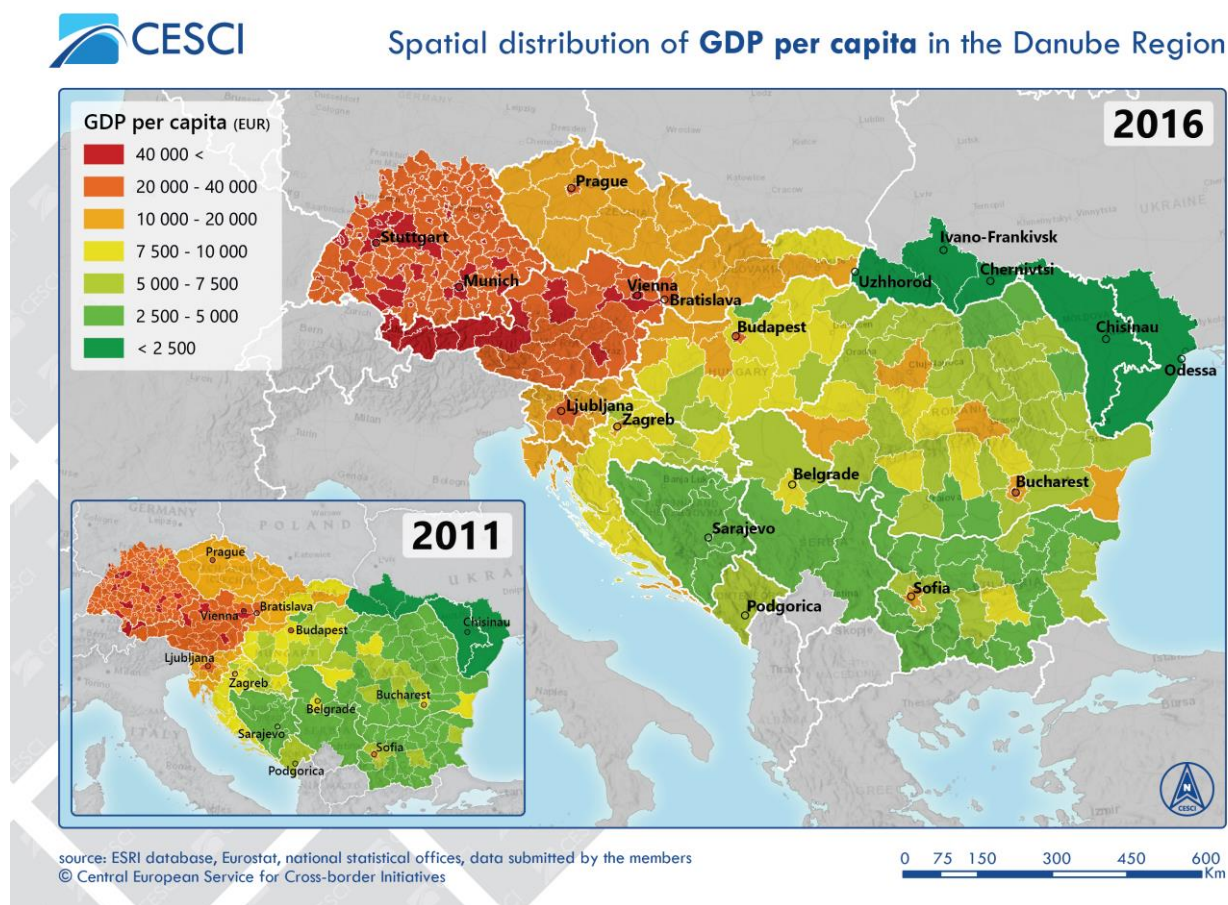


Figure 41: Spatial distribution of GDP per capita in the Danube Region

Taking into account the **GDP per capita** based on constant 2010 USD, different groups of **national economies** can be defined. According to GDP levels, Austria (50 250 USD per capita in 2018, 190% of the Danube Region average) and Germany (47 502 USD, 180%) are absolute leaders, followed by a more heterogeneous group consisting of mostly central European countries like Slovenia, the Czech Republic, Slovakia, Hungary and Croatia (from 26 759 USD, 101% down to 15 870 USD, 60%). Romania, Bulgaria, Montenegro, Serbia, Bosnia and Herzegovina (from 11 535 USD, 44% to 6 056 USD, 23%) are another group of countries, and on the bottom of the list Ukraine (3 110 USD, 12%) and Moldova (2 684 USD, as low as 10%) can be found. In the majority of countries excluding Ukraine, Germany and Austria significant growth took place between 2014 and 2018. The period was characterised by the emergence of a convergence region within the macro-region with the countries of Romania (increase from 38% to 44% by 6%-points comparing its GDP per capita to the average of the Danube Region), Slovakia (4%-points), the Czech Republic (4%-points) and Hungary (5%-points). It is also reflected in the decreasing weight of the most developed economies (Austria -7%-points, Germany -6%-points compared to the macro-regional average). Non-EU and some new Member States were unable to catch up, stagnation or low increase (Montenegro 2% points, Bosnia and Herzegovina 2% points, Serbia 1% points, Moldova with no change, Ukraine -1% points) was experienced.

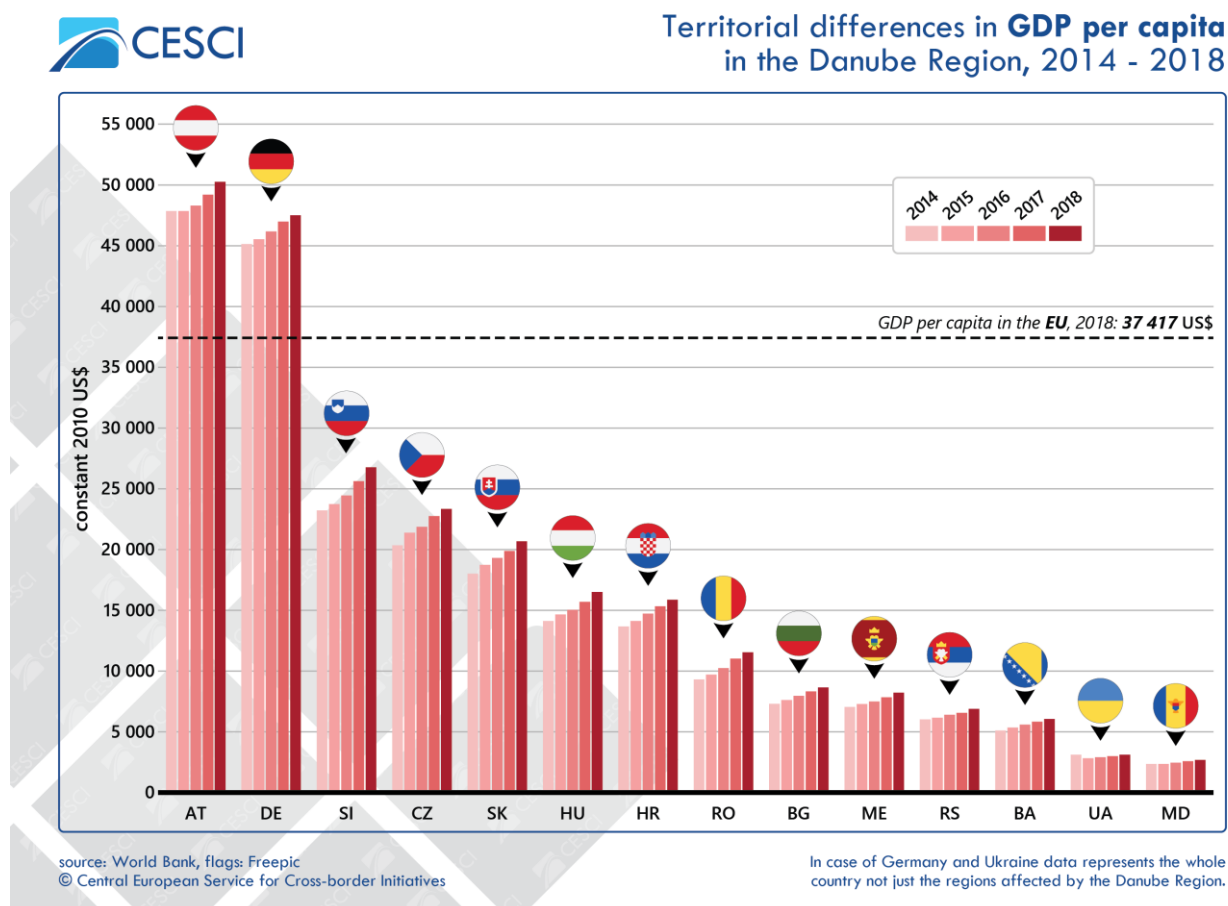


Figure 42: Territorial differences in GDP per capita in the Danube Region

In recent years, excluding some extraordinary data mostly connected to the crisis in Ukraine (with a decrease of 9.8% in 2015), the Danube Region experienced **GDP growth** and those **rates** generally exceeded the EU15 averages in almost every single country of the macro-region in the very last few years. In 2014 there were five national economies with lower pace of growth compared to the EU15 but by 2018 only Germany (1.4%) remained under the related EU15 average (2%). The focal point of economic growth within Europe and the EU has been relocated to a few central and south-eastern European economies such as Romania (7% in 2017, 4.1% in 2018), Hungary (4.9% in 2018), Montenegro (4.9%), Slovenia (4.5%), Serbia (4.3%), Slovakia (4.1%), while economies that can already boast with high GDP, namely Austria (2.7%) and Germany (1.4%) had mediocre results. Comparing the data of 2018 to 2014, while Germany (-0.75% points) experienced a slight backdrop in GDP growth rate along with Moldova (-1% points), in all economies a positive change occurred. Developing economies were placed on the top among national economies with the highest increase between the years of 2014 and 2018 in relation to change in GDP growth (Ukraine 9.9% points, Serbia 5.9% points, Montenegro 3% points).

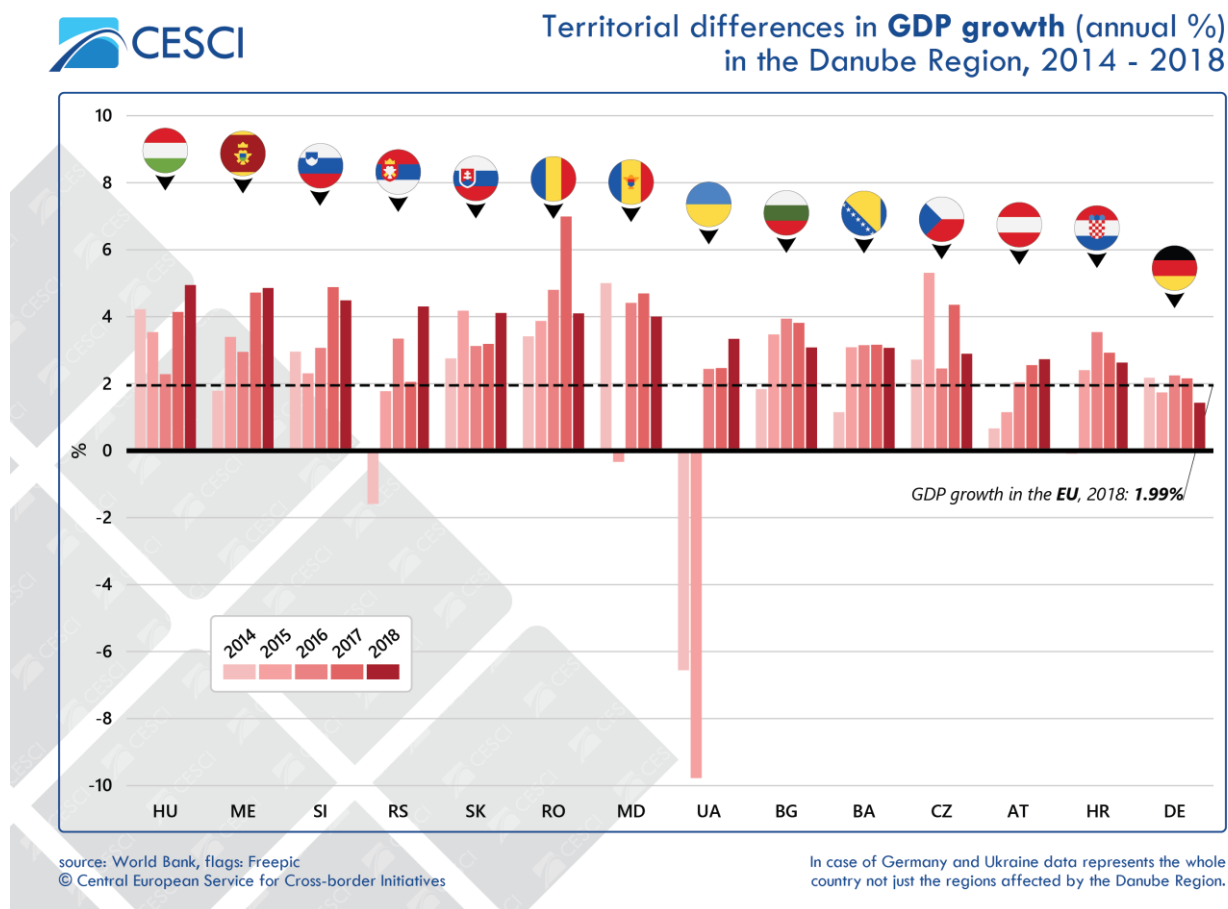


Figure 43: Territorial differences in GDP growth (annual %) in the Danube Region

The **number of SMEs** is still relatively low in the Danube Region despite of positive changes. The Danube Region is characterised by lower enterprise density in terms of SMEs. While in the EU15 47 and in the EU28 47.6 SMEs per 1000 inhabitants were operating, the Danube Region had 39.2. The scale of growth from 2011 to 2016 was slightly even lower (7.7%) than of EU15 (8.3%) and EU28 (8.7%). Thus, the economic output and the growth potential of SMEs within the Danube Region has been exposed to transnational companies and companies with German background mainly.

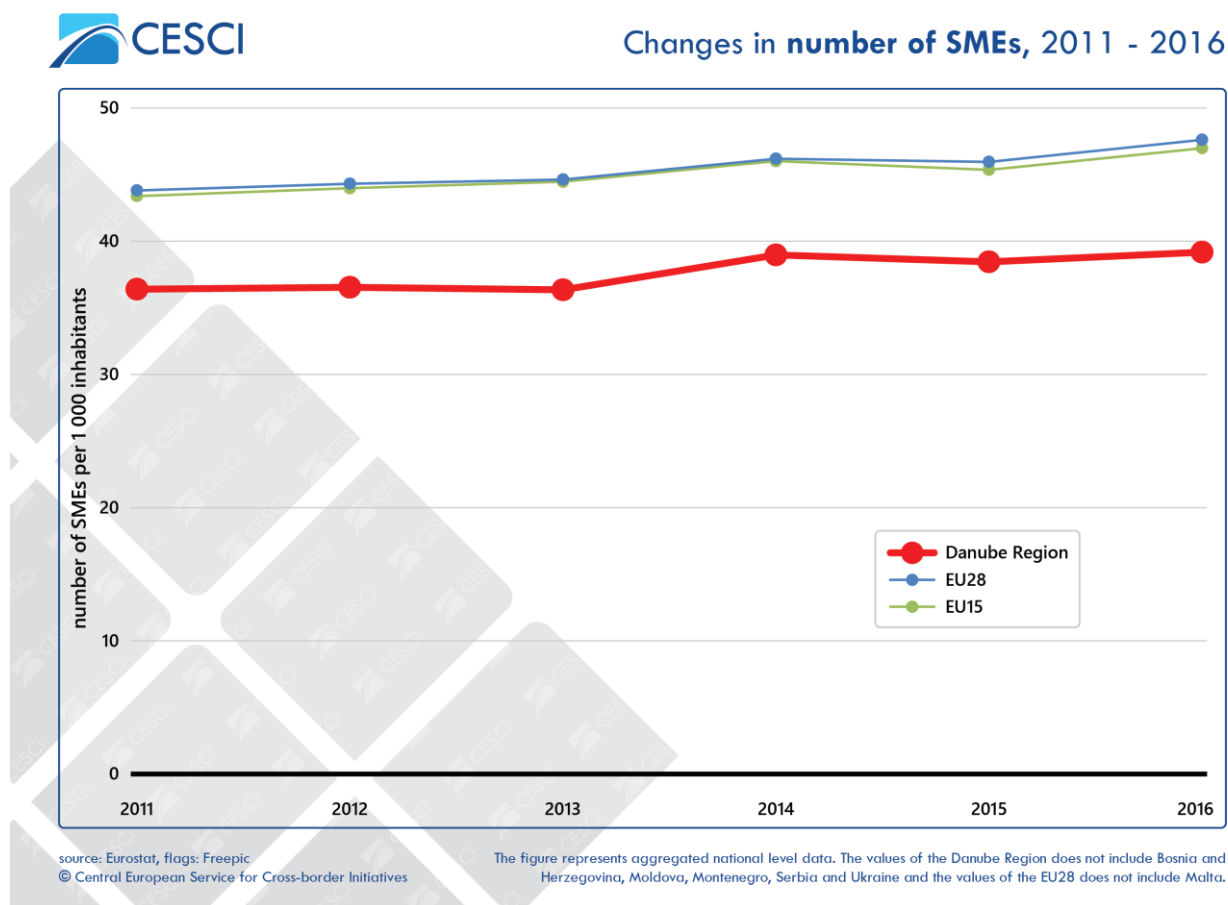


Figure 44: Changes in number of SMEs

The ecosystem for SMEs to develop is unfavourable in many cases. Economic challenges are also represented in the form of low **number** and thus share **of SMEs**. Compared to total enterprises their share is high, but still can be regarded lower than the EU28 average despite of reaching the EU15 level mainly due to shrinking numbers in the EU.

Focusing on national data within the macro-region, the share of SMEs is very 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.

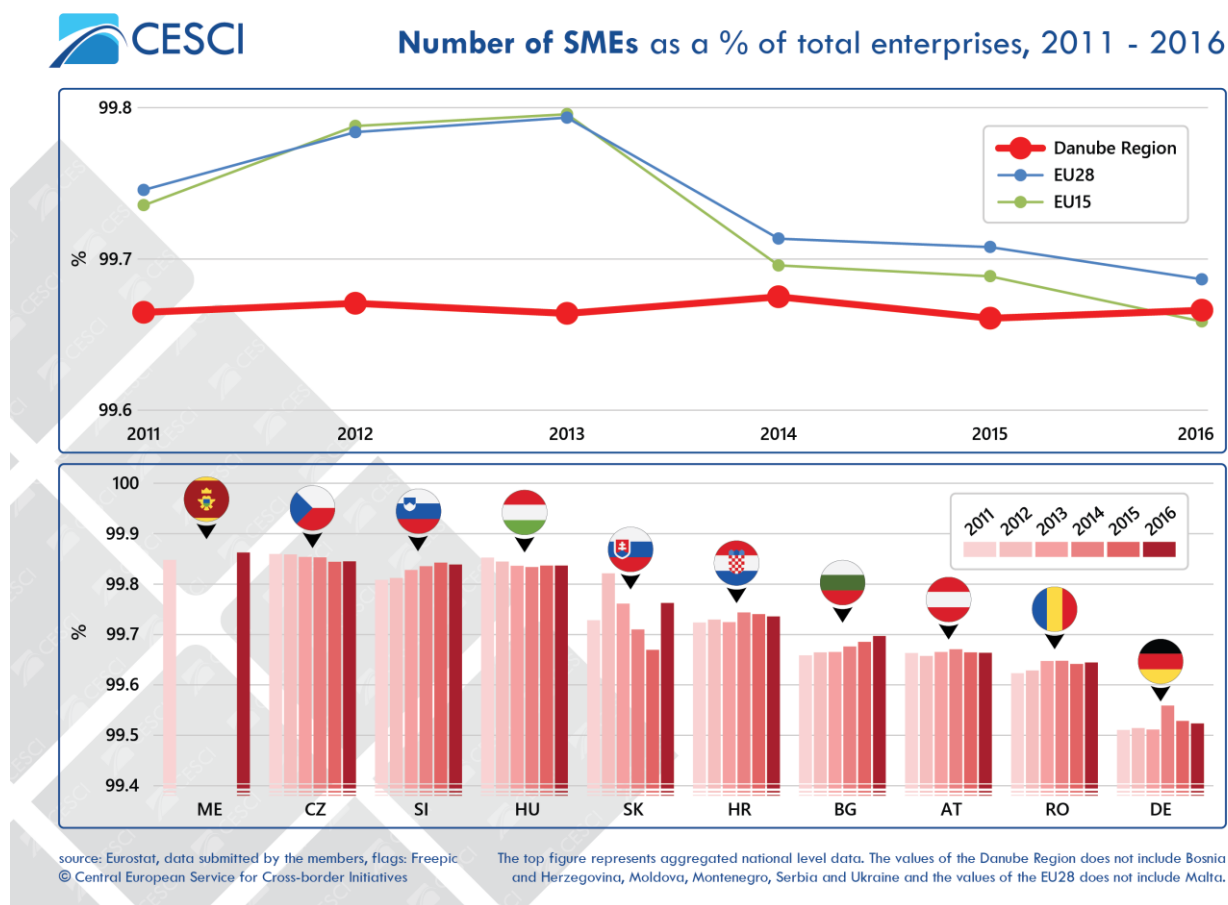


Figure 45: Number of SMEs as a % of total enterprises

Comparing the Danube Region to the rest of the EU, there has been a decreasing but still relevant gap in favour of the European Union in relation to **value added of SMEs**. 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%).

Focusing on the inner conditions of the Danube Region, the **share of SMEs** can be considered high in Bosnia and Herzegovina, Slovenia, Bulgaria and Croatia, with figures between 60 and 65%. Except for Austria the rest of the countries are known for shares around 50% or even lower. However, for these data it has to be underlined that high figure can be a sign of lack of financially strong large enterprises which would create significant value added. On the other hand, in e.g. Germany the relatively low share also signs the operation of large profitable companies with not necessarily weak SME sectors. Still, the dual economy, i.e. the presence of both small and large companies and their differences, are common in the macro-region.

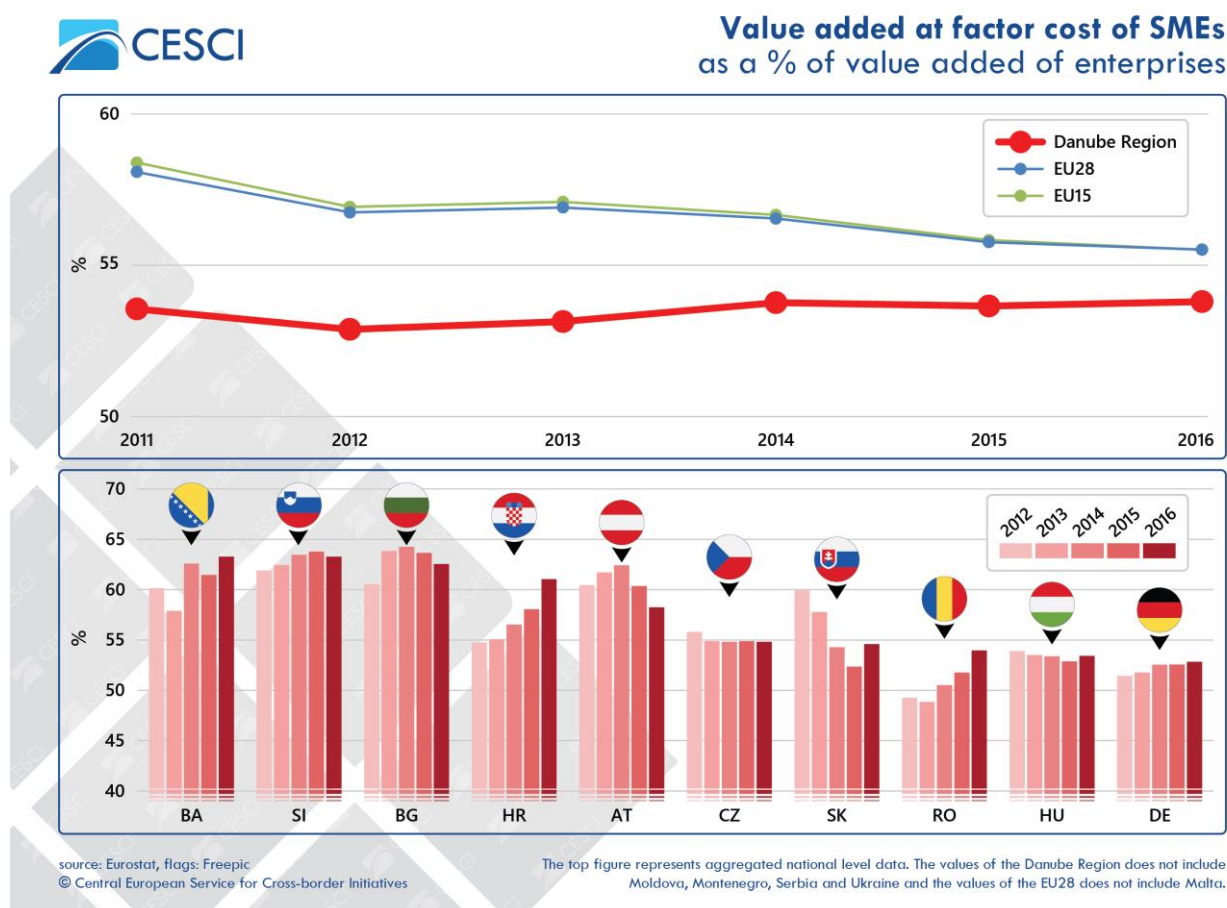


Figure 46: Value added at factor cost of SMEs as a % of value added of enterprises

Taking into account the **proportion of SMEs by sector**, some important differences and similarities can be detected **comparing EU15 and EU28 to the Danube Region**. Regarding mining (0.1%), water supply; sewerage, waste management and remediation activities (0.3-0.4%), construction (14-14.4%), transportation and storage (4.7-5%), electricity, gas, steam and air conditioning supply (0.4-0.5%), information and communication (4.7-4.9%), as well as repair of computers and personal and household goods (0.7-0.8%) there are no major differences. On the other hand, it can be said that the macro-region is more industrial (10.8% of SMEs are interested in manufacturing) compared to the EU states (EU15 7.6%, EU28 8.6%), and it became just even more manufacturing-centred by 2016 (the gap increased by 0.2% points from 2011 compared to EU28). The differences are significant but not extreme in the case of construction (EU15 13.4%, EU28 13.5%, Danube Region 12%), and real estate activities (EU15 6.2%, EU28 5.8%, Danube Region 5.2%). The majority of SMEs are operating in wholesale and retail trade; repair of motor vehicles and motorcycles (EU15 25.2, EU28 25.9%, Danube Region 26.2%).

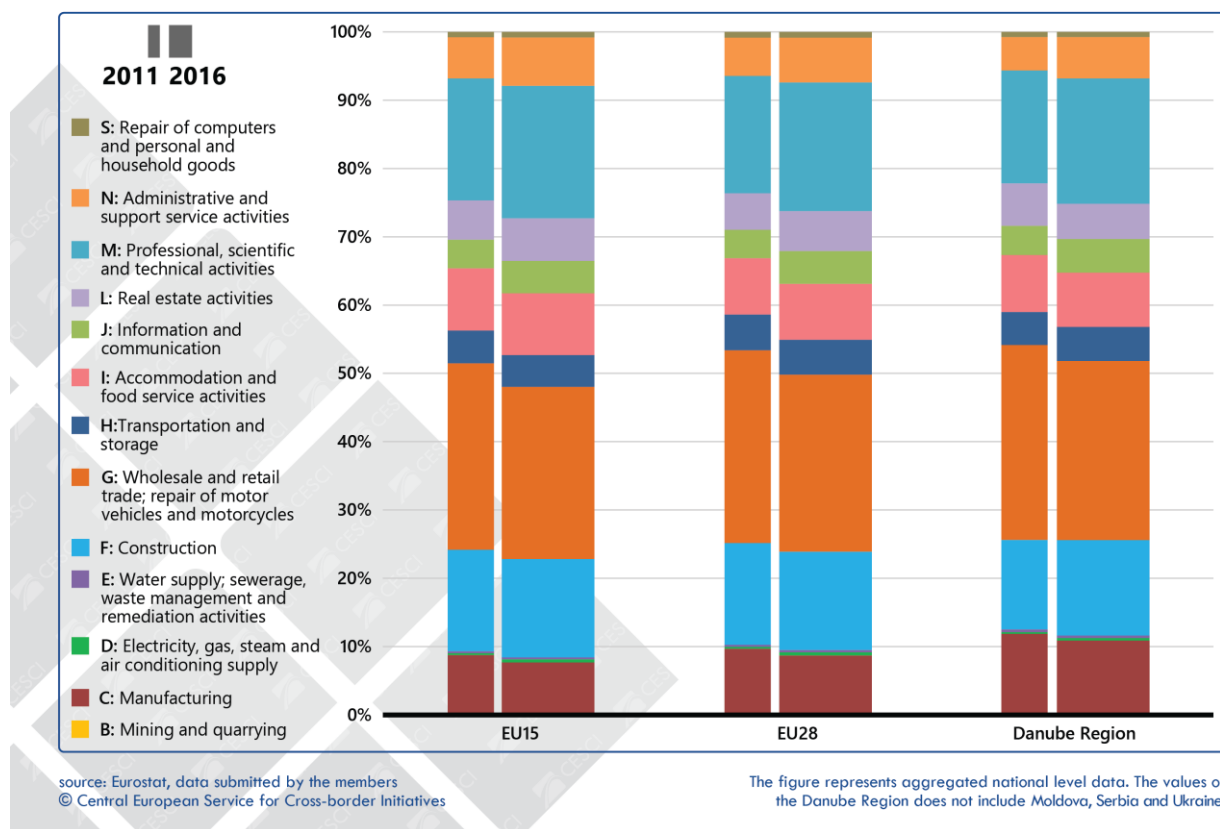


Figure 47: Proportion of SMEs by sector

In terms of **turnover of SMEs**, the major specialities and main characteristics will be 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%). 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 higher than the EU average (2.8%) in countries with developed tourist 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%).

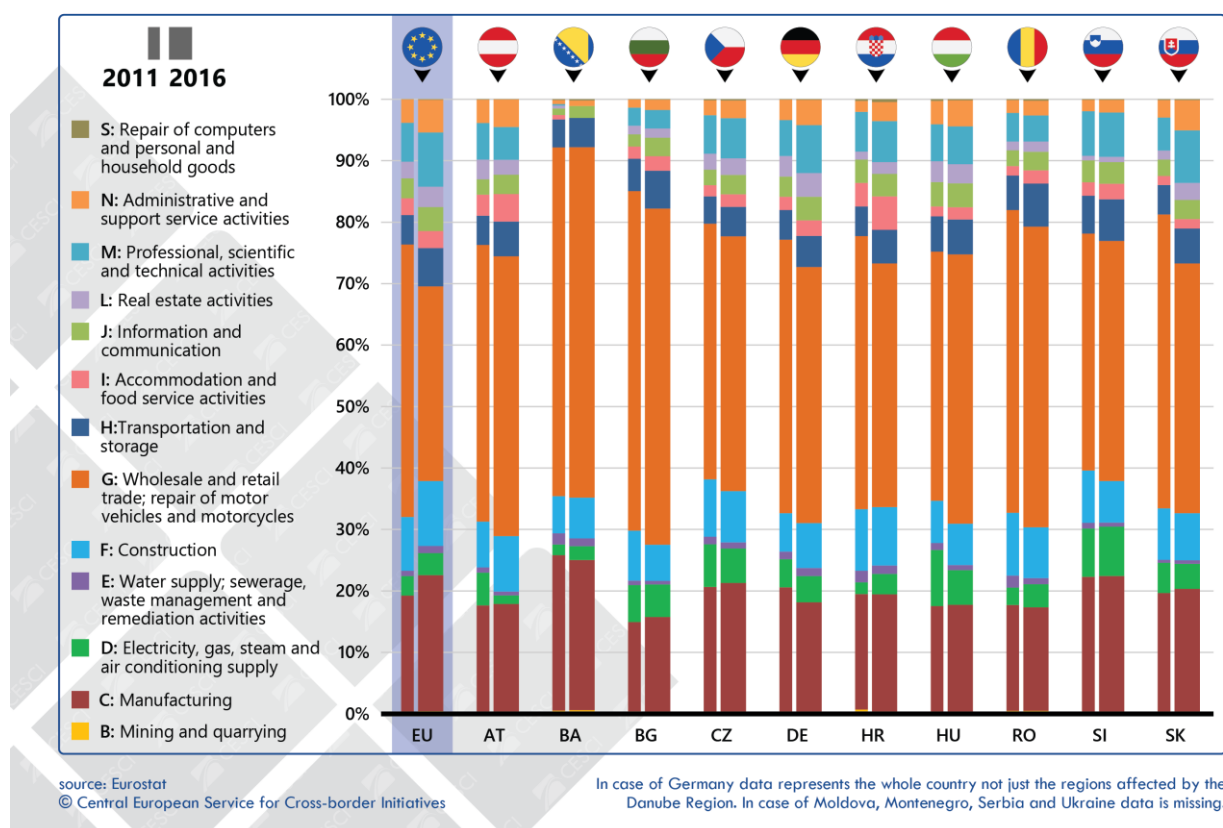


Figure 48: Turnover of SMEs by sector in the Danube Region

Considering the **proportion of SMEs by main sectors**, it can be stated that the Danube Region is a heterogeneous macro-region. Hereby the most relevant differences and characteristics will be outlined. In relation to mining and quarrying Bosnia and Herzegovina (0.4%) and Montenegro (0.3%) stand out compared to the EU average (0.1%). Except for Austria, Germany and Montenegro in all countries manufacturing exceeds European levels, and is especially important regarding its share in Bosnia and Herzegovina (20.4%), Czech Republic (17.2%), Slovakia (15.3%), Slovenia (13.7%) and Croatia (13.1%). Regarding construction the macro-region still had low number of SMEs in 2016, only in Czech Republic (17.2%) and Slovakia (19.7%) the share was high compared to the EU average (14.7%). In wholesale and retail trade (EU28 26.4%) the SMEs have extraordinary and high figures in a couple of countries, for example in Bosnia and Herzegovina (51%), Bulgaria (41.9%), Romania (36.5%) and Montenegro (35.5%). Thus, trade is the most common business activity considering SMEs within the macro-region. Transportation and storage is another field which is outstanding in the proportion of SMEs since in every single national economy the rate is over the EU28 (3.5%), and varies between 4.3 and 13%. In the case of real estate activities (EU28 6.1%) only Bulgaria (6.5%) exceeds the European average. In the case of administrative and support service activities (EU28 6.7%) Germany (8%) and Slovakia (6.8%) concentrate high number of SMEs among all SMEs.

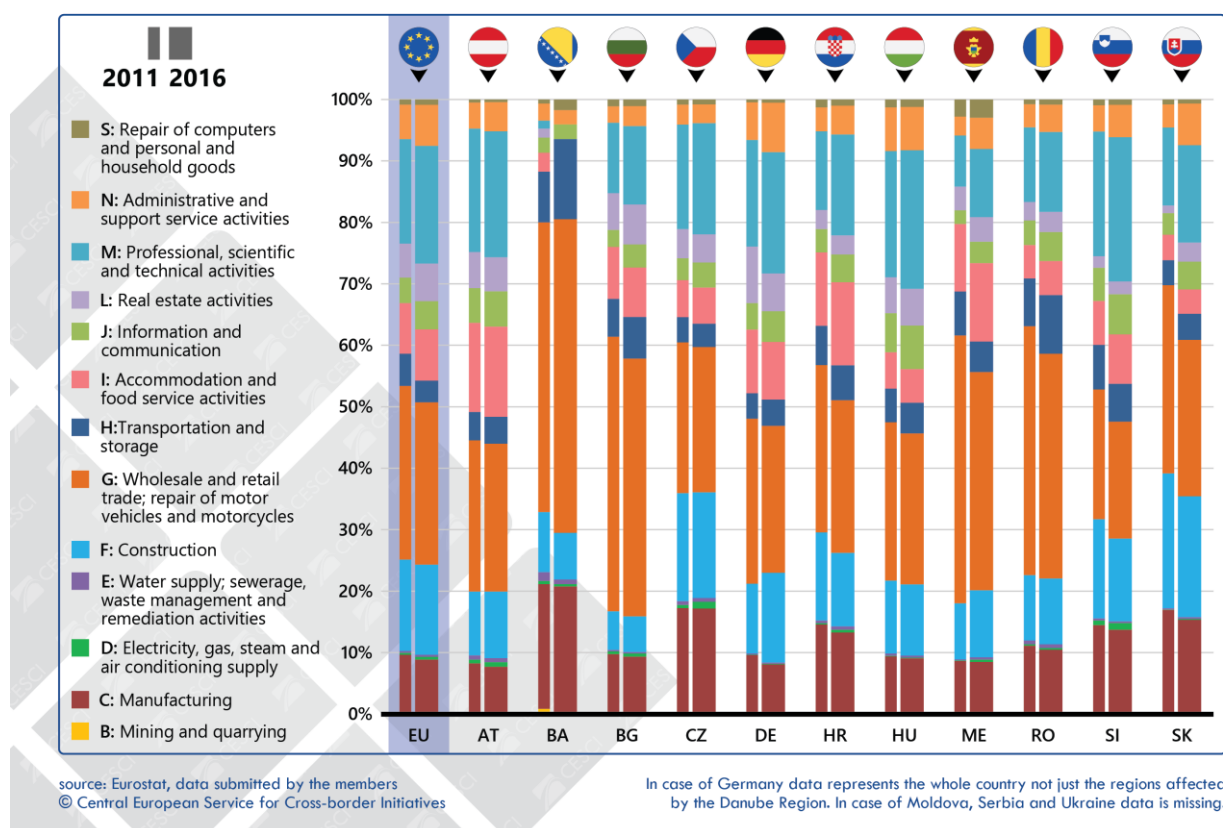


Figure 49: Proportion of SMEs by sector in the Danube Region

On European level, historically the territory of the Danube Region is known for its high agricultural potential. It is still represented in the figures considering the relatively high **share of agriculture in the GDP** of the macro-region. Except for some years the proportion of agricultural activities represented a higher share in production (1.8% in 2017) compared to the EU15 (1.3%).

Regarding the conditions within the Danube Region, the share of agriculture has decreased only slightly in most national economies. Owing to large fertile agricultural lands and traditions, agriculture in the majority of the given countries plays a crucial role in many socioeconomic ways, economic production included. However, there are significant territorial differences in terms of the contribution of agriculture to GDP. In the westernmost parts, including Germany (0.7%), Austria (1.2%), Slovenia (1.9%) and the Czech Republic (2%) the share is around or below as low as 2%, while in Moldova (10.2%) and Ukraine (10.1%) the share exceeds even 10%, and also stays high in Montenegro (6.8% in 2017), Serbia (6.2% in 2018) and Bosnia and Herzegovina (6% in 2018). Thus, the development of agriculture still has a large effect on the eastern and southern economies of the region.

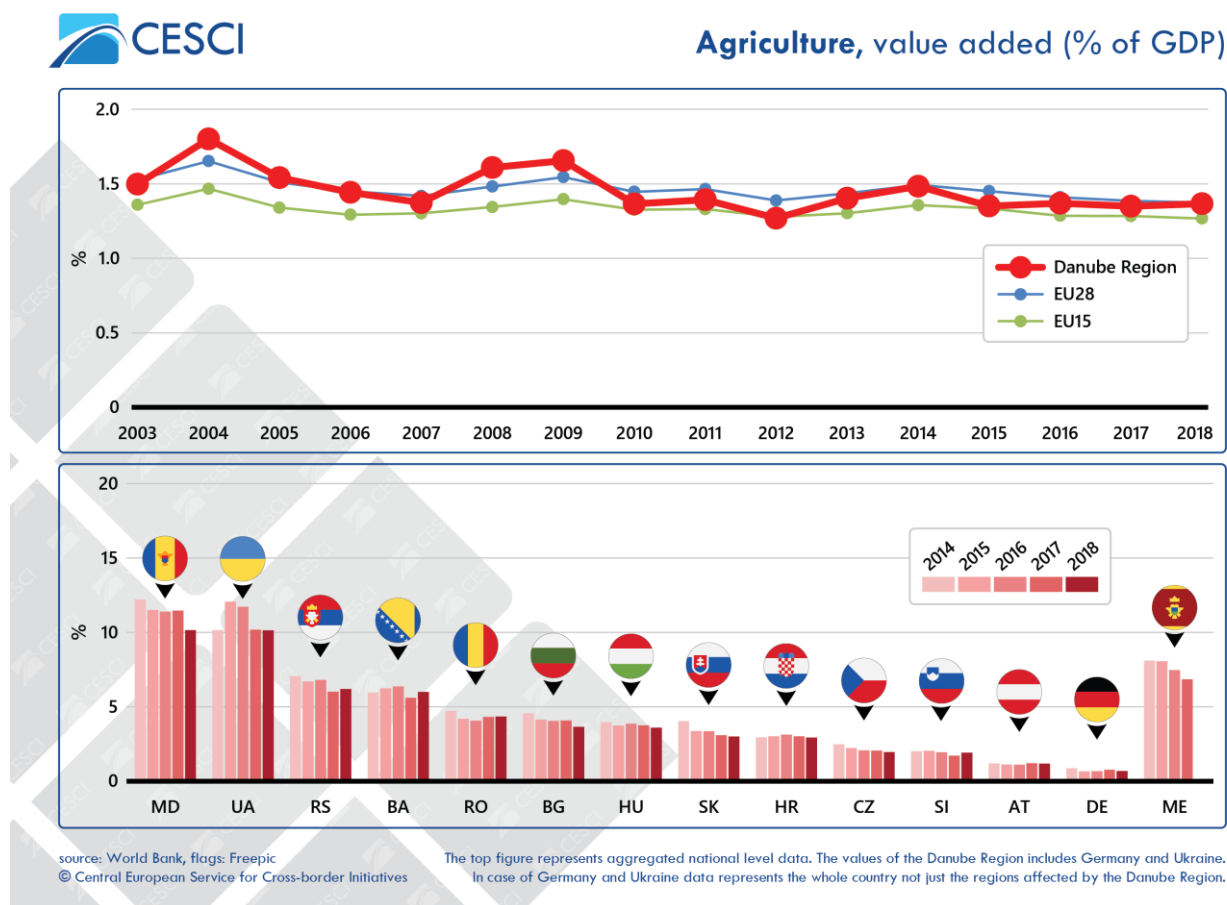


Figure 50: Agriculture, value added (% of GDP)

Comparing the economy of the Danube Region to the EU15 and the EU28, it is strongly characterised by industrial activities according to the value added by industry. **Industry** has much larger proportion (28.25% in 2018) in the related economies compared to EU Member States (EU15 21.4%, EU28 21.9%). Owing to the process of (re)industrialisation in many central and eastern European countries industry has stayed an important piece of the national economies and thus the whole Danube Region. The Danube Region is a heterogeneous part of Europe when it comes to the share of **industrial enterprises**. Regarding the share of industrial units the Danube Region contains the TOP10 most industrial regions in almost whole Europe (for which there is data).

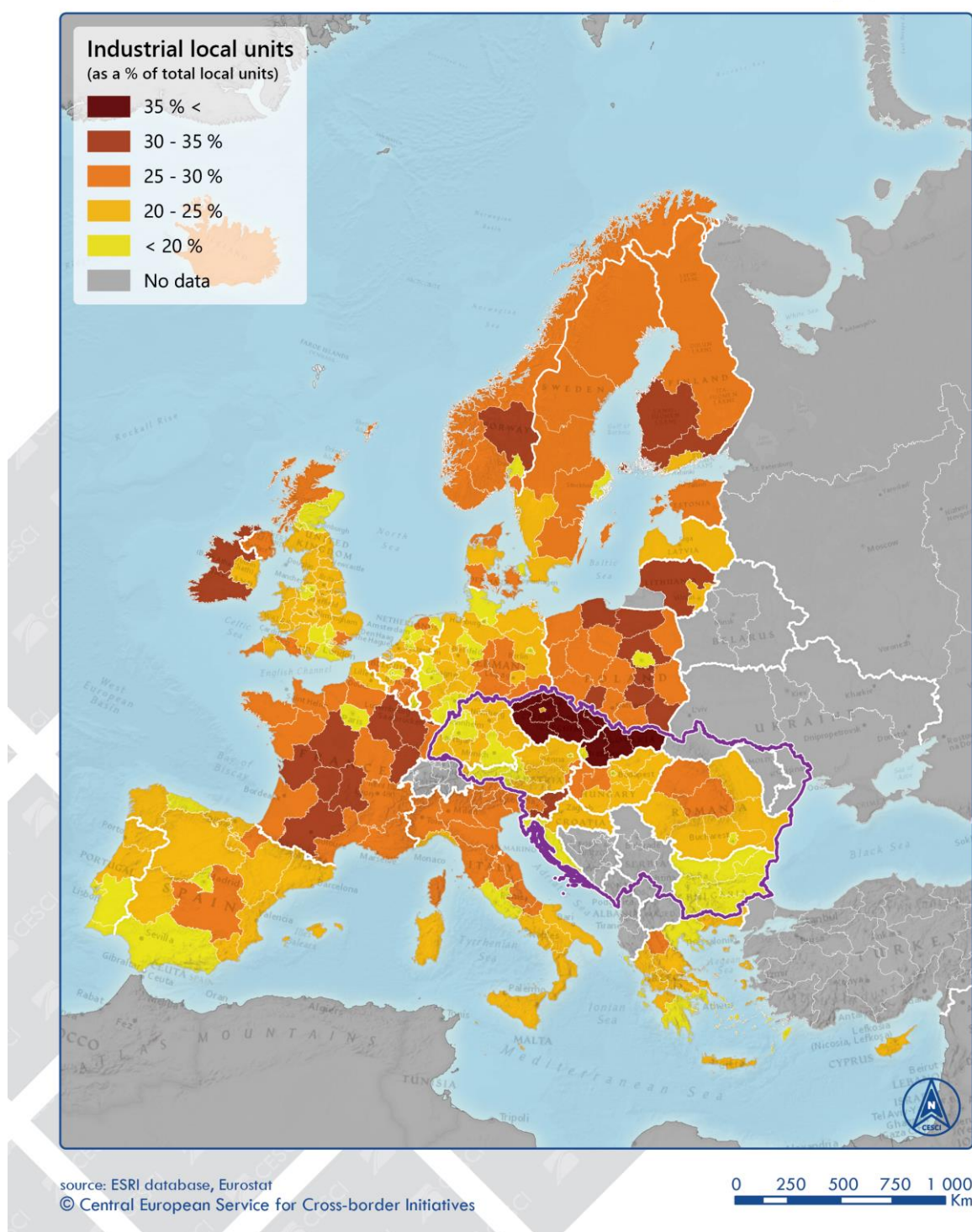


Figure 51: Spatial distribution of industrial local units in Europe

Moreover, focusing on inner economic status of the Danube Region, in the examined period the share of industrial activities has maintained its high share excluding some countries (e.g. the Czech Republic), and in some countries even further increased. Countries with the highest share of industry in terms of value added include traditionally heavily industrialised regions of

Europe e.g. the Czech Republic (32.7%) and Germany (28%), and economies which have attracted much FDI in industry (Slovakia 31.3%, Romania 29%, Slovenia 28.9%, Hungary 26.3%). Relocation of industrial activities to Central and South-East Europe from Germany and other parts of the developed economies has been an important process in the last two decades of economic changes in this part of Europe.

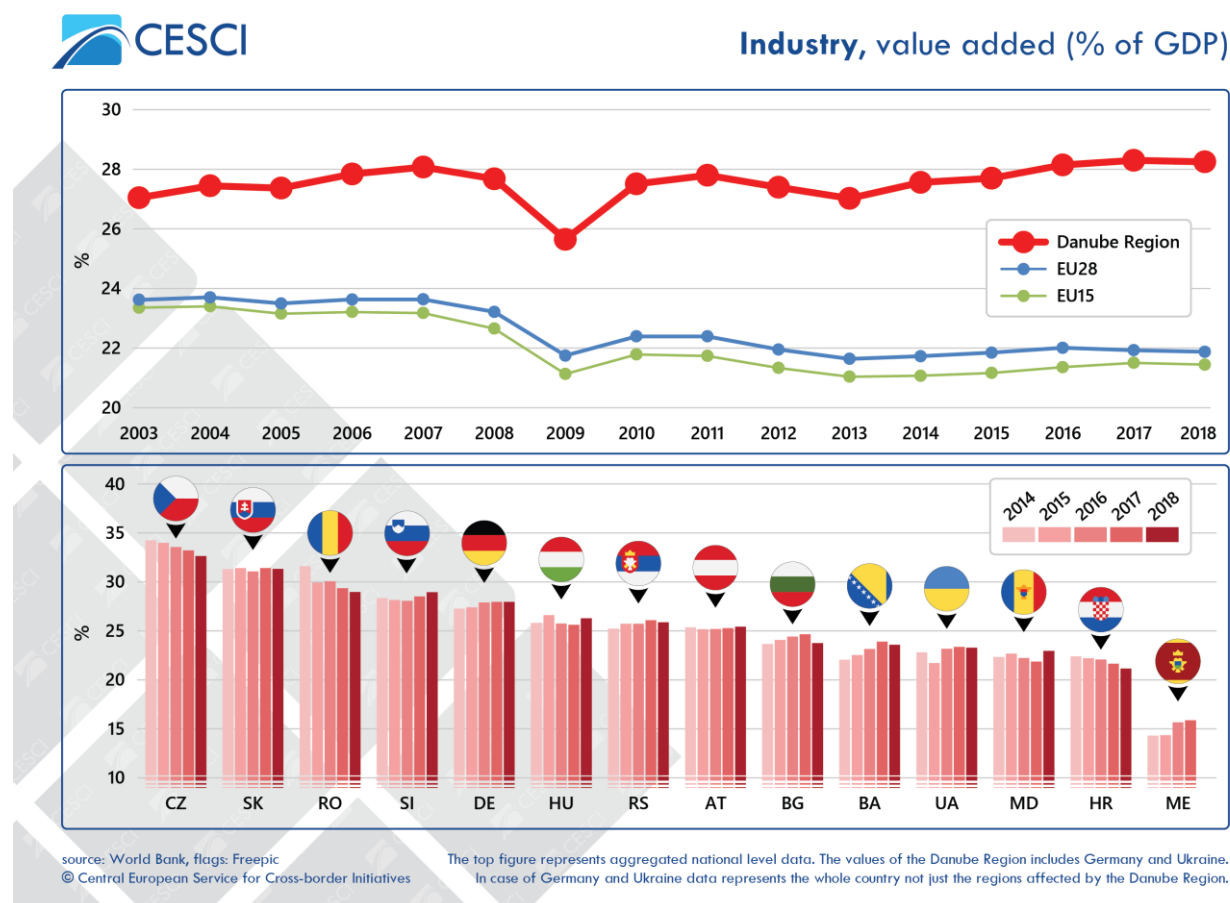


Figure 52: Industry, value added (% of GDP)

Checking national and regional data, the (re)industrialisation is reflected in high data in relation to the Czech Republic, Slovakia and Slovenia, furthermore partly in some regions of Hungary and Romania. Data in relation to the share of industrial units among total local units, is even higher than 40% in eastern Slovakia (42.4%), central Slovakia (40.8%), as well as in Severovýchod (42.2%), Středni Morava (42%), and Jihovýchod (40.2%) from the Czech Republic. In the contrary, in regions of capital and major cities, in Upper Bavaria (14.9%), Yugozapaden (14.2%), Budapest (13.8%), and Vienna 12.4%) the share of industrial local units is very low compared to most regions.

Danube Region has had permanently lower **share of services** (59.85% in 2017) compared to the rest of Europe, especially when it comes to financial, business and advisory services, and EU Member States (EU15: 67.3%; EU28: 66.65%). It indicated that services play significantly

lower role in the economies situated outside of the EU integration, Montenegro with large tourism industry excluded.

Focusing on inner spatial distributions, economies with high share of services in production are generally western countries with developed business services (Austria 62.7%, Germany 61.5%), economies with strong tourism sector (Austria, Montenegro 59.1% in 2017, Croatia 58% in 2018) or countries where industry and agriculture has relatively lower importance (Bulgaria 59.2%). Expect for Romania, Bulgaria and Ukraine noteworthy changes in the share cannot be detected. Countries with low share are generally the more eastern and southern countries with less developed and diversified economies such as Moldova (53.3%), Ukraine (51.3%) and Serbia (51%), or industrialised countries such as the traditionally industrial Czech Republic (55.3%) or the reindustrialised Hungary or Slovakia.

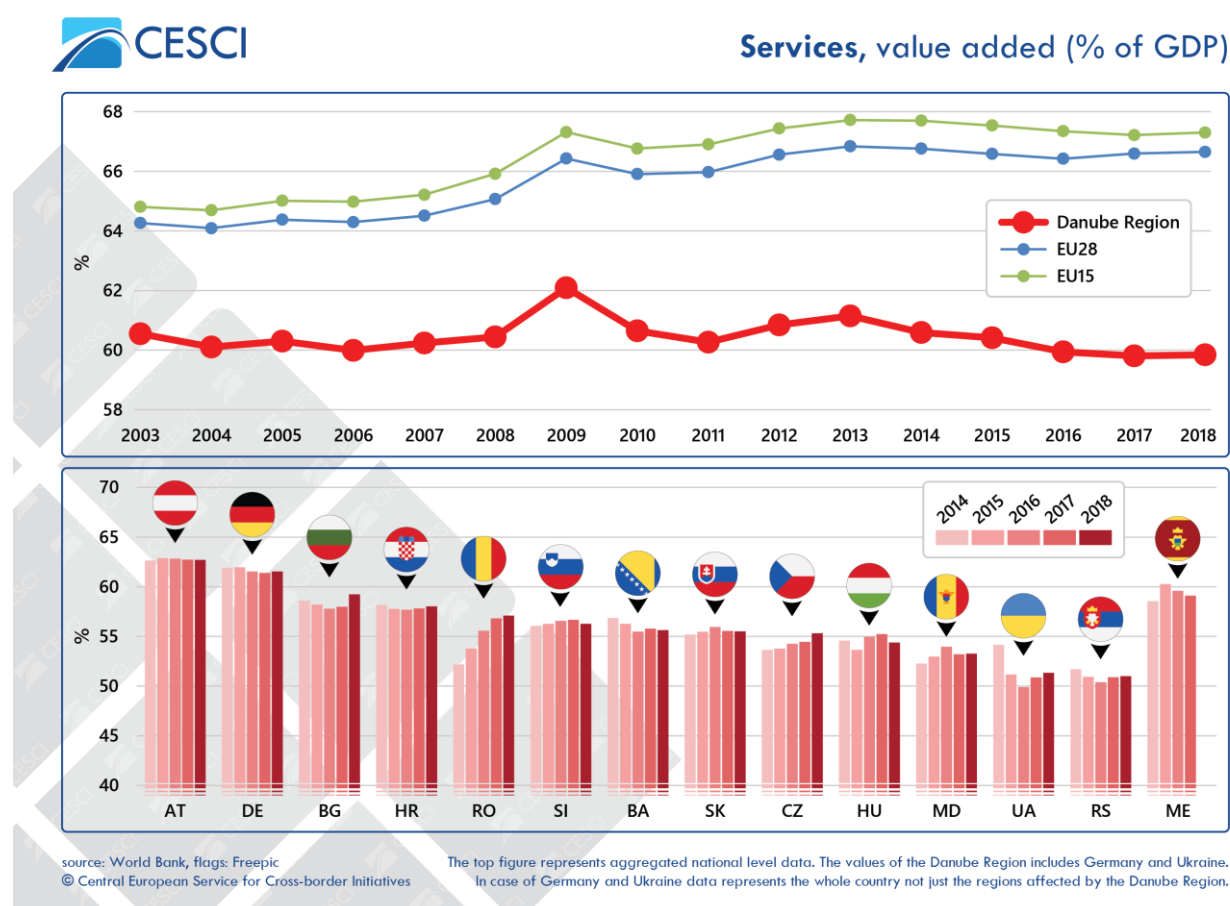


Figure 53: Services, value added (% of GDP)

In the macro-region the most significant **sector in terms of value added** is the service sector, followed by industry, other activities, while agriculture has the lowest share in terms of GDP. Compared to the EU average, the significance of agricultural and industrial activities is higher, while services are less important contributors to GDP.

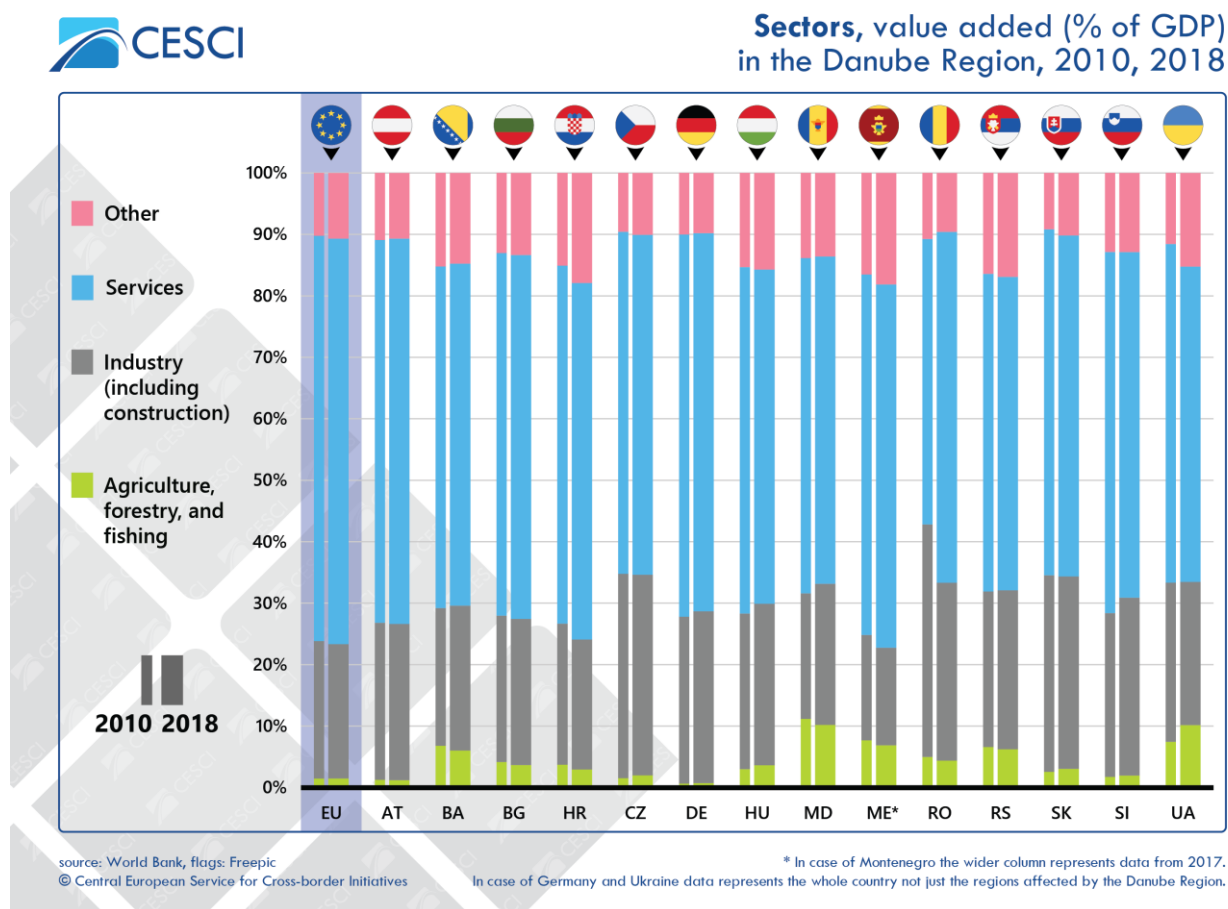


Figure 54: Sectors, value added (% of GDP) in the Danube Region

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 development status, it is worth taking into account the related infrastructure (as it is a main factor in cohesion) including accommodation and cycle paths of transnational relevance, as well as overnight stays.

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.³² 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 often situated right next to areas with extensive capacities especially in Croatia and Bulgaria.³³ Taking into account the changes in the last years, apart from some

³² 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).

³³ Regions with the lowest number of bed-places per 1000 inhabitants are as follows the Buigarian Yugozapaden (25) Yuzhen Tsentralen (20) and Severen Tsentralen (14), central Hungary (24), Continental Croatia (20), furthermore the Romanian Vest (17) and Nord-Vest (14).

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 bed-places.³⁴

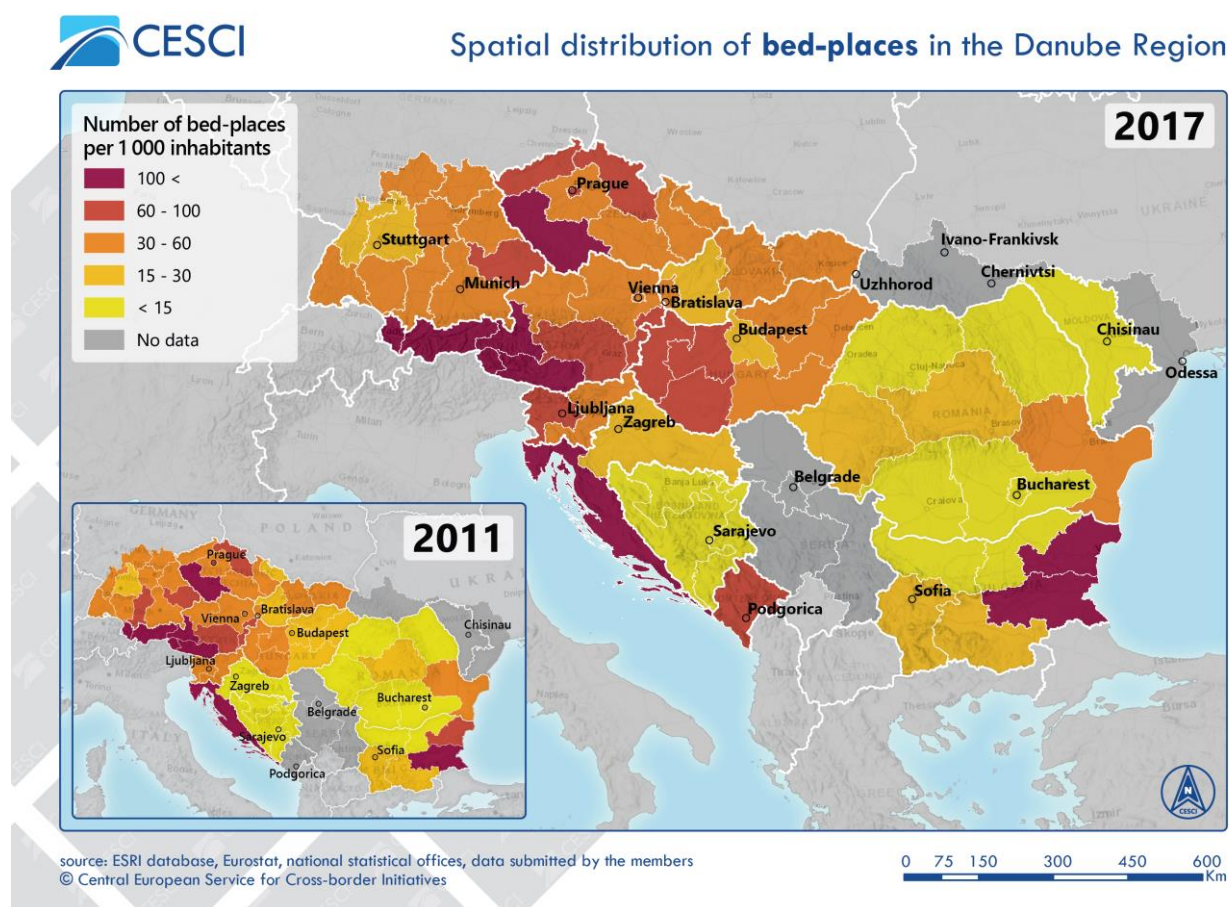


Figure 55: Spatial distribution of bed-places in the Danube Region

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.³⁵ 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,

³⁴ Fastest growing regions include 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 Yugozapaden 146%.

³⁵ Regions with the highest number of guest nights per 1000 inhabitants are as follows: Adriatic Croatia (59005 nights in 2018), Tyrol (50065), Salzburg (42497), Carinthia (20158), Vorarlberg (17729), Burgenland (9526) and Styria (8867) and Vienna (8082) from Austria, Prague (14100), Yugoiztochen (9529) and Severoiztochen (8438) from Bulgaria, Lower Bavaria (8225).

Serbia, Bosnia and Herzegovina.³⁶ Between 2011 and 2017 Bosnian, Croatian, Hungarian, Romanian and Bulgarian regions became more popular for incoming guest at highest pace.³⁷

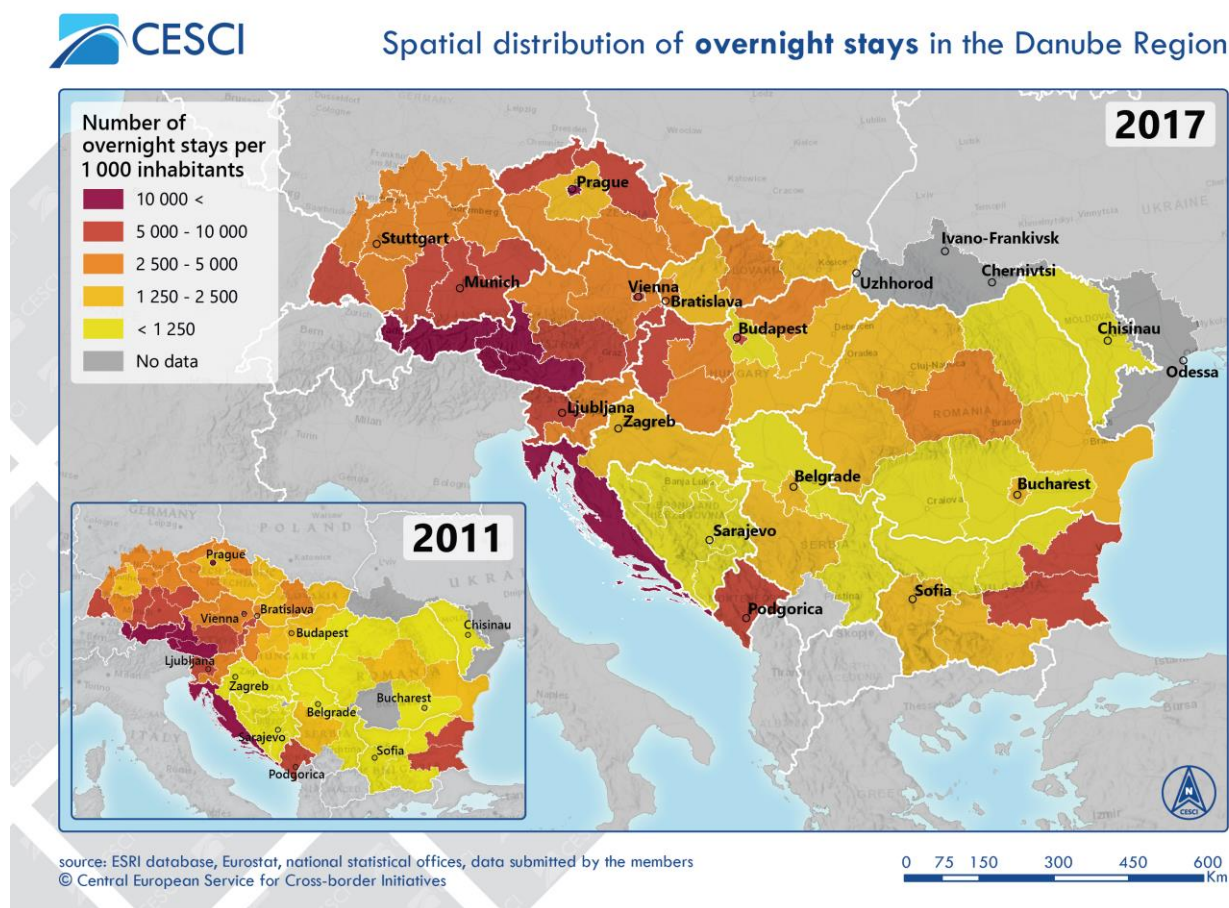


Figure 56: Spatial distribution of overnight stays in the Danube Region

Hereby, bicycle paths with tourism purposes are analysed since such paths and related services have a geographically transnational scale, not local traffic. The mentioned infrastructure is regarded and functioning as important tourism products and factors of transnational tourism development. From the point of view of sustainable and green tourism **EuroVelo** is an initiative of transnational importance. The EuroVelo network consists of 16 long distance cycle routes which connect and unite the whole European continent. The idea can be traced back to 1995 when creating a network of international cycle routes was first raised. Ever since, the number of routes is exponentially growing attracting an increasing number of tourists. From this point of view, the Danube Region is at an especially distinguished position as almost half

³⁶ Regions with the lowest number of guest nights per 1000 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 (8862), Federation of Bosnia and Herzegovina (845), Republika Srpska (689), Vojvodina (620), Moldova (545) and Brčko District (267) from Bosnia

³⁷ Regions with the fastest growing 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 Yugoapaden (180%).

of the routes cross its territory. Furthermore, out of the seven routes³⁸ criss-crossing the Danube Region, five are forming a junction in the heart of the region since they ran along a comparatively small territory between the three capitals of Austria, Hungary and Czech Republic resulting in a higher number of cycling tourists visiting the Danube Region. The popularity and viability of the project is also proved by the fact that the East Europe Route (No. 11) – which is cutting half the region from north to south – having been incorporated only in 2011 is a new addition to the network and already seems to be one of the most popular ones. However, despite of the high number of designated 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).



Figure 57: Map of the EuroVelo network³⁹

³⁸ The affected routes and countries from the Danube Region: Central Europe Route (No. 4: Germany, Czech Republic, Ukraine), Atlantic-Black Sea (No. 6: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria), Sun Route (No. 7: Germany, Czech Republic, Austria), Mediterranean Route (No. 8: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro,), Baltic-Adriatic Route (No. 9: Czech Republic, Austria, Slovenia, Croatia), East Europe Route (No. 11: Slovakia, Hungary, Serbia, Macedonia).

³⁹ source: ECF

In the Danube Region several **Cultural Routes of the Council of Europe**⁴⁰ 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. Analysing the territorial coverage and density of the network, Croatia, Germany, Slovenia are well connected within the macro-region. On the other hand, large areas of Bulgaria, Bosnia and Herzegovina and Moldova are excluded from the network, while none of the routes incorporated Ukrainian members up until 2019. Regarding the quantitative distribution of the Cultural Routes, most of them cross Germany (12), followed by Croatia (9), Romania (7) and Austria (6). Czech Republic, Hungary and Slovenia (5) have medium number of routes, while Serbia (4), Slovak Republic (3), Bulgaria (2), Montenegro (1), Moldova (1) as well as Bosnia and Herzegovina (1) have limited number of Cultural Routes. No Cultural Route involves all countries of Danube Basin. However, there are thematic fields where multiple countries are cooperating, especially in the case of the former Iron Curtain (members from 10 countries), furthermore in relation to viniculture (8), industrial heritage (8), Jewish heritage (7), cemeteries (7), Art Nouveau architecture (6), Roman heritage (5), Romanesque architecture (5), Saint Martin (5), Reformation (5), thermal towns (4), and Mozart (4). Routes with macro-regional relevance from the viewpoint of the Danube Region (having at least two countries from the macro-region, enclosed in parentheses) include:

- ATRIUM - Architecture of Totalitarian Regimes of the 20th Century In Europe's Urban Memory (Romania, Bulgaria, Croatia);
- Destination Napoleon (Germany, Czech Republic, Croatia);
- European Cemeteries Route (Austria, Bosnia and Herzegovina, Croatia, Germany, Romania, Serbia, Slovenia);
- European Mozart Ways (Austria, Czech Republic, Germany, Slovakia);
- European Route of Cistercian Abbeys (Czech Republic, Germany);
- European Route of Historic Thermal Towns (Croatia, Czech Republic, Germany, Hungary);
- European Route of Industrial Heritage (Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Serbia, Ukraine);
- European Route of Jewish Heritage (Austria, Bosnia and Herzegovina, Czech Republic, Germany, Romania, Slovakia, Slovenia);
- Routes of Reformation (Austria, Czech Republic, Germany, Hungary, Slovenia);

⁴⁰ A cultural, educational heritage and tourism co-operation „project“ aiming at the development and promotion of an itinerary or a series of itineraries based on a historic route, a cultural concept, figure or phenomenon with a transnational importance and significance for the understanding and respect of common European values. Cultural Routes extend geographically and have a strong spatial dimension. Cultural Routes are either: 1. linear routes presenting linear patterns; 2. reticular (archipelagos) pattern routes with geographically separated elements; or 3. territorial routes involving territories presenting one common theme or character.

- Impressionisms Routes (Croatia, Germany, Slovenia);
- Iron Curtain Trail (Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Romania, Serbia, Slovakia, Slovenia);
- Iter Vitis Route (Bulgaria, Croatia, Hungary, Montenegro, Moldova, Romania, Serbia, Slovenia);
- Liberation Route Europe (Czech Republic, Germany);
- Réseau Art Nouveau Network (Austria, Germany, Hungary, Romania, Serbia, Slovenia)
- Roman Emperors and Danube Wine Route (Bulgaria, Croatia, Hungary, Romania, Serbia);
- Routes of the Olive Tree (Croatia, Slovenia);
- Saint Martin of Tours Route (Croatia, Germany, Hungary, Slovakia, Slovenia);
- TRANSROMANICA - The Romanesque Routes of European Heritage (Austria, Germany, Romania, Serbia, Slovakia);
- Via Habsburg (Austria, Germany).

With regard to the distribution of Cultural Routes' members in the Danube macro-region, it has to be noted that most of the members are cities or municipalities (59), tourism stakeholders (37), sites (26) and cultural organisations like museums (21). Only a few members can be classified as associations (15), institutions such as foundations or public organisations (12), persons (12), scientific organisations (10), regions (2), chambers of commerce (1) and natural parks (1).⁴¹

In order to strengthen the management of tourism related to the Cultural Routes, cultural tourism policies, recommendations and guidelines drafted in the framework of Routes4U⁴² 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. The Roman Emperors and Danube Wine Route can serve as an example of how to prepare a Cultural Route in line with the needs and within the geographic area of macro-region. Recommendations of the workshop organised during the project include: Creating cultural tourism products requires 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 co-operation among the stakeholders along the Cultural Routes.

⁴¹ According to the publication „Roadmap for the Danube Region. Strengthening regional development through the Cultural Routes of the Council of Europe”

⁴² Routes4U is a joint programme between the Council of Europe and the European Union. The 30-months project (2017-2020) aims to foster regional development through the Cultural Routes of the Council of Europe programme in the four EU macro-regions, including the Danube Region.

As it can be seen on the table attached, the **tourism destination management**, which is a major example for the need for better transnational governance as well (see Chapter 3.3.4 Territorial cooperation and governance framework), of the Danube Region countries differs from each other in many cases. 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. Taking into account the total number of points, which means the representation of the destination management approach in a given country, Slovenia has the highest rank, followed by a group of countries with 8 total points, namely Austria, Croatia, Germany and Hungary. Bulgaria, Czech Republic, Slovakia and Serbia gained 7 points. The following countries are under the average of 6.8 points: Montenegro (6 points), Romania (6 points), Moldova (5 points) and Ukraine (5 points). State power is especially strong in the case of Romania, Montenegro in relation to destination management, while in Ukraine the top-down approach is common with no real destination management organisations at any levels. Considering the regional level capacities are great in the case of federal states from the western part of the macro-region, in Austria and Germany to be precise, and also strong in the Czech Republic. In Ukraine, Romania, Moldova and Montenegro regional level is very weak; the empowerment of dedicated regional stakeholders in tourism is largely missing as important stakeholders. Considering local level, capacities are of great importance in the case of Croatia, Hungary and Slovenia, while in many countries the score is only one point each time.

Table 2: Differences in tourist destination management capacities in the Danube Region⁴³

COUNTRY	NATIONAL LEVEL		REGIONAL LEVEL		LOCAL LEVEL		TOTAL
	Main organisations - Capacity		Main organisations - Capacity		Main organisations - Capacity		
Austria	Österreich Werbung (Ministry of Economy and Chamber of Agriculture)	2	Burgenland Tourismus Kärnten Werbung Marketing & Innovationsmanagement Niederösterreich-Werbung Oberösterreich Tourismus SalzburgerLand Tourismus Steirische Tourismusgesellschaft Tirol Werbung Vorarlberg Tourismus WienTourismus	4	Tourism information offices	1	7
Bulgaria	The Ministry of Tourism Expert Committee on Registration of Tour Operators and Travel Agents (ECRTOTA) Expert Committee on Categorization and Certification of Tourist Sites (ECCCTS)	4	Territorial Units of the Ministry: Blagoevgrad Burgas Varna Veliko Tarnovo Vidin Kazanluk Russe Smolyan	2	Tourism information offices	1	7

⁴³ source: own data collection

COUNTRY	NATIONAL LEVEL		REGIONAL LEVEL		LOCAL LEVEL		TOTAL
	Main organisations - Capacity		Main organisations - Capacity		Main organisations - Capacity		
Croatia	Ministry of Tourism The Croatian National Tourist Board	3	Tourist boards of counties (21) Tourist boards of the municipalities (149)	2	Tourist boards of cities (116) Tourist communities of the areas (10) Tourist boards of places (15) Tourist board of the island (1) Tourist Information Centres-TIC (110)	3	8
Czech Republic	Ministry for Regional Development The Czech Tourist Authority	2	Departments of Tourism in Regions (14 independent) Tourism Commission of Association of Regions of the Czech Republic Regional Bodies Destination Managements	4	Tourism information offices	1	7
Germany	Landesarbeitsgemeinschaft of the Chamber of Commerce and Industry The German National Tourism Board	3	German Tourist Association (also operates to a certain degree on national level)	4	Tourism information offices	1	8
Hungary	The Board of Sport and Tourism Hungarian Tourist Office The National Touristical Board Hungarian Tourism Agency	3	9 Regional Marketing Directories: Lake Balaton RMI Budapest – Central Danube Region RMI Southern Great Plain RMI Northern Great Plain RMI Southern Transdanubian RMI Central Transdanubi RMI Northern Hungary RMI Western Transdanubia RMI Lake Tisza RMI	2	Tourist Destination Management Organisations Tourist information offices	3	8
Moldova	Ministry of Agriculture, Regional Development and Environment The Tourism Agency of the Republic of Moldova National Association of Tourism Legal Agents of Moldova National Association of Rural, Ecological and Cultural Tourism in Moldova	3	Sub-departments in the municipalities	1	Tourism information offices	1	5
Monte-negro	Ministry of Sustainable Development and Tourism National Tourism Organisation of Montenegro	4	Bjelasica i Komovi	1	local tourism organisations	1	6

COUNTRY	NATIONAL LEVEL		REGIONAL LEVEL		LOCAL LEVEL		TOTAL
	Main organisations - Capacity		Main organisations - Capacity		Main organisations - Capacity		
Romania	Tourism Ministry Tourism Advisory Council National Association of Travel Agencies National Tourism Agency	4	Sub-departments in the municipalities	1	Tourism information offices	1	6
Serbia	Ministry of Trade, Tourism and Telecommunications National Tourism Organisation of Serbia	2	Tourism Organisation of Vojvodina	3	Municipal tourism organisations	1	6
Slovakia	Ministry of Transport and Construction Slovak Tourist Board Slovak Tourist Agency	3	Regional Tourism Organisations	3	Municipalities	1	7
Slovenia	Ministry of Economic Development and Technology Slovenian Tourist Board	3	Regional Destination Boards	3	Local Tourism Organisations	3	9
Ukraine	Ministry of Economic Development and Trade National Tourism Organisation	3	Regions (oblast)	1	Local municipalities	1	5
Average		3		2,4		1,5	6,8

Employment in the field of information and communication technologies (ICT) represents one of the most specific areas on the labour market for requiring highly skilled workforce and a profound digital economy. The share of such employment of total employment is low within the Danube Region (3% in 2018), and did not reach the EU averages (EU28 3.2%, EU15 3.3% in 2018) between 2008 and 2018. 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 in non-Member States of the macro-region in particular.

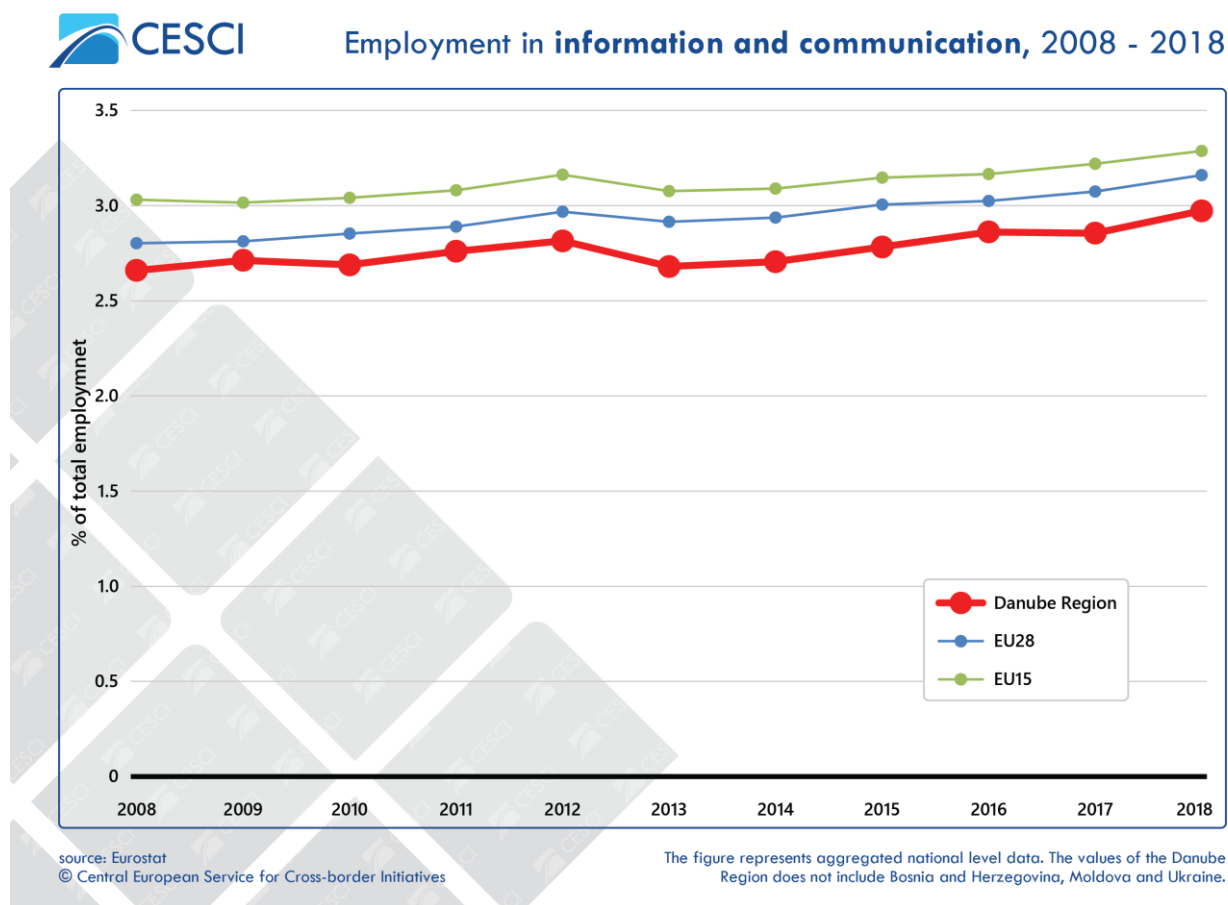


Figure 58: Employment in information and communication

Taking into account **intramural expenditure on Research & Development** (RDI) the Danube Region consists of both RDI leaders and followers. The macro-region is a mix of the most innovative regions of Europe including Austria (1279.6) 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 of eastern and south-eastern Europe (Bosnia and Herzegovina 9.4, Ukraine 10, Montenegro 20.6, Romania 41.4, Serbia 43.6). Knowledge-intensity of national economies⁴⁴ from the point of Gross domestic expenditure on RDI (GERD) shows large territorial differences within the macro-region. Considering available data, excluding Croatia, Serbia, and Montenegro the proportion of business enterprises in the expenditures are at least the half of total national expenditures. However, notable differences in the source of innovation have to be highlighted. The share of government is relatively high in Romania, Croatia, Serbia, Slovakia, Bulgaria and Montenegro, while the role of financial investments in education is outstanding in Montenegro, Serbia, Croatia and Slovakia, compared to other stakeholders. Consequently, the size and composition of RDI activities represent a high potential in joint knowledge management and valorisation initiatives covering joint planning,

⁴⁴ The data of Ukraine is based on estimation.

conduct of research, furthermore activities of private, government and educational institutions to support knowledge production and transfer.

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

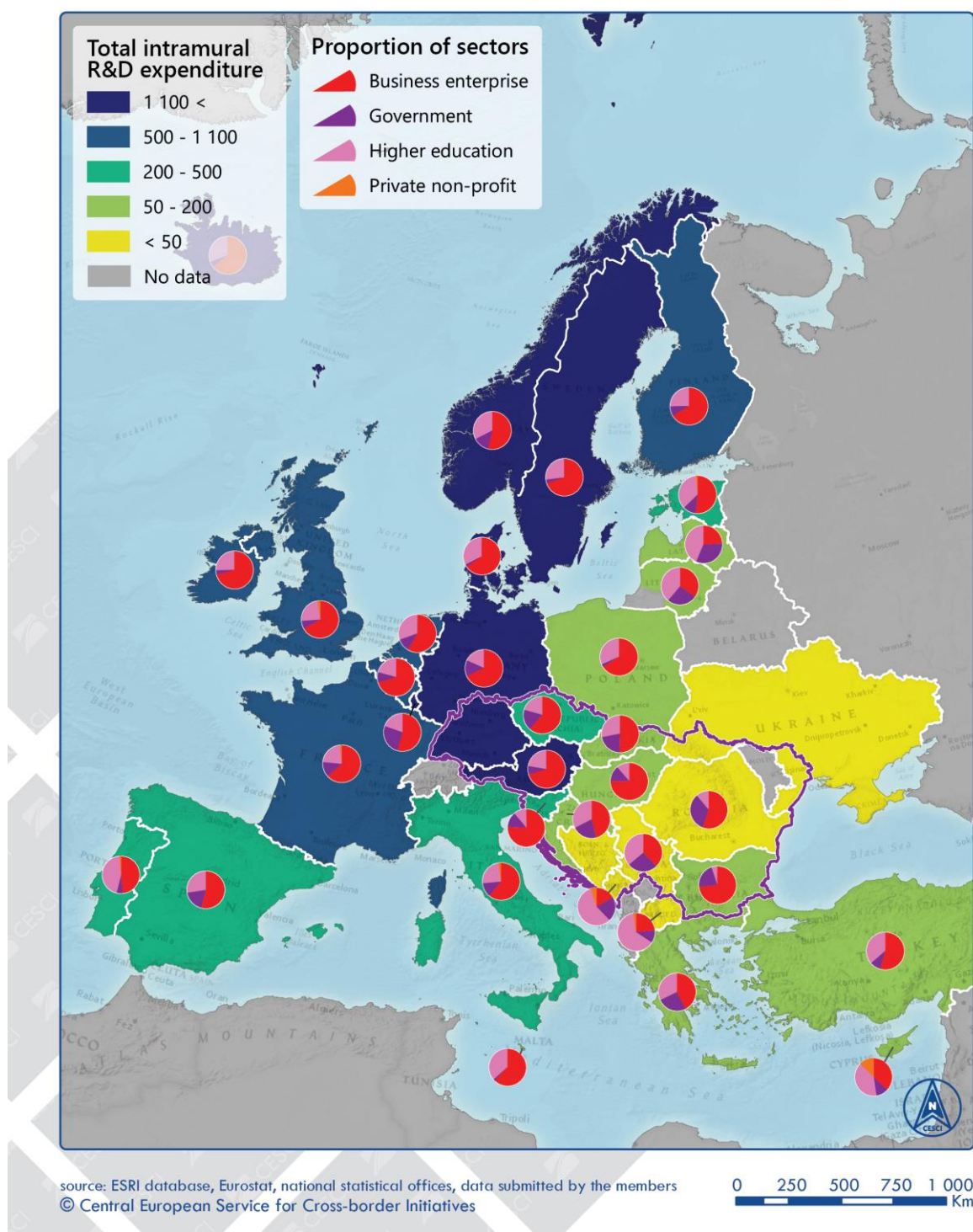


Figure 59: Intramural RDI expenditure (GERD) by sectors of performance in Europe

Patents, as indicators of knowledge production, showed severe spatial inequalities across the Danube Region. Analysing the macro-region, it has been performing worse (141 patent applications to the European Patent Office per million inhabitants in 2018) than the old Member States (EU15 172) and similarly to all Member States (EU28 140). The catching-up of the macro-region, especially in the case of countries with low patent activity, has failed to be reached.

Focusing on the inner economic relations of the Danube Region, the most innovative economy in this respect is by far Germany (322 applications per million inhabitants) followed by Austria (259). These are the leaders of innovations, while all the other countries of the Danube Region are performing way below the aforementioned averages. Eastern European and non-EU Member States' applications are extremely low: even the group of followers are consisted of countries where the rate is many times lower than the average of the macro-region (Slovenia 48, Czech Republic 23, Hungary 12, Slovakia 9). Countries with no real leading role in the innovation ecosystem of the Danube Region are generally from the newest Member States (Bulgaria 5, Croatia and Romania 3) or non-Member States (Montenegro 3, Serbia, Moldova and Ukraine 1, Bosnia and Herzegovina close to 0 applications per million inhabitants). Thus, mostly the westernmost economies are well integrated into the European level of RDI, while the latter group of countries are almost excluded from transnational patenting cooperation.

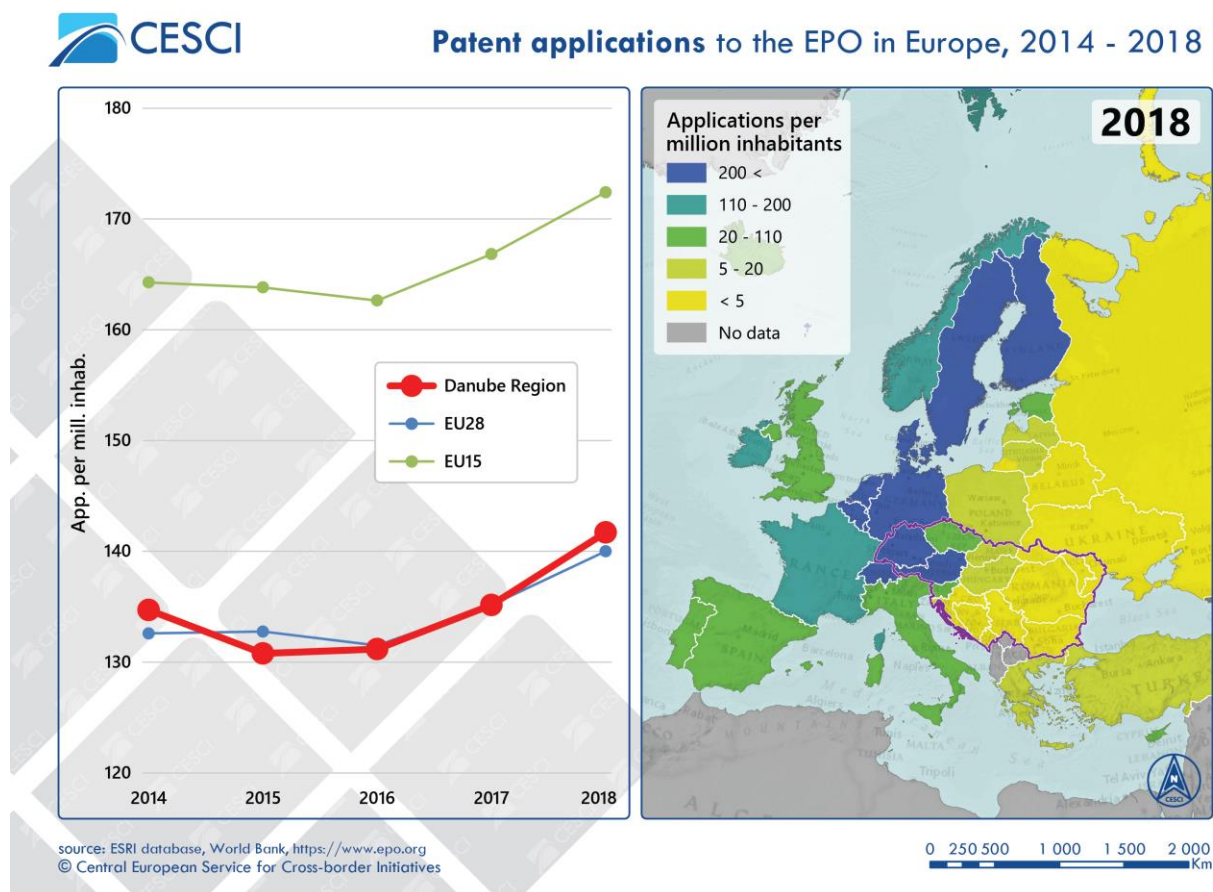


Figure 60: Patent applications to the EPO in Europe

In order to enhance the EU's competitiveness, increasing the level of **research and development** (RDI) investments has been a key aim during the past decades which is also reflected in the Europe 2020 Strategy where the target has been defined at 3% of EU's GDP.

In contrast to this, according to the data from 2015, only five regions (Mittelfranken, Wien, Oberösterreich, Kärnten and Tirol) in the Danube Region has spent 3-4% of its GDP on RDI, four (Praha, Jihovychod, Zahodna Slovenija, Freiburg and Unterfranken) has approached it by spending 2-3%, but the vast majority are dedicating less than 2% for this cause. At the same time it has to be said that a handful of regions (Stuttgart, Steiermark, Karlsruhe, Tübingen and Oberbayern) managed to even overachieve the 4% threshold. These better performing regions are almost all located in Germany, one being in Austria. The highest ratio spent on RDI was in Stuttgart where 6.17% has been dedicated to research and development. The other end of the scale from where data is available is populated by regions mostly from Romania, Bosnia and Herzegovina and Bulgaria, where no region has reached the 1% threshold (apart from the latter's capital region). Since the ratios are gradually decreasing towards the east, an east-west west-east divide is certainly noticeable.

Despite of this strict duality, some positive tendencies can also be observed. Comparing the data for the same regions in 2011 and 2015, it was found that during these four years no regions decreased the ratio of its GDP dedicated to research and development, but a considerable amount of regions even managed to increase it. Steiermark for instance increased it by nearly a whole percentage point (0.97%), but also Czech, Slovak, Bulgarian and Hungarian regions improved by more than 0.5% during these four years. Subsequently, comparing the maps from the two point in time shows that reaching the 3% target value was only manageable for western regions, however, what is not visible from the colour-code is that there are regions further to the east (especially in Czech Republic) marked with the same colour, but in fact two regions came very close to the threshold of 3% and another two to the 2% limit indicating serious effort and potential for development.

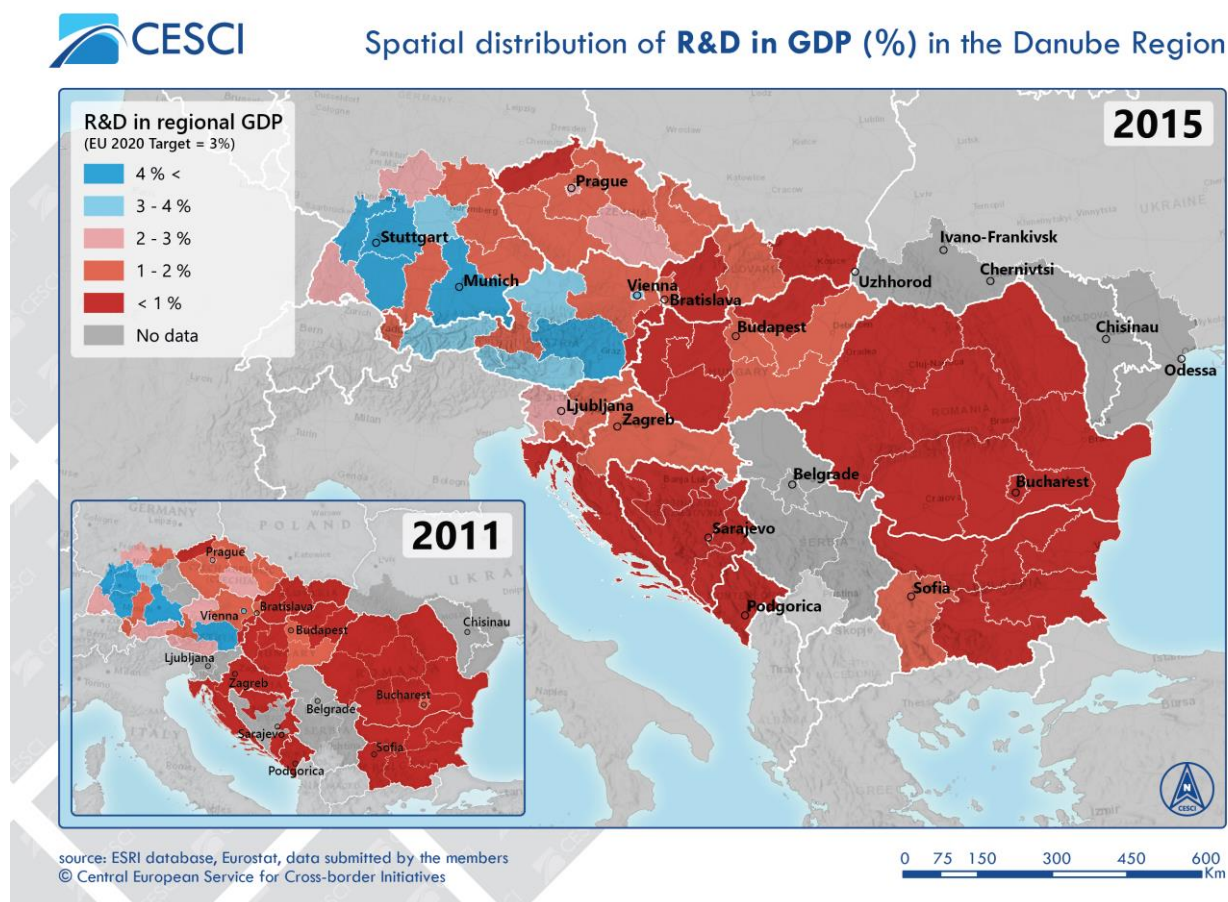


Figure 61: Spatial distribution of RDI in GDP (%) in the Danube Region

The **enterprises** in the Danube Region are performing in a less **innovative** way compared 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 part of the continent. Only German and Austrian enterprises are innovative in large numbers. Croatia, Czech Republic, Serbia and Slovenia are in a worse situation in relation 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 enterprises would have 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.

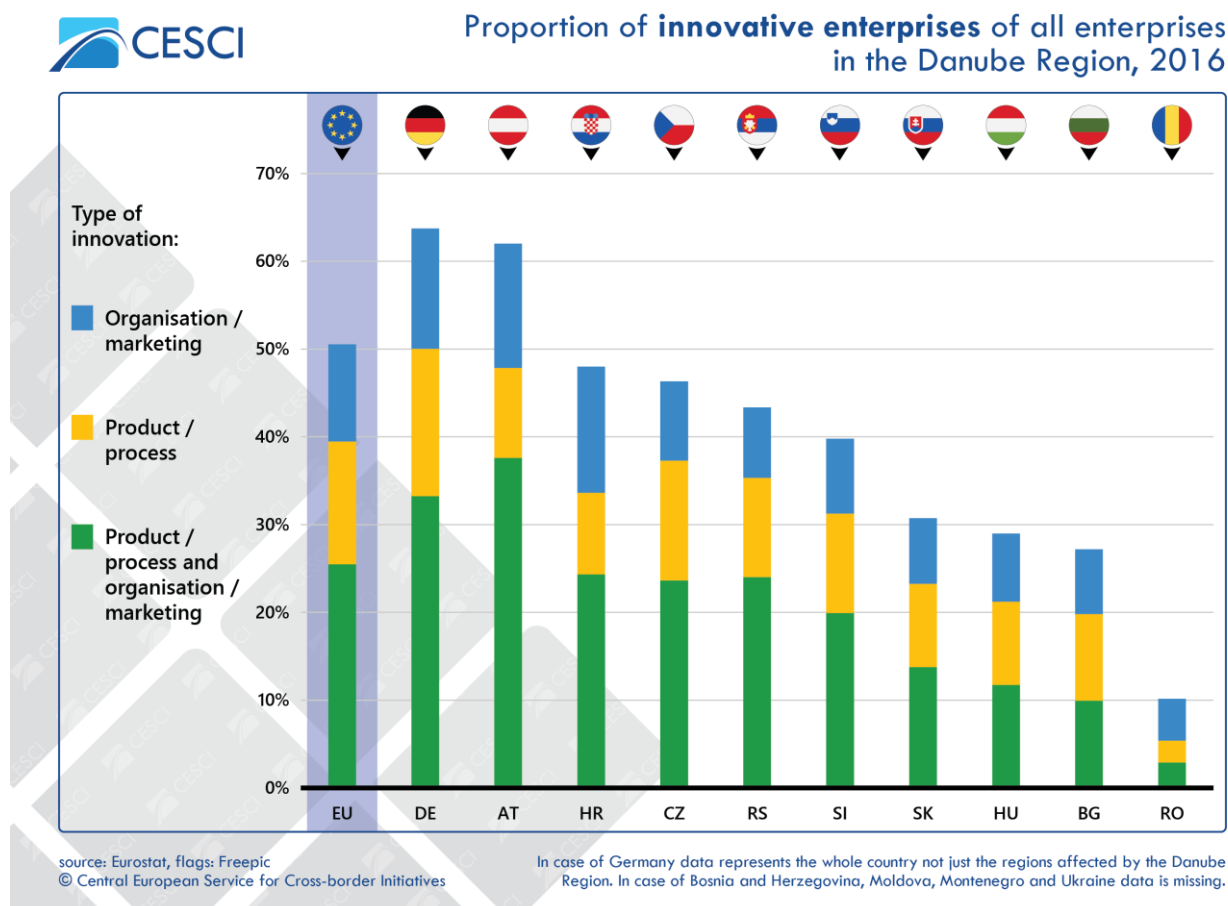


Figure 62: Proportion of innovative enterprises of all enterprises in the Danube Region

Taking into account the **human resources side of the RDI sector**⁴⁵, regardless Austria (48.6%) and Germany (47.5%) all the related countries have less human resources in science and technology than the EU28 average (45.6%). Thus, it can be said that based on current employees and available skilled labour, the macro-region performs weak, and catching-up to the rest of Europe is a big challenge. The share of human resources is low, however almost in all countries it has increased. Apart from Austria and Germany, Slovenia (45.4%) is part of the national economies having sufficient such workforce, but Serbia (33%) and Romania (26.1%) especially have low share of such labour. In the case of many countries development of the given economies is hindered by the main causes of such low shares; i.e. still low attendance to higher education, underfinanced educational system and unfavourable economic structure with high share of manual labour. Furthermore, if there is sufficient number of quality human resources, brain drain from the eastern side of the macro-region erodes local workforce and supplies already developed western RDI systems.

⁴⁵ Human Resources in Science and Technology (HRST) covers all persons with tertiary education (ISCED) and/or employed in science and technology.

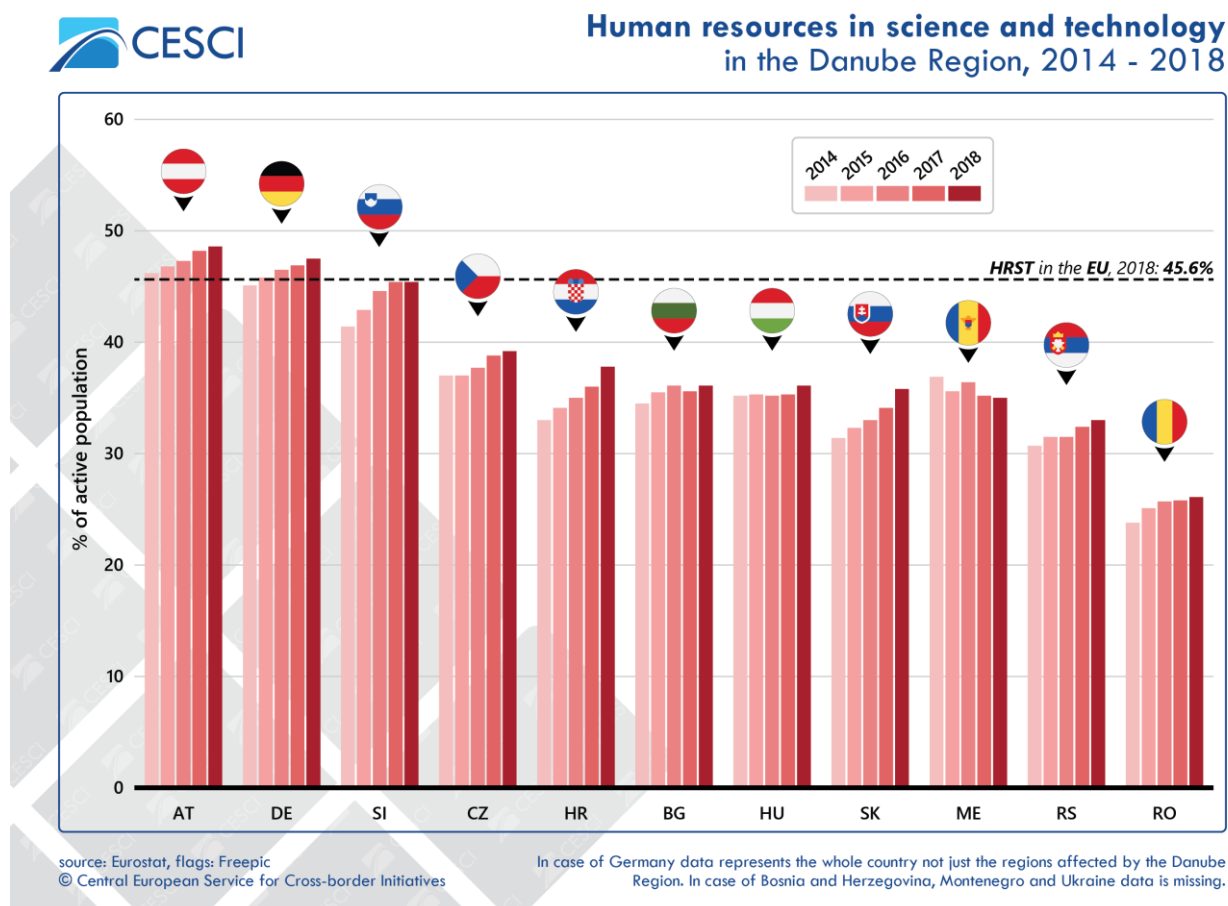


Figure 63: Human resources in science and technology in the Danube Region

High-technology sectors represent more sustainable, crisis-proof employment and the employment of highly qualified, skilled labour, furthermore potential for a technology-intensive economy in an era of growing uncertainties resulting from deepening lack of manual labour. Capital city regions (Budapest, Bratislava Region 10.2%, Prague 9.7%, Bucharest-Ilfov 9.6%, Yugozapaden including Sofia 7.9%, Belgrade Region 7.2%, Vienna 7%, western Slovenia including Ljubljana 6.5%), along with the innovation ecosystems of Munich (Oberbayern 7.3%) stand out as employment centres for the highly educated population, regardless of their geographic position within the macro-region. Regions with low employment levels in hi-tech sectors are situated mainly in Romania, Bulgaria, Serbia, and presumably in Bosnia and Herzegovina, Moldova and Ukraine.⁴⁶

⁴⁶ Low share of hi-tech sectors in employment in regions as follows: Sud-Vest Oltenia (1%), Sud-Est (1%), Sud-Muntenia (1.1%), Nord-Est (1.1%) from Romania, Šumadija and western Serbia (1.1%), southern and eastern Serbia (1.6%), furthermore Yugoiztochen (1.1%) and Severoiztochen (1.9%) from Bulgaria.

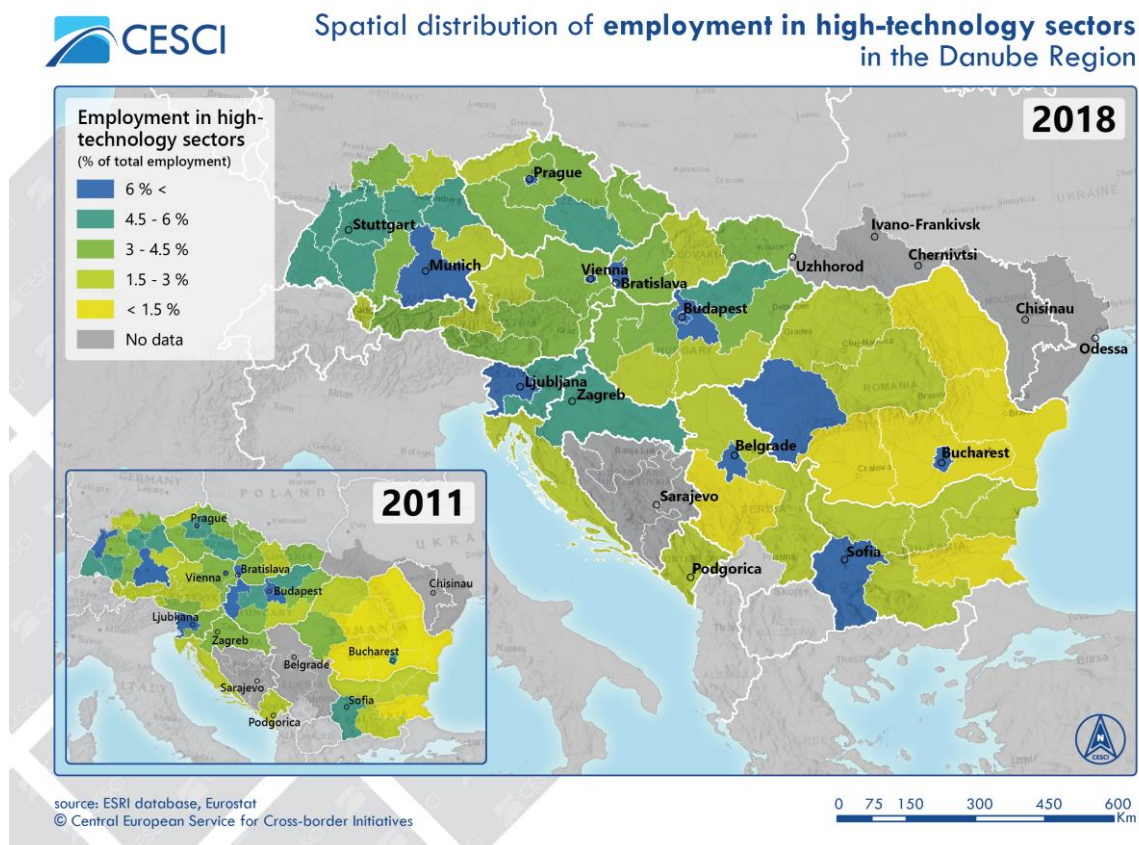


Figure 64: Spatial distribution of employment in high-technology sectors in the Danube Region

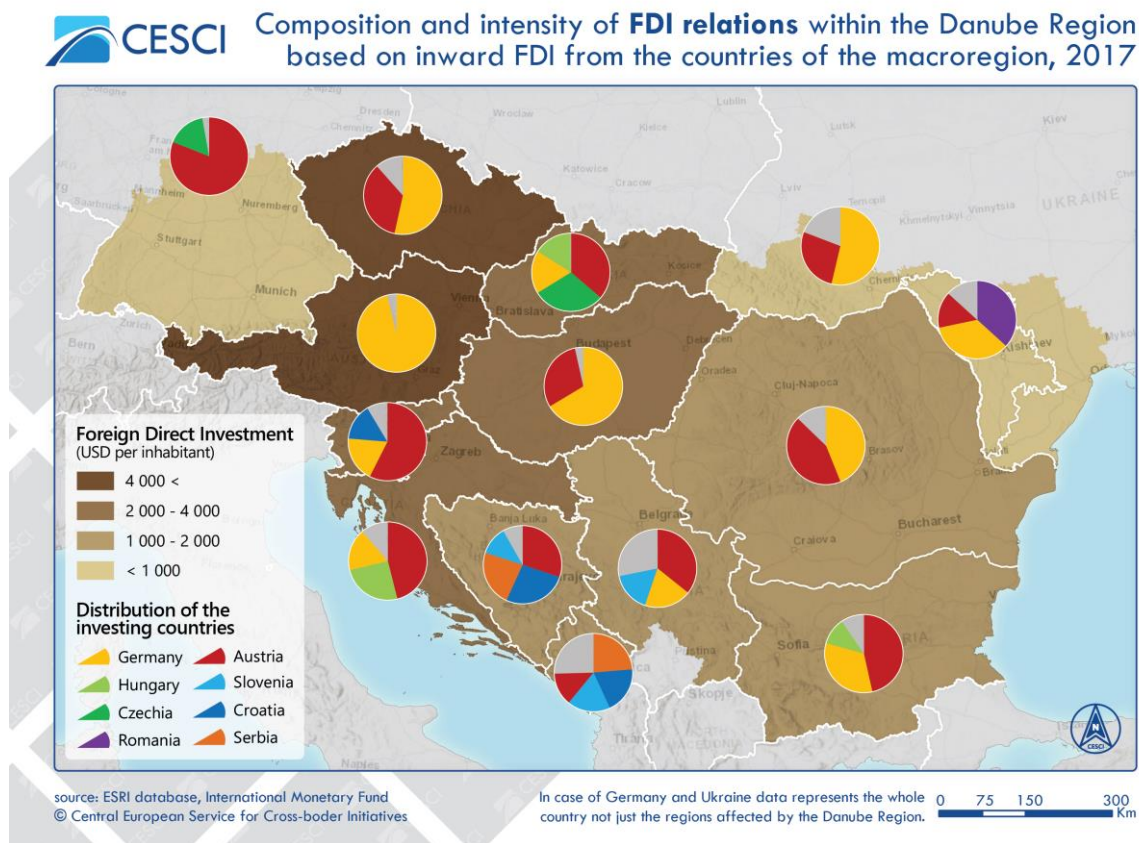


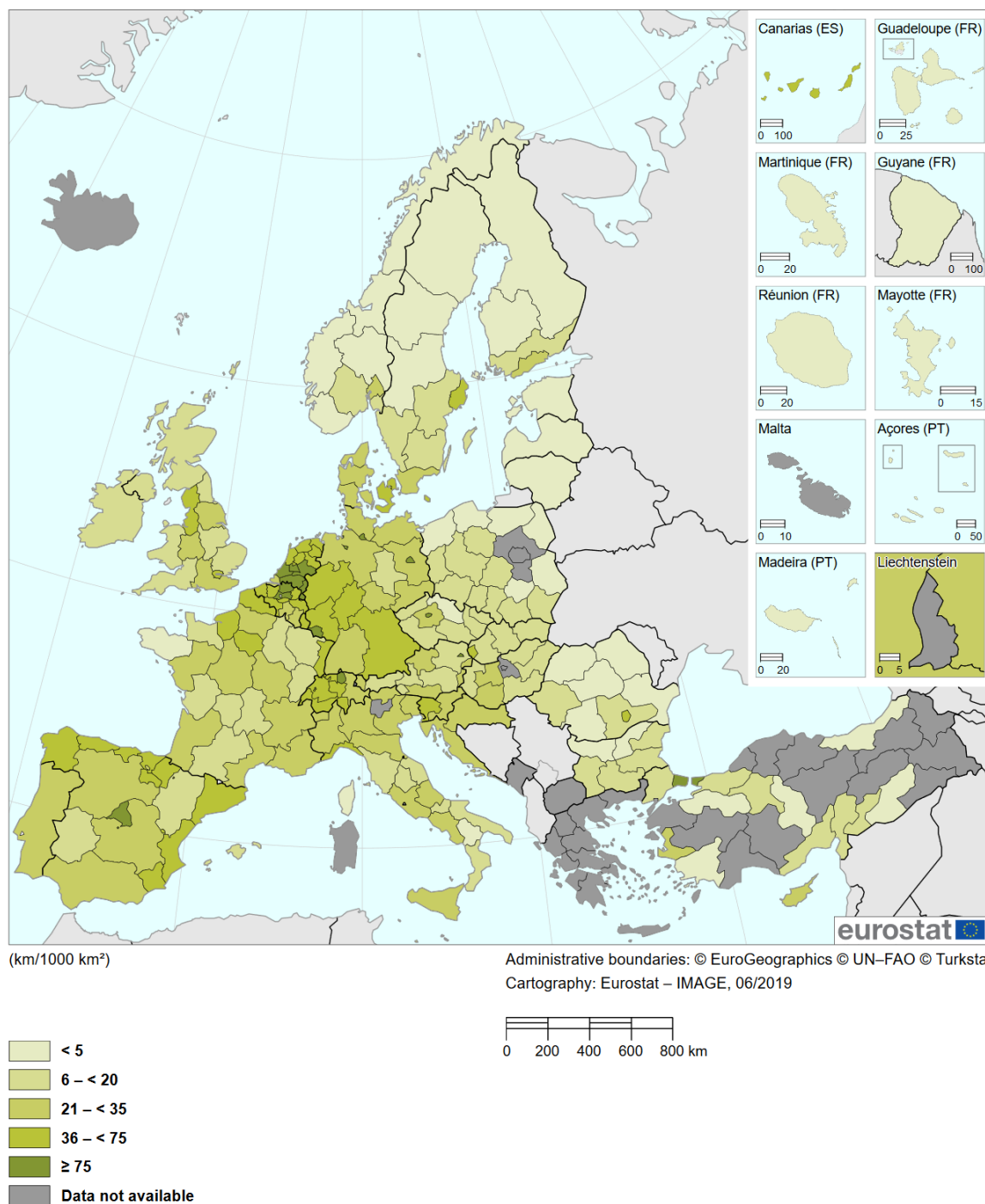
Figure 65: Composition and intensity of FDI relations within the Danube Region based on inward FDI from the countries of the macro-region

At last but not least, after analysing the sectoral and spatial differences of the main economic activities, the volumes and directions of the **Foreign Direct Investment** within the macro-region should also be examined. FDI flows tell a lot about internal economic relations of the Danube Region. Based on the inward FDI in total (million USD) the top investment targets were Austria (54 065), Czech Republic (47 300), Germany (40 940) and Hungary (31 989), and the least relevant were Moldova (1 192) and Montenegro (549). When it comes to the intensity of FDI to certain countries (million USD per inhabitants) Austria (6 145 million USD per inhabitant) and Czech Republic (4 465) leads the chart followed by Slovakia (3 692), Croatia (3 536), Slovenia (3 534) and Hungary (3 268). On the bottom of the chart Germany (495), Moldova (155) and Ukraine (85) can be found, meaning these countries are the least attractive to capital coming from the Danube Region. Thus, there is a strong inequality according to geographic location and the level of EU integration (time of accession to the EU). In general, the western part of the macro-region except for Germany, furthermore EU Member States joined the EU earlier than 2007 are more successful in attracting capital from the macro-regional economies.

Taking into account the main direction of FDI flows it can be stated that the majority of the macro-region is having strong ties with the German-speaking part of the macro-region: in seven countries out of 13 foreign economies Germany ranks first (in Romania shared with Austria, and in Moldova shared with Romania), while Austria is the leading investor in seven countries as well. The only national economies where the combined German and Austrian capital inflows do not make up at least the half of the total inward macregional FDI are solely Bosnia and Herzegovina and Montenegro. There is an intense and high level interaction between Germany, Austria, Czech Republic, Slovakia, and Hungary. The western Balkans, especially economies outside of the EU, comprises of states where the distribution of FDI is more diverse with lower shares per each investors. On this former common Yugoslav market there are still strong interconnections and "internal" capital flows among the related countries. Serbia, Slovenia and Croatia play important role on this Balkan market. Apart from the investing companies deriving from Germany and Austria, only the share of Hungarian investors is significant within the macro-region when it comes to investing in various different submarkets of the Danube Region (by targeting Slovakia, Bulgaria and Croatia). To sum up, the western half of the programme area plays a leading role in the flow of capital in the macro-region as the source of capital. The structure and direction of FDI flows within the region is rather one-sided for the majority of the countries. Missing diversification of inward FDI and the weak market access to the capital markets of leading investors as well as the lack of relevant companies capable of investing in the other and western countries in particular from eastern economies are of crucial importance. However, the situation has improved significantly in the last decade since the one-sided picture was even more apparent and valid, e.g. in recent years the market expansion of the Hungarian or Czech companies is notable within the Danube Region.

3.4.2 The existing economic infrastructure (accessibility and energetics)

Map 1: Motorway density (km/1000 km²), by NUTS 2 regions, 2017
(km/1000 km²)



Note: Croatia: 2015 data instead 2017. Belgium and Turkey: 2016 data instead 2017.
Germany, Ireland, Lithuania, Portugal and United Kingdom, NUTS level 1.
Source: Eurostat (online data code: tran_r_net)

Figure 66: Density of the European motorway network⁴⁷

⁴⁷ source: Eurostat

As there is still a high preference for motorised traffic, and the number of cars and vans has been increasing steadily in the Danube Region, the spatial distribution of **motorways** strongly defines economic as well as living conditions in general. The distribution of speedways is very uneven. In Ukraine (0.5km/1000 km²), Romania (3.4), Bosnia and Herzegovina (4.2), Bulgaria (7.2), Serbia (8.8) and Slovakia (9.7) the network is less dense compared to the EU average (17.3). In Czech Republic (15.9) and Hungary (16.3) the rates are close to the EU28, while the network is more developed than the European level in Austria (20.5), Croatia (23.2), Germany (36.3) and Slovenia (38.1). The western regions, e.g. Bavaria, Upper Austria, Bratislava Region, western Slovenia or central Transdanubia from Hungary, are having a higher density, while in the eastern part only few regions have a more extensive network. Another challenge is the parallel and uncoordinated developments regarding transnational infrastructure, and the existence of major bottlenecks.

Transport density based on total transported goods per square km divides the macro-region into two distinctively different halves; to a western and an eastern part along the Uzhhorod-Budapest-Zagreb line. In Germany, Czech Republic and Slovakia there is no region from the lowest category, Austria, Hungary and Slovenia have only very few less frequent locations, while in Bosnia and Herzegovina, Montenegro, Moldova, Romania and Bulgaria there are no or almost no regions with many transported goods. The leading regions (with more than 100 thousand t/km²) can be found in Germany excluding Vienna and Prague. Apart from the Austrian and Czech capital cities, only Bucharest, Budapest, Zagreb, Sofia stand out along with the Austrian regions of Wiener Umland/Südteil, Rheintal-Bodenseegebiet and Linz-Wels among the regions thanks to their data above 16 thousand t/km². These mostly western regions are usually well-integrated into the European trade links and markets, both physically by developed multimodal transport infrastructure and economically by business relations. High figures sign the importance of the transport and logistics industry in the aforementioned regions. There is high potential in the productions, process, storage as well as transport of (semi) products. Transport interconnectedness (based on neighbouring regions with high transport density) is favourable along the axes of Stuttgart-Prague, Prague-Brno-Bratislava/Vienna-Budapest, Munich-Vienna/Bratislava-Budapest, Ostrava-Brno-Vienna-Graz-Ljubljana. On the other hand, in the case of mostly Bosnian and Romanian regions along with Montenegro, the weak transport links and embeddedness to the wider markets etc. keep the transported goods on a low level. Except for Eastern Tyrol the regions with the highest increase between 2011 and 2017 are from Romania in the highest number, followed by Bosnian, Bulgarian and Slovak ones mostly.

In addition, such extensive growth in transport fundamentally using combustion engine, raise the question of sustainability. In case this process continued, this would lead to further environmental and social problems including air pollution, additional greenhouse gases, traffic congestions, increasing travelling times etc. The intermodality of macoregional travels is often

not ensured, and there are multiple uncoordinated transport developments even in the vicinity of each other.

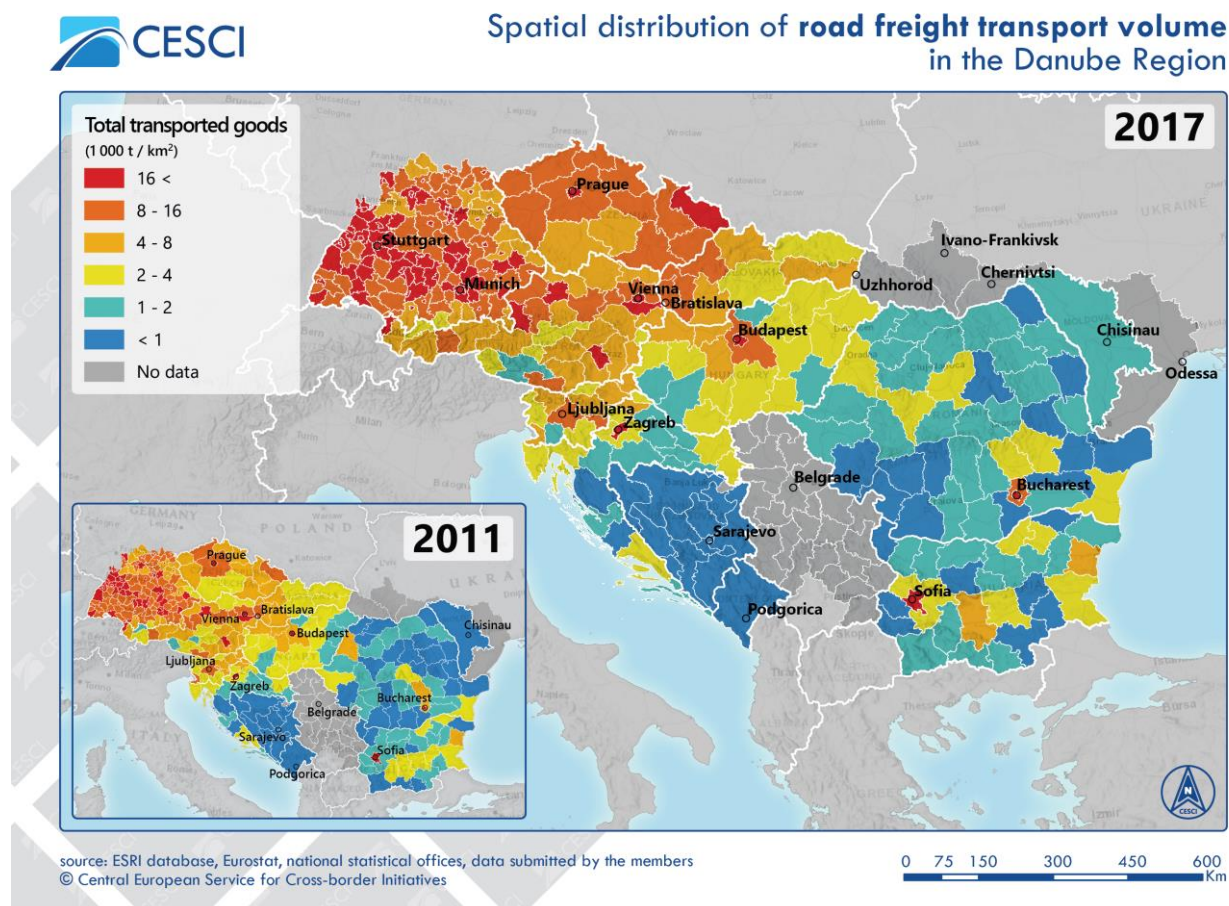


Figure 67: Spatial distribution of road freight transport volume in the Danube Region

The macro-region consists of national **railway networks** on distinct development levels. The macro-regional network is thus fragmented and uneven. The lowest density can be found in the Balkans and in East Europe. The least extensive network compared to the size of the country is operated in Montenegro (17.9 km/1.000km²), Bosnia and Herzegovina (19.8), where the number of lines is also very limited. In these countries along with Moldova (34), Ukraine (35.9) and Bulgaria (36.1) large populated areas are left of rail transport provision. On the other hand, there is a dense network in relation to Czech Republic (119), Germany (93), Hungary (77.9) and Slovakia (73.9). In the latter countries the systems are part of continental Europe with the highest relevance of railway transport based on network density (and on share in modal split many times).

Within a wider context the eastern side of the macro-region is one of the main rail gateways to Russia, Central Asia and China. The region has an outstanding importance in international trade along the Mediterranean TEN-T and Pan-European Corridor V, which creates links between Mediterranean ports such as Rijeka with the Ukrainian capital. The trinational transport and logistics area around the junction of railway networks of Čierna nad Tisou,

Slovakia, Záhony, Hungary, and Chop, Zakarpattia Oblast, Ukraine is where the European standard track gauge (1435 mm) and the Russian wide gauge track (1520 mm) meet. The utilization of this territorial capital is a key in a cohesive transnational logistics and transport system from Ukraine to Austria and Germany.

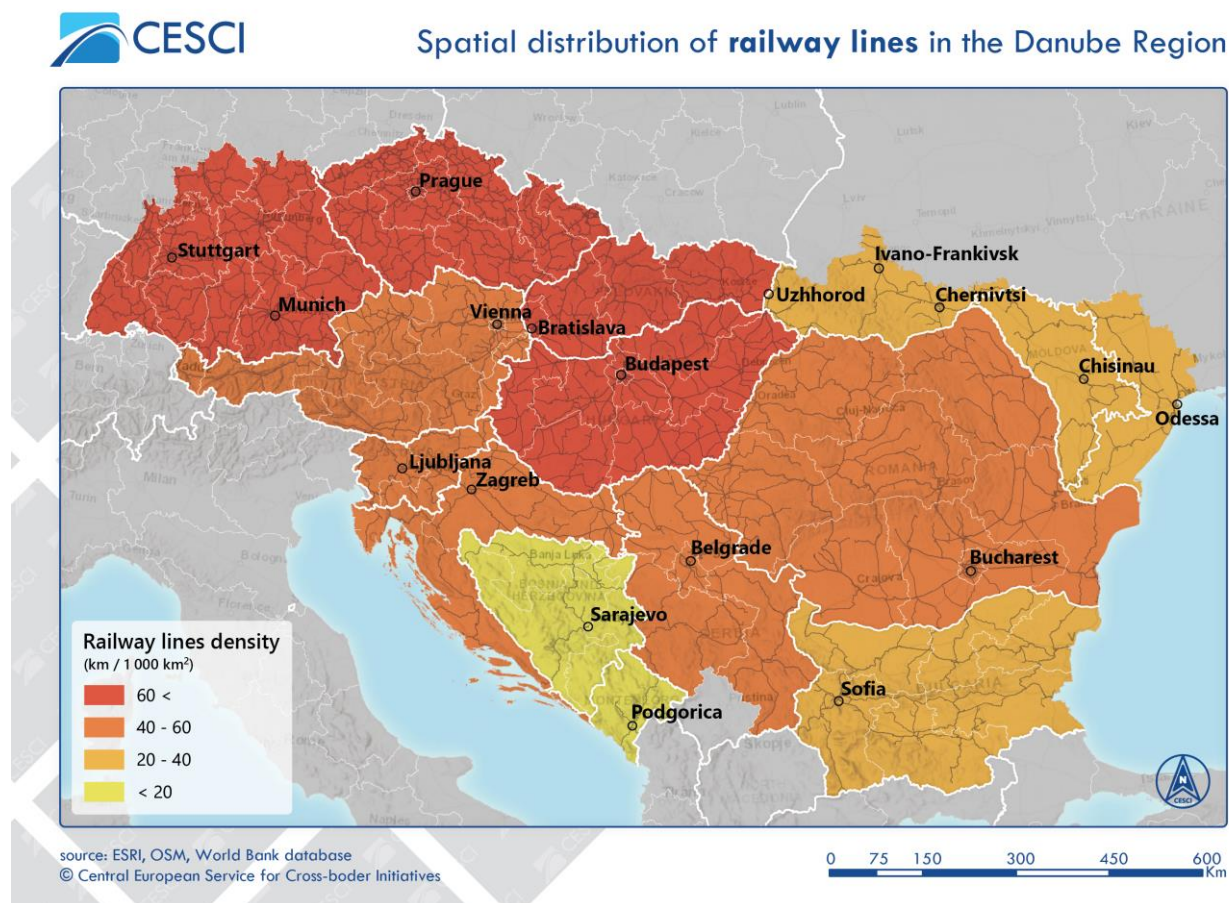


Figure 68: Spatial distribution of railway line in the Danube Region

The Danube Region has more and more importance in **air freight traffic**. Excluding Bosnia and Herzegovina (-70%) and Montenegro (-1%) in all countries the traffic increased from 2015 to 2017. The change was outstanding in Moldova (+83%), Czech Republic (+51%), Serbia (+50%), Slovenia (+33%) and Hungary (+32%). Because of its size and airports such as Munich (or Frankfurt, the largest from continental Europe) Germany (422 thousand t) is the number one country in air freight transport. However, keeping in mind their size Austria (227 thousand t), Czech Republic (89 thousand t) and Hungary (87 thousand t) are further important hubs. Austria, Czech Republic and Hungary concentrate 72% of the freight traffic if the German data is ignored. The air freight traffic is very low in the western Balkans (Serbia 24, Slovenia 12, Croatia 9, Bosnia and Herzegovina 2.9, Montenegro 0.9 thousand t).

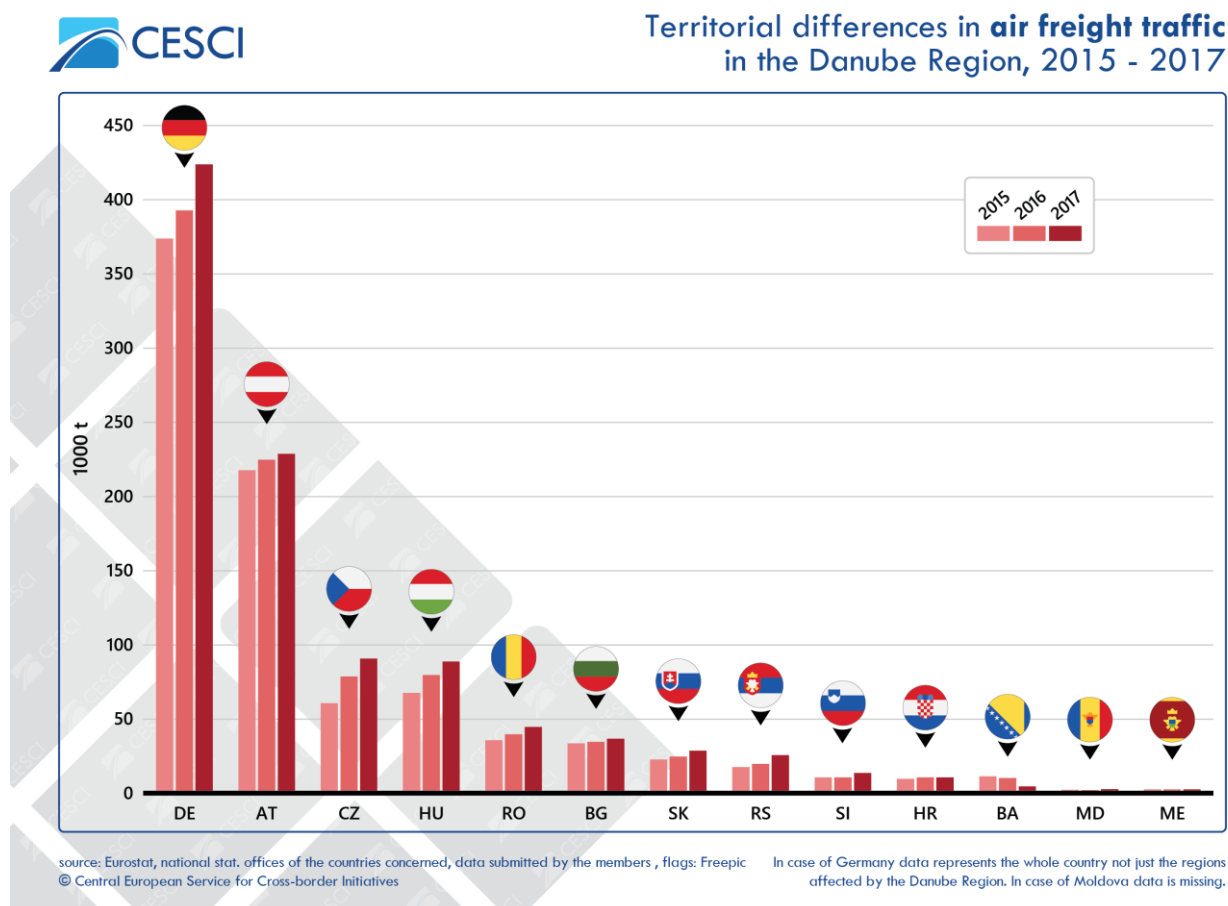


Figure 69: Territorial differences of air freight traffic in the Danube Region

The major **airports** with the largest number of air passengers are operating in Germany (Munich, Stuttgart and Nuremberg), Austria (Vienna), Czech Republic (Prague), Hungary (Budapest) and Romania (Bucharest). The highest density of international airports with significant number of passengers on a transnational scale is in Germany, Austria, Croatia, and partly in Romania. Despite of significant growth in some airports such as Bucharest or Budapest, air traffic is still very much fragmented, parallel market interests persist. The intermodality in terms of air and land traffic is still on a relatively low lever.

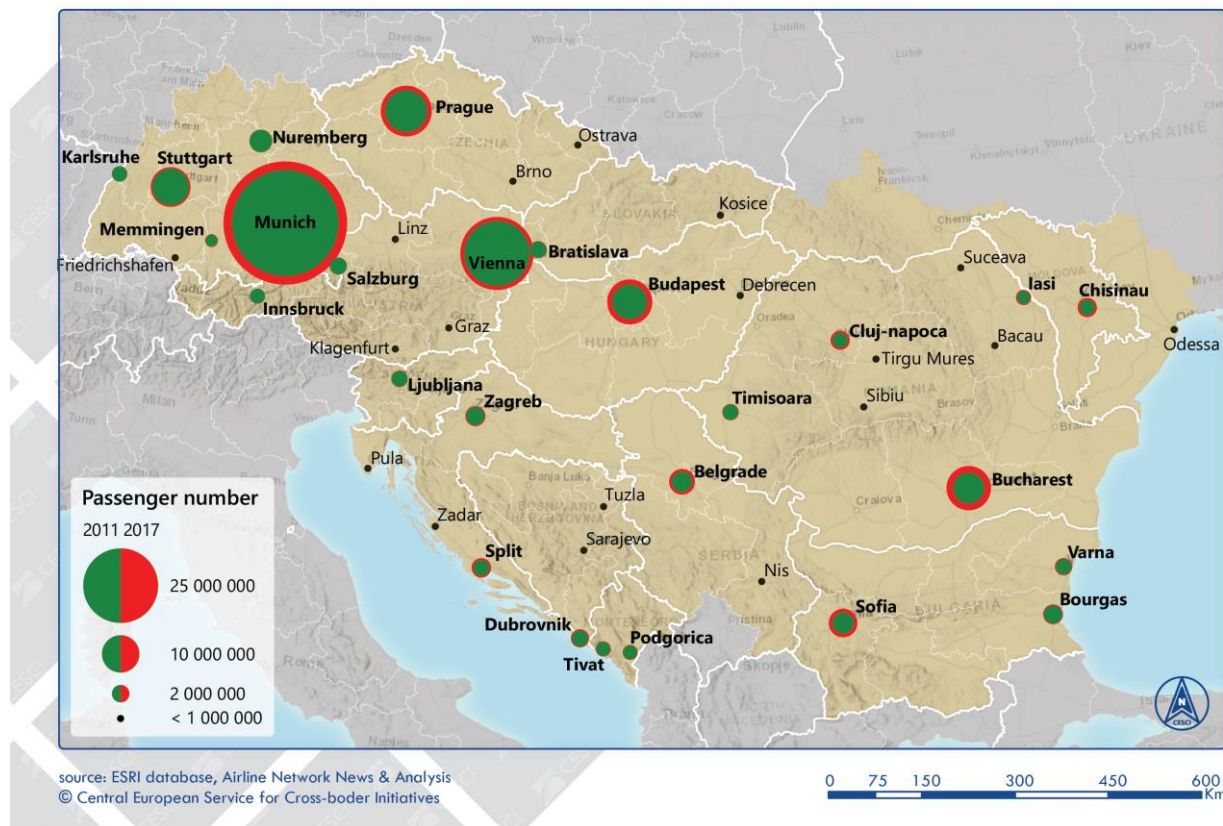


Figure 70: Number of air passengers in the Danube Region

In general the macro-region is situated at the junction of major pan-European and TEN-T corridors. However, the **interoperability** of the networks is still lagging behind the ones in western or northern Europe. Integrated public transport systems, e.g. joint ticketing, are very rare compared to western counterparts (e.g. Eurometropole Strasbourg-Kehl, Maas-Rhein Euregio, Triregio Basel). There are very few cross-border public transport services serving transnational needs as well. There is still a lot to do in harmonising the transport systems in the field of passenger information, transport management and creating transport alliances (e.g. joint ticketing, tariff systems). Interconnections could be further created along with eliminating major bottlenecks hindering transcontinental traffic flows because of e.g. unsolved technical background or transboundary lines out of operation.

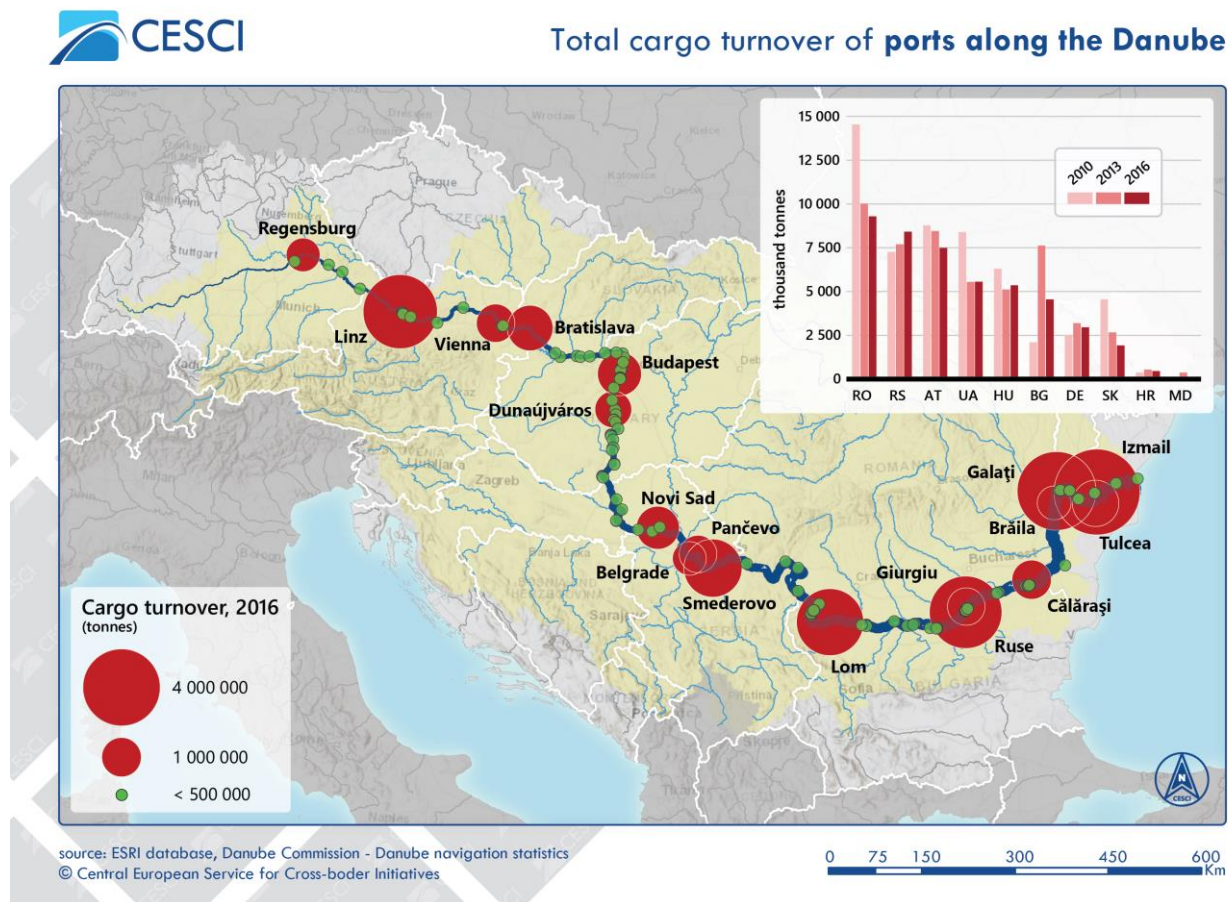


Figure 71: Total cargo turnover of ports along the Danube









The Danube Region has a strategic position in transnational **water transport**. Since the Danube as a transport corridor is linking together the North Sea with the Black Sea, it has transcontinental importance as well. However, to fully capitalise from its potential as the macro-region's main and most frequented water transport route, a close cooperation is required from the affected countries and regions. In accordance with this, several developments are already visible; core and comprehensive ports along the TENT-T network have been established (for example the Ennshafen port) and others are currently being planned, or are under construction (for instance Vukovar port).

Considering the cargo turnover in 2016, the first 10 ports realizing the biggest traffic are all located in the Balkans (apart from Linz, Bratislava and Budapest). Izmil has by far the largest turnover (5 327 tonnes), tightly followed by Galați (4 466 tonnes), but the relatively closely located Tulcea with its 1 559 tonnes of turnover also allows for cooperation in the Black Sea region. The smallest ports with available comparable data are Dunaújváros, Brăila, Regensburg and Belgrade. It must be noted that the data is expressed in tonnes and not monetary value; however, these still offer a useful insight on logistics potentials.

Looking at the temporal tendencies, we can observe that in the majority of the countries the amount of cargo turnover is decreasing. The rate of this drop varies among the countries; in

Romania from 2010 to 2013 was the steepest, but Ukraine also lost a big portion of its turnover at the same period. Bulgaria is the third country losing the most, but in this case the fluctuation tendencies are even more hectic, as from 2010 to 2013 it experienced a dramatic increase then from 2013 to 2016 a serious decrease. Serbia and Hungary are the only cases where the cargo turnover actually rose from 2014 to 2016 though only gradually with 8.6% and 7.4% respectively.

Table 3: Data of the most significant ports along the Danube⁴⁸

PORT		AREA (km ²)	HANDLING FACILITIES AND DEVICES						
			Covered water transshipment	Conveyor belt	Pneumatic equipment	Ro/Ro- ramp	Gantry crane	Mobile crane	Floating crane
	Regensburg	1.80	no	yes	no	yes	7	1	-
	Linz AG	1.35	no	no	no	no	2	1	-
	Vienna	3.00	yes	yes	no	yes	3	1	-
	Bratislava	1.43	yes	yes	yes	yes	19	2	-
	Budapest	1.52	yes	no	yes	yes	4	-	-
	Dunaújváros	0.05	no	no	no	no	7	-	-
	Novi Sad	0.04	yes	yes	yes	yes	6	-	-
	Pančevo	no data	yes	yes	yes	yes	3	3	-
	Belgrade	1.00	yes	yes	no	yes	11	2	-
	Smederovo	no data	yes	no	no	no	3	1	-
	Ruse Iztok	0.83	no	yes	yes	yes	17	-	-
	Lom	no data							
	Călărași	0.16	no	no	no	yes	0	0	0
	Giurgiu	0.38	yes	yes	no	yes	0	1	0
	Tulcea	0.21	no	no	no	no	8	-	-
	Brăila	0.48	yes	yes	yes	no	12	8	2
	Galați	1.06	no	yes	no	no	31	10	9
	Izmail	1,07	no	no	no	no	53	6	3

Water freight transport is a typical area where transnational and cross-regional cooperation can be realized with high added value and return. In order for the freight transport to be organised in the most efficient way possible, it is advisable that the most significant **ports** along the Danube share with each other their complementary assets and equipment this way reducing the costly, parallel infrastructure developments and creating a synergic and cost-efficient port-network. For example, Vienna has no pneumatic equipment, while Budapest does, but the Hungarian capital possesses no conveyor belt which the Austrian counterpart has, thus along the lines of these complementarities a functional, mutually advantageous cooperation can be established.

⁴⁸ source: Danube Logistics Portal, data submitted by the members

The ports also differ in size, which have a direct impact on their capacity. The biggest by far is the one in Vienna, but in general the ports in Germany, Austria and Slovakia are more extensive than the ones in the east. In connection with the size and function, further cooperation possibilities are emerging. One such example could be between the Romanian Brăila having several facilities and devices (such as conveyor belt and pneumatic equipment) but being relatively small and the Ukrainian Izmail which is in need of equipment but has more than double as much space-capacity as its Romanian neighbour.

However, in the case of transnational waterway and port infrastructure developments the protected wetland habitats and the unique aquatic ecosystem of the Danube River Basin should be taken into account. The aspects of water freight transport and nature conservation need to be coordinated (e.g. considering river bed dredging or enlargement of port areas). The negative impacts of increasing capacities should be minimised and irreversible artificial interventions must be excluded.

In transnational economic cohesion one of the most crucial elements is connected to **energy**. In order to capture the related infrastructure, the analysis can rely on production and consumption data mostly along with some information on efficiency and dependency. Such numbers reflect the status and the (lack/availability of) capacities of the Danube Region's energy infrastructure.

There are significant spatial differences in terms of **energy production** in the Danube Region. Germany (115 650 thousand tonnes of oil equivalent, 39.3% of the macro-region's data) in 2016, Ukraine (60 732), Czech Republic (27 159) and Romania (25 044) make up almost 78% of the total energy production. These countries are followed by the group of Austria, Hungary, Bulgaria and Serbia with a share of 3.6-4.2% of the total production of the macro-region in each particular country. Slovakia, Bosnia and Herzegovina, Croatia, Slovenia, Moldova and Montenegro, together producing only 6.9% of the total energy, are the smallest producers with a share of 0.2-2.1% in the given states. It means the vast majority of the region is not known for significant energy production, the major producers are situated on the eastern and western edges of the macro-region. Except for Moldova, Bosnia and Herzegovina and Croatia the energy production decreased from 2012 to 2016 across the macro-region.

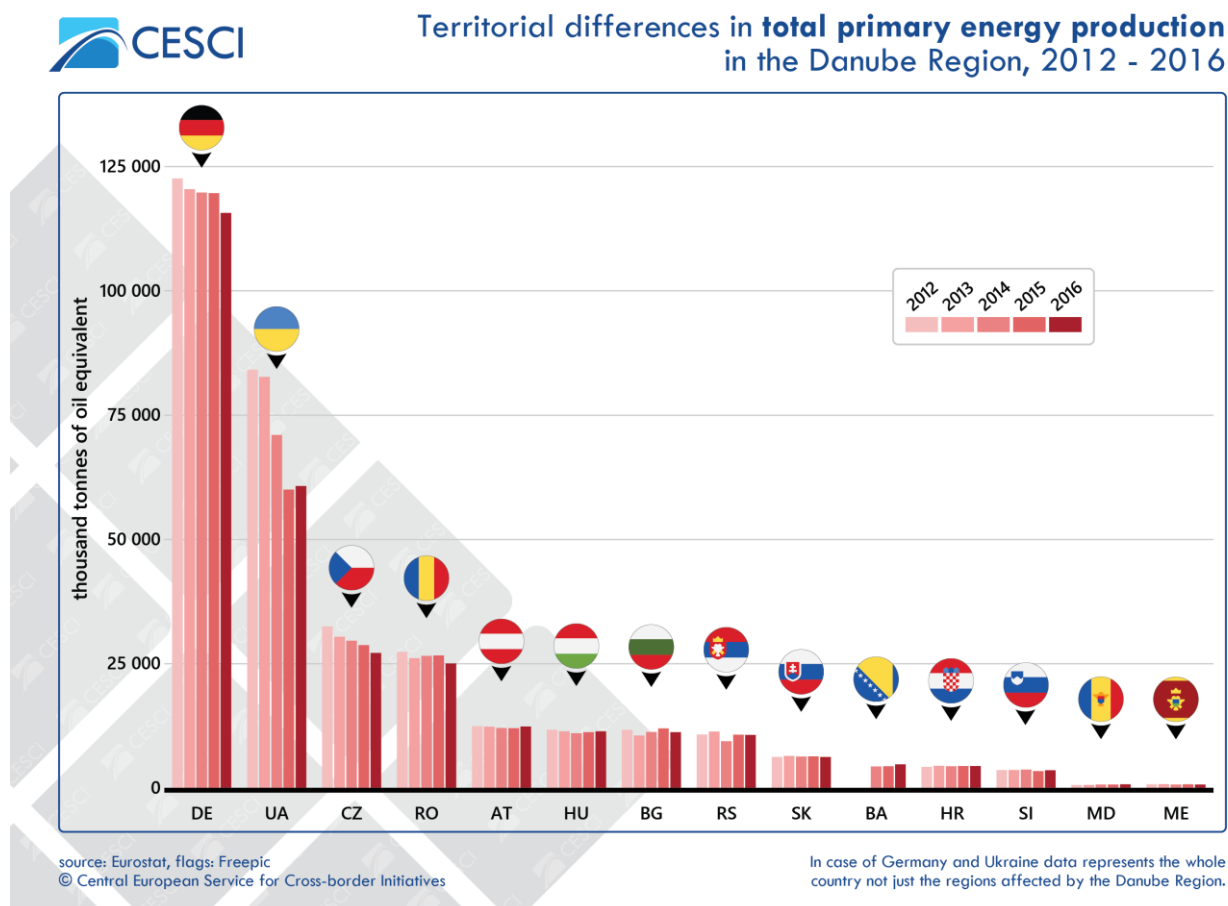


Figure 72: Territorial differences in total primary energy production in the Danube Region

The Danube Region still heavily relies on **fossil fuels**. Despite of significant favourable changes (e.g. in Bosnia and Herzegovina or Slovenia), in many related states, the energy sector is very far from being carbon neutral. All power systems are based on fossil fuels, and such fuels reach at least as many as 60% in each country. States with the highest share in consumption are Moldova (88.7%), Serbia (83.9%), Germany (79.7%) and Bosnia and Herzegovina (77.5%). Sustainable consumption would require significant decrease and a shift to renewables in all states. The majority of states have a figure between 80 and 65%.

However, speaking about energy not simply the production but the **transmission/transfer of energy** should be considered. There are major regulatory and legislative obstacles when it comes to the realisation of a single energy market across the macro-region. It is especially true since the Danube Region consists of external countries in relation to the Single Market of the EU. Harmonisation of energy systems, as well as free flow of energy as a product encounters obstacles particularly in/from the direction of the non-Member States.

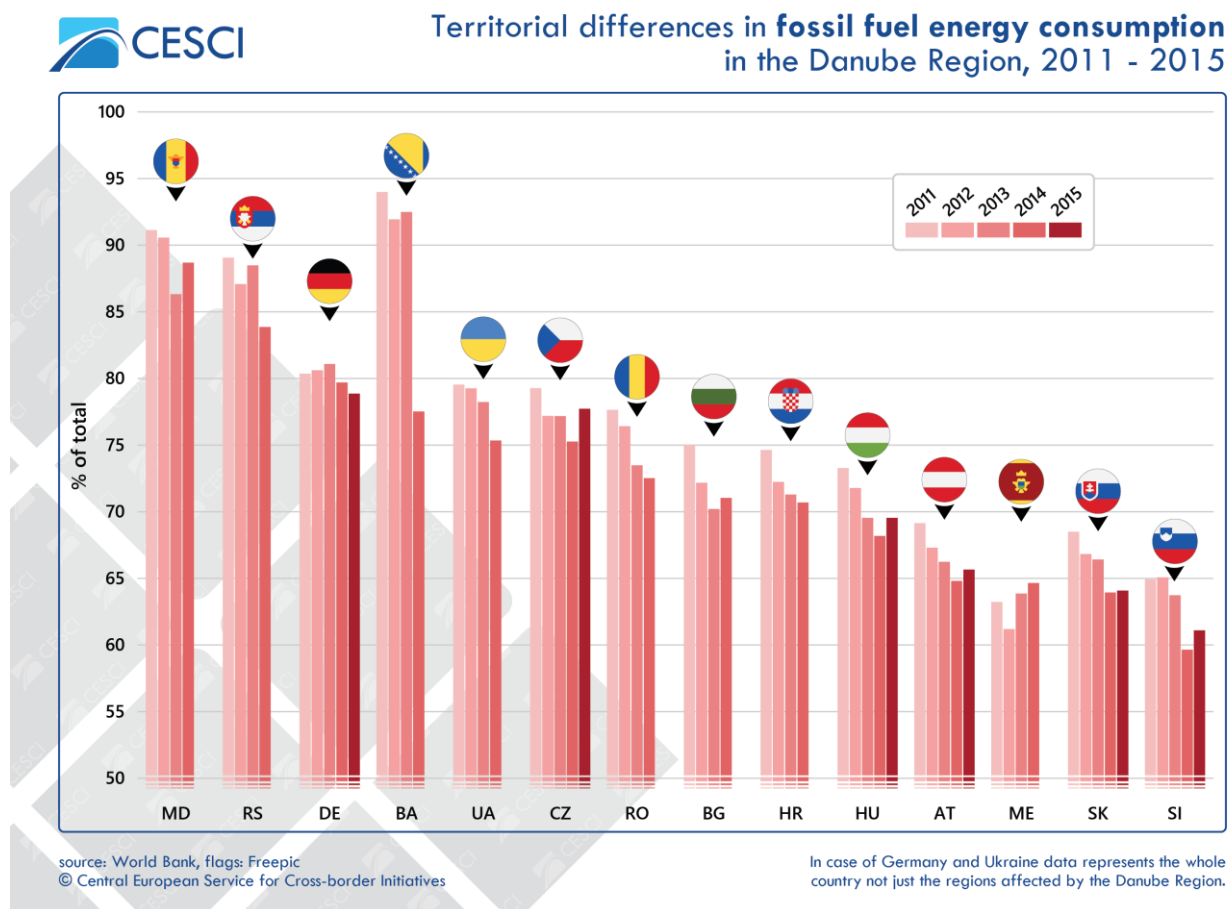


Figure 73: Territorial differences in fossil fuel energy consumption in the Danube Region

Power generation regarding conventional **thermal power stations** is another problematic field across the majority of the macro-region since only Austria (64.6%) surpasses the EU average (50.5%) significantly. The majority of the energy production systems are mediocre (Slovakia 56%, Slovenia 53.5%, Croatia 53.5%, Romania 52.5%, Hungary 51%, Czech Republic 49%, Germany 48.7%, Ukraine 46.4%, Bulgaria 43.3%) or even outdated. The largest losses are known in Bosnia and Herzegovina (efficiency of as low as 32.7%), Serbia (37.9%) and Montenegro (38.8%). The inefficient technology and infrastructure has not been reconstructed effectively, thus no major changes took place in the past few years to create a more efficient thermal power plant network.

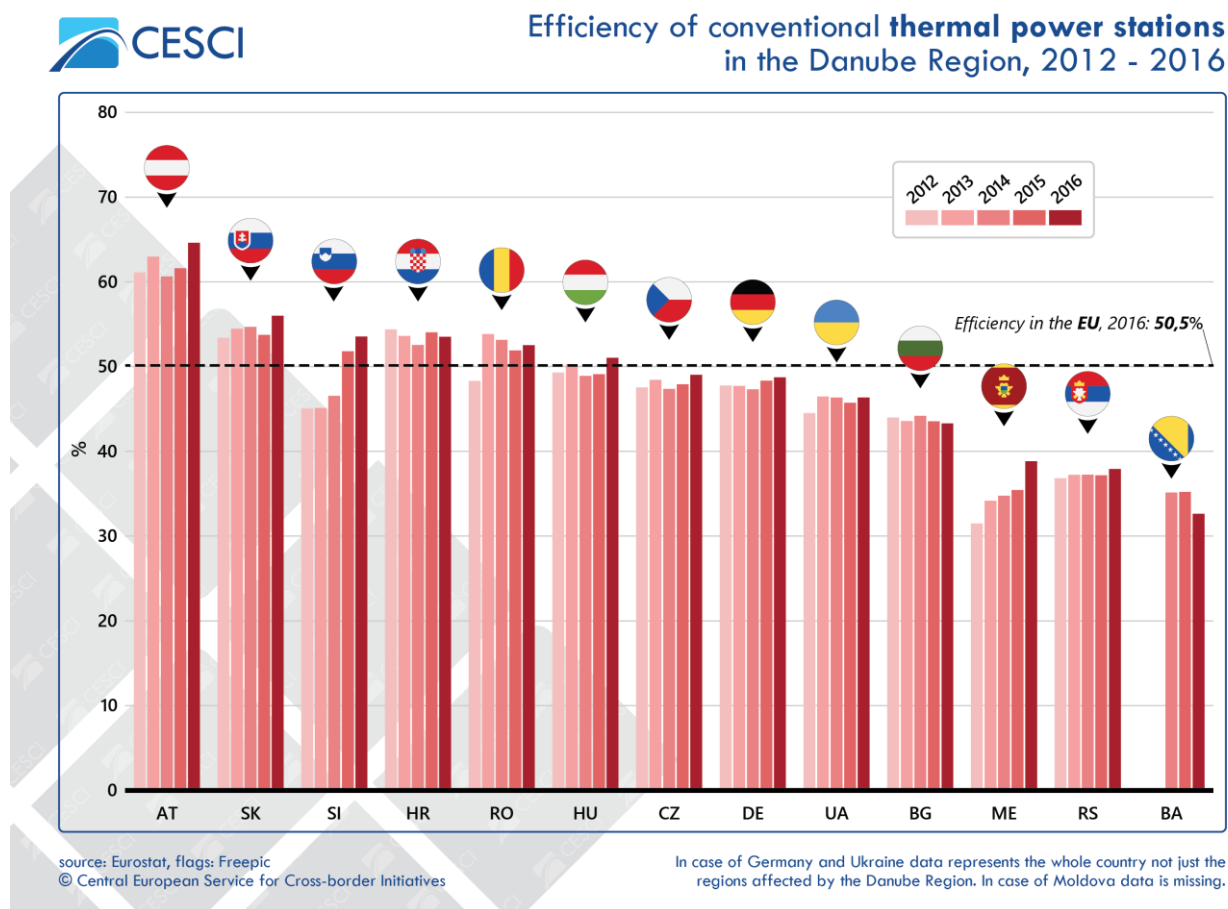


Figure 74: Efficiency of conventional thermal power stations in the Danube Region

In the Danube Region the **share of renewable energy in gross final energy consumption** is low, and has never reached 50% in any countries. In the majority of the countries the shares of renewables were stagnating (e.g. Austria +0.2% points, Bulgaria -0.3% points) or even 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 traditional fossil fuels as well as nuclear energy.

Considering the EU2020 targets, the Member States are performing heterogeneously; in some countries the target was set low and thus it has already been reached (see Czech Republic or Hungary), while some countries still have to take steps to realise the targets set for 2020 (e.g. Slovenia, Germany).

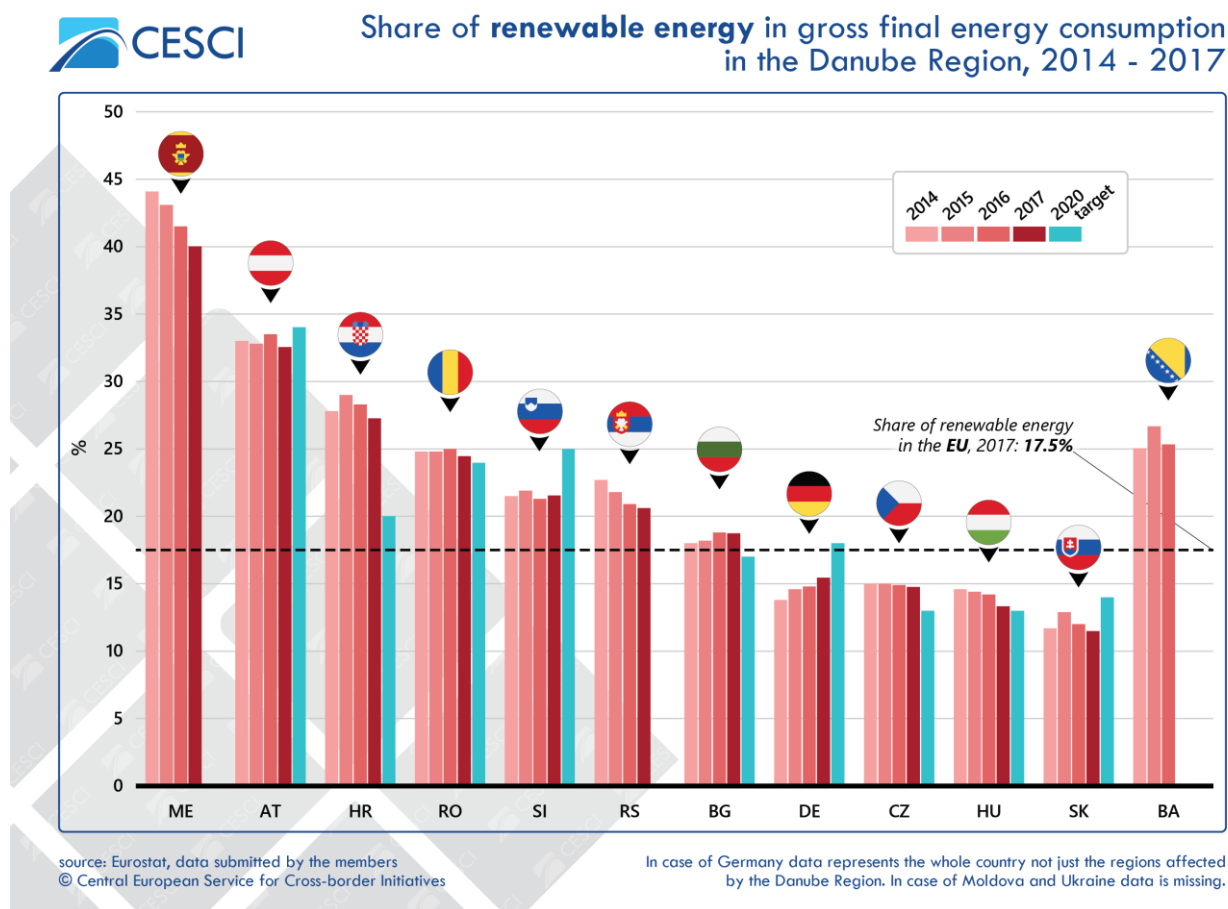


Figure 75: Share of renewable energy in gross final energy consumption in the Danube Region

In the **renewable energy balance** of the macro-region biofuels altogether play the decisive role since in all the related countries except for Germany (36%) they, namely solid and liquid biofuels, represent a majority share above 50%, the highest rates being in Hungary (87%), the Czech Republic (72%) and Ukraine (79%) and the lowest being in Germany, Austria (51%), Serbia (57%) and Slovenia (57%). Biofuels are of outstanding importance since only in Germany the rate is lower than the EU28 average (49%). After solid biofuels hydropower is the most important source of renewables. In the case of Serbia (41%), Austria (34%), Bosnia and Herzegovina, Slovenia (32% each), Montenegro (29%) hydropower is by far the second most utilised energy source. However, in the Czech Republic, Germany (4% each) and Hungary (only 1%) hydropower has minor relevance in the energy mix. Compared to the EU28 (11%), the share of hydropower is significantly higher in the macro-region, only the aforementioned three states have lower shares regarding hydropower. Considering other renewables, solar and wind energy can be regarded important sources of renewable energy. However, wind (14% in EU28) has higher share only in Germany (21%), while solar energy (EU28 6%) has higher rate in the mix only in Germany (10%) and Bulgaria (7%). Furthermore, in some countries municipal waste (EU28 4%, Germany 8%) and geothermal energy (EU28 3%, Slovenia 5%, Hungary 4%) play an additional but minor role in the whole balance.

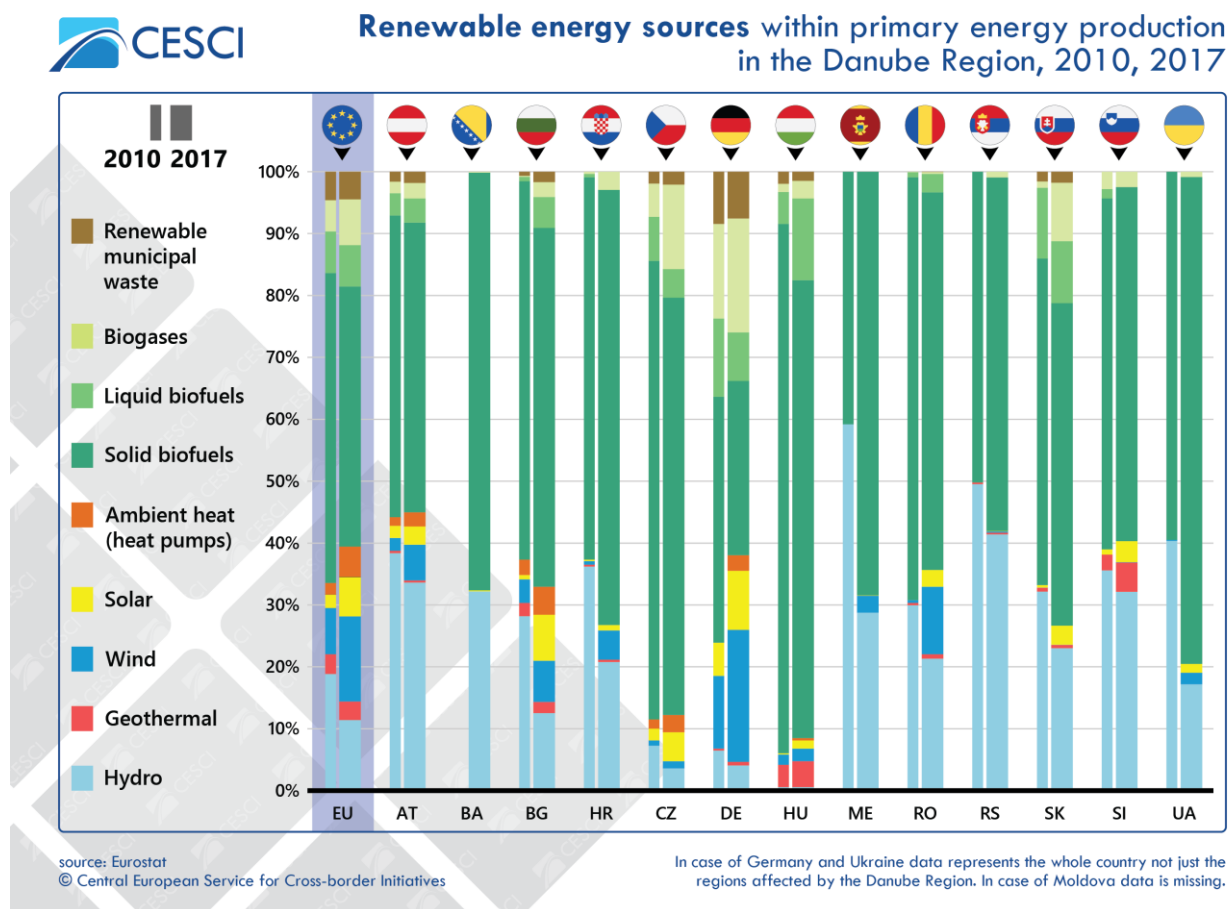


Figure 76: Renewable energy sources within primary energy production in the Danube Region

With regard to **energy consumption**, it can be stated that the macro-region is characterised by large inequalities. The largest consumers are situated on the outer ring of the macro-region, namely Germany (52.7% of total consumption of the whole macro-region in 2016) and Ukraine (13.1%). In general, the less developed economies and Balkan states have notably lower consumption compared to heavily industrialised and catching-up regions, western and central states of the macro-region such as Austria or the Czech Republic. Croatia, Slovenia, Bosnia and Herzegovina, Moldova, Montenegro altogether is responsible for as low as 4.5% of the total energy consumption. Apart from Ukraine and Romania the consumption increased during the related period.

When it comes to kilogram of oil equivalent per capita, the majority of the macro-region has relatively low data, and intensity stays below EU average (2171 kgoe per capita in 2016). The highest consumption per capita can be found in the case of Austria (3 233), Germany (2 634), Slovenia (2 362) and the Czech Republic (2 357), while the rate is at least two times lower in Montenegro (1 138), Romania (1 128), Bosnia (1 060) and Herzegovina and Moldova (701).

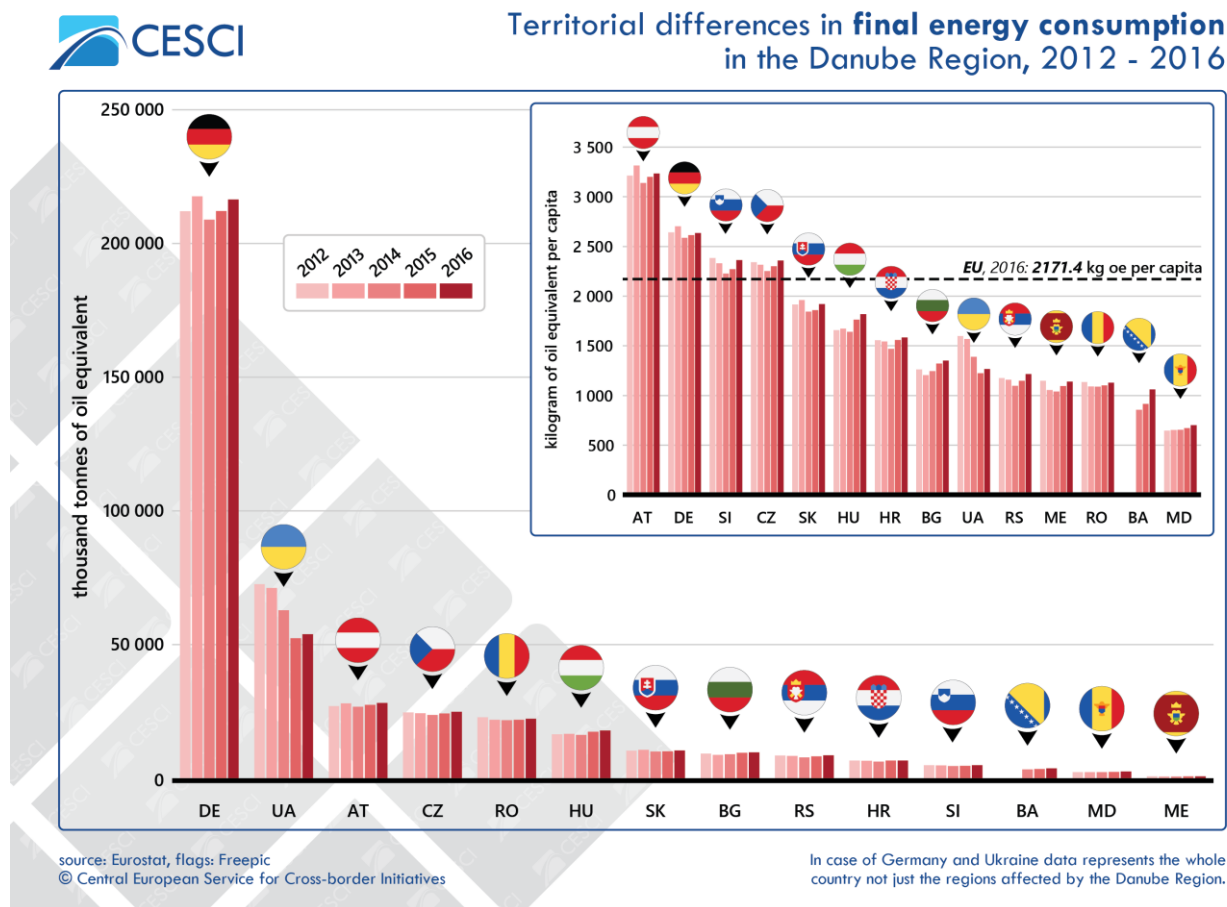


Figure 77: Territorial differences in final energy consumption in the Danube Region

The **energy dependence**⁴⁹ of the Danube Region varies from country to country; some are even more dependent than the EU average (53.6%) such as Germany (63.5% in 2016), Austria (62.5%), Slovakia (59%) and Hungary (55.6%), where the majority of energy needs are met by imports from other countries, while some countries rely less on external energy markets such as Bosnia and Herzegovina (31.1%), Serbia (29.2%) and Romania (22.3%). Except Romania in all related countries at least one quarter of the total energy need is met by import, and apart from Slovenia (-2.8% points) and Austria (-2% points) the rate has not decreased notably. Dependence on sources outside of the given countries implies energy security; the macro-region is still exposed to external energy production, transit and security of supply. Diversification of sources, linking the energy markets of the macro-region and the shift towards local renewables and a more energy efficient economy is of great significance. The macro-regional integration would lead to less exposure towards Russia and the Persian Gulf countries.

⁴⁹ The indicator shows the share of total energy needs of a country met by imports from other countries. Or, in similar words, the indicator shows the extent to which an economy relies upon imports in order to meet its energy needs.

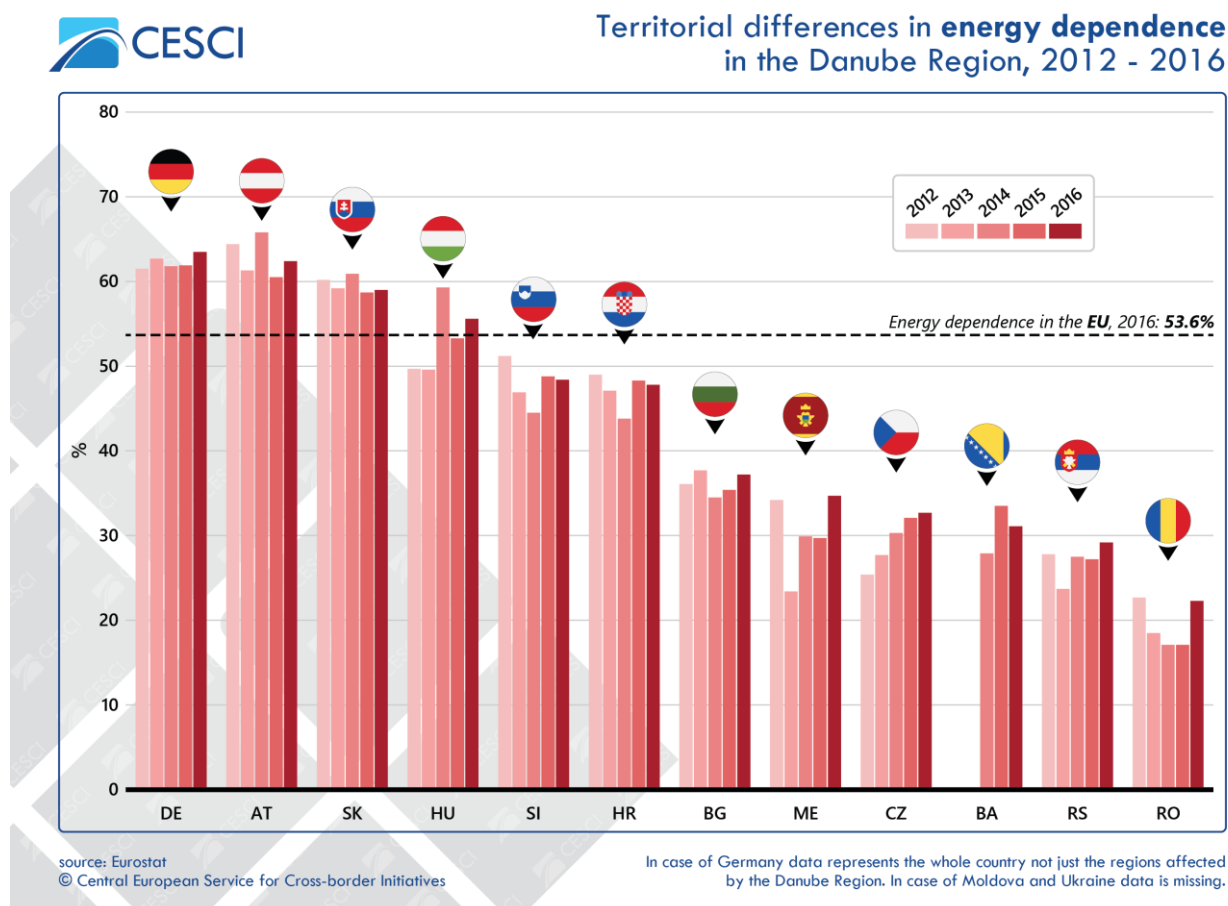


Figure 78: Territorial differences in energy dependence in the Danube Region

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. Analysing the population aged 30-34, the first observation that can be made is that the capital regions are the main centres where the more educated population concentrates. Bratislava (60%), Prague (57%), Budapest (55%), Bucharest (51%) and Vienna (48%) are at the top of the list of tertiary education attainment level in 2018. Secondly, it is important to notice that on the western regions (affected regions in Germany, Austria, but also Croatia and Slovakia to a lesser degree) there are no regions where this ratio would fall below 30%, meaning that the distribution of highly educated workforce is evenly spread out in the aforementioned countries. This, however, cannot be said about countries such as Romania or Bulgaria where the majority of the territories has only less than 20% of population with tertiary education. Taking into consideration the previous observation – the fact that these capitals has comparably the same or higher values than their western counterparts – it is safe to assume that in the case of Romania and Bulgaria (and to a lesser degree Serbia and Hungary) the capital region functions as a brain drain centroid where the highly educated workforce from the whole country gathers. 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.

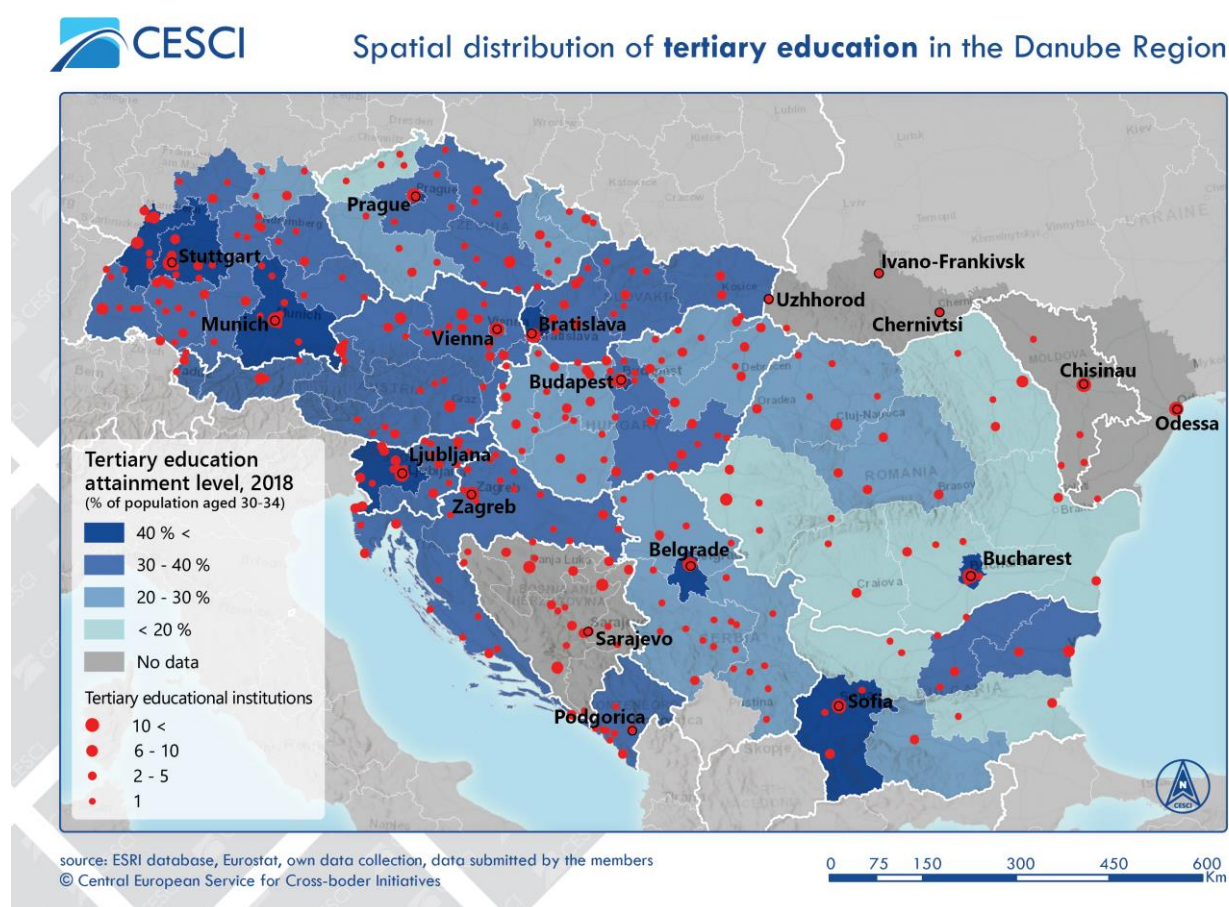


Figure 79: Spatial distribution of tertiary education in the Danube Region

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 according to data from 2016. The cross-cutting general tendencies show that 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 skills mismatch is an area that has to be handled in the short run. The non-harmonised educational offers with the labour market needs lead 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 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 territory. Germany and Austria (together with Slovenia) are also slightly outliers considering the ratio of students studying natural sciences, mathematics and statistics.

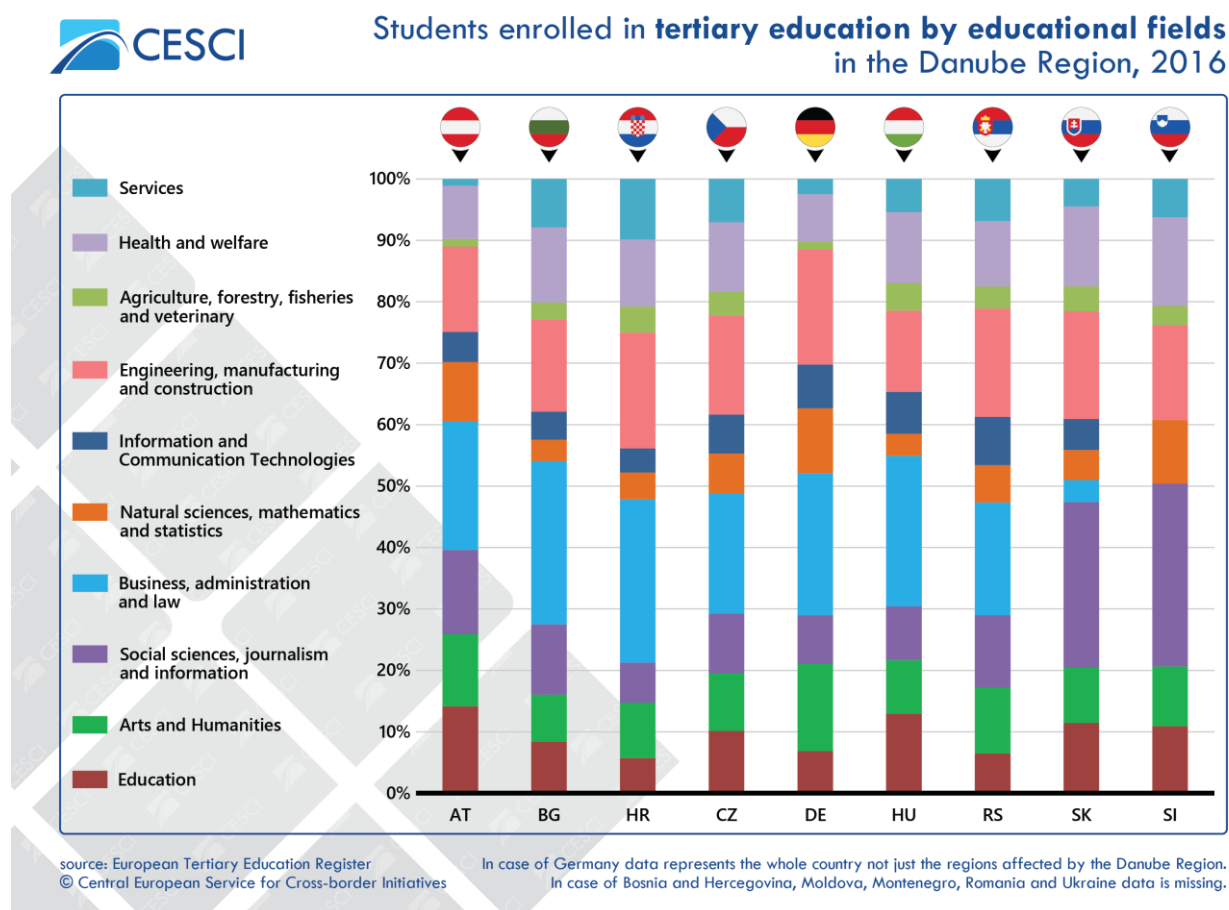




























Figure 80: Students enrolled in tertiary education by educational fields in the Danube Region

Apart from the number and density of the 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.

Table 4: Highest quality educational centres of the Danube Region according to the Shanghai Ranking⁵⁰

INSTITUTION		WORLD RANK 2019	CHANGE SINCE 2013	NATIONAL RANK 2019
	Heidelberg University	47	↑	1
	University of Munich	52	↑	2
	Technical University Munich	57	↓	3
	University of Freiburg	101-150	↓	5-7
	University of Vienna	151-200	-	1
	University of Tuebingen		-	8-10
	Charles University in Prague	201-300	-	1
	Medical University of Vienna		-	2-3
	University of Innsbruck		-	2-3
	University of Wuerzburg		-	11-21
	Karlsruhe Institute of Technology		-	11-21
	University of Erlangen-Nuremberg		-	11-21
	University of Ulm		↑	11-21
	University of Stuttgart	301-400	↓	22-27
	Vienna University of Technology		↑	4
	University of Belgrade	401-500	↓	1
	University of Konstanz		↓	28-30
	Medical University of Innsbruck		-	5-6
	University of Graz		-	5-6
	University of Zagreb		-	1
	University of Ljubljana	501-600	↓	1
	University of Bayreuth		↓	31-43
	Medical University of Graz		↓	7
	Eotvos Lorand University		↓	1
	University of Regensburg		↓	31-43
	Palacký University		↑	2

⁵⁰ source: 2019 Academic Ranking of World Universities - ARWU

Taking into account the **mobile cellular subscriptions** the territorial differences examined in other fields of technology are not so apparent, and the pattern does not necessarily follow the general economic development of the given countries. The leader is Austria (171 subscriptions per 100 persons), and Germany (134) is the third, but Montenegro (166) and Ukraine (133) have higher position than e.g. Slovenia or Hungary. There are only two countries with less than 100 subscriptions per people; namely Bosnia and Herzegovina (98) and Moldova (90). Regarding changes in the past few years, it can be stated that penetration of cellular mobile phones remained relatively high, and there was no global direction towards increase or decrease. The macro-region as a whole has an average situation compared to the EU average, only few countries deviate from the standard. The biggest changes occurred in Austria (+16.1 subscriptions per 100 persons from 2013 to 2017), Slovakia (+16.2), furthermore in Bulgaria (-23.9) and Czech Republic (-10.5).

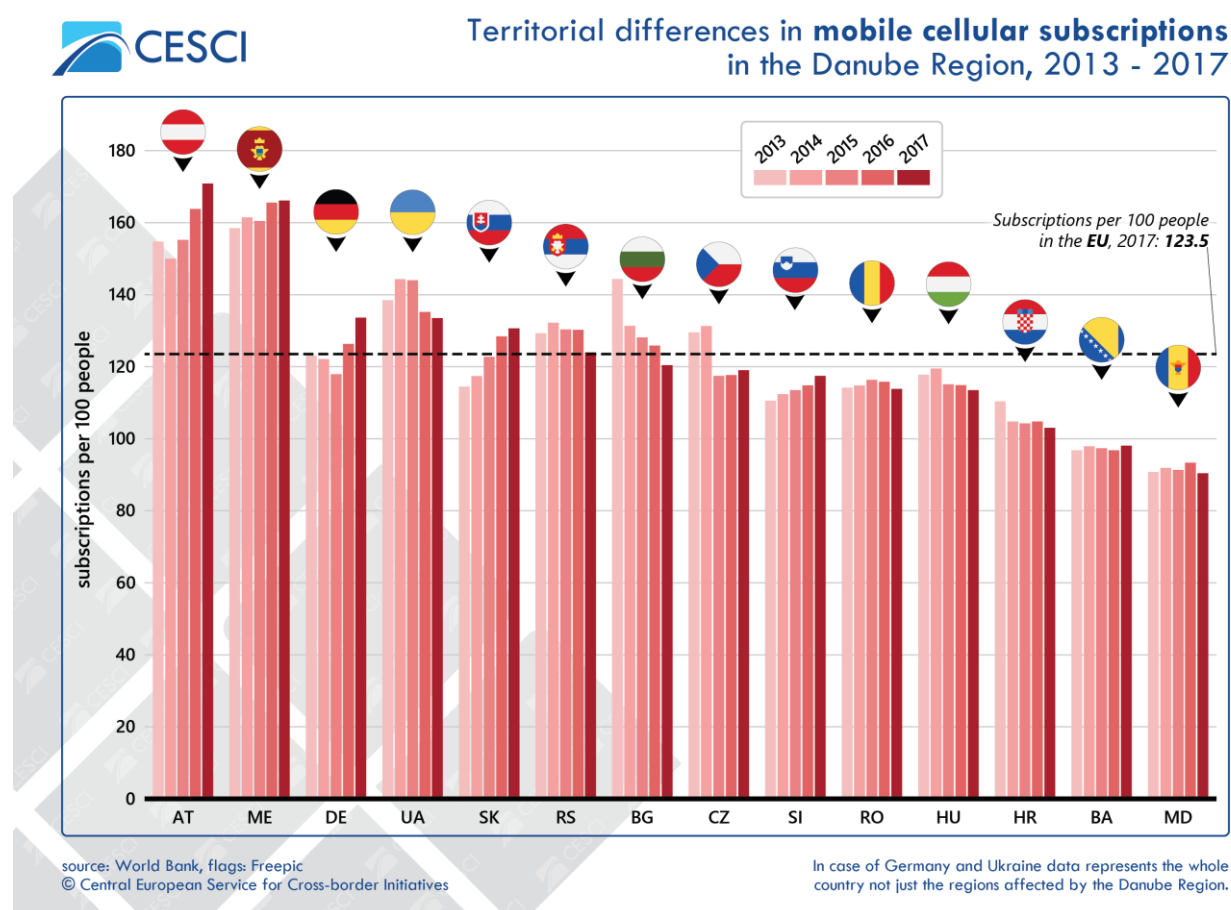


Figure 81: Territorial differences in mobile cellular subscriptions in the Danube Region

IT infrastructure as well as transport infrastructure, has significant long-term inequalities, traditionally between the eastern and the western part of the macro-region. While in Germany, most parts of Austria, Czech Republic, Slovenia and Hungary households with **broadband access** to internet is generally above 77% (93% in Prague, 92% in the German regions), in a couple of regions from Bosnia and Herzegovina, Serbia, Romania and Bulgaria (and Ukraine

and Moldova presumably) the share of broadband access is below 61% (Republika Srpska 68.5%, Brčko District 67.5%, the Bulgarian regions of Severen Tsentralen 67% and Severozapaden 65%). However, notable changes have occurred in the last few years: the previously almost homogeneous less developed part of the macro-region has managed to increase broadband access at a high pace, and some regions became successful catching-up areas. Regions with the fastest growing access include Vojvodina (25.6% points) and the rest of Serbia (31.1% points), Sud-Vest Oltenia (27% points), Nord-Vest (26% points), Vest, Centru, Sud-Muntenia (24% points each) and Nord-Est (22% points) from Romania, the Czech region of Moravskoslezsko, furthermore Yugoiztochen, Severozapaden and Severoiztochen from Bulgaria (22% points each). Consequently, the picture is more heterogeneous now. Notwithstanding, the huge gap in internet access is still a significant territorial challenge causing inequalities in many aspects of socio-economic life e.g. shift to digital economy and information society, areas of teleworking, e-governance and e-administration, access to all sorts of quality and up-to-date information.

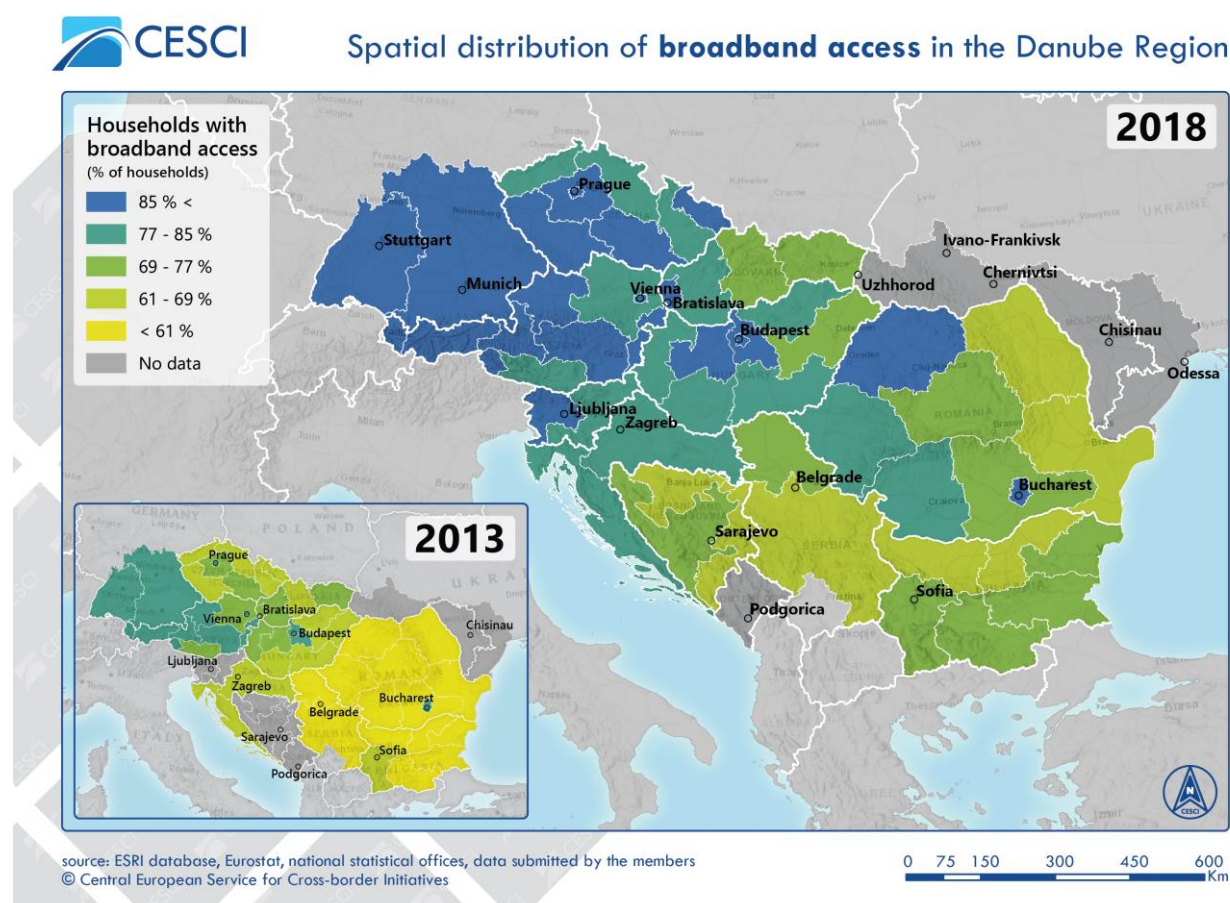


Figure 82: Spatial distribution of broadband access in the Danube Region

3.5 Social cohesion

3.5.1 Demographic conditions

The **spatial distribution of population** in the Danube Region is very uneven. There are two major characteristics in the spatial configuration of the population; the western, north-western part of the macro-region is densely populated compared to the southern, south-eastern parts, furthermore especially on the latter part capital cities and populated urban regions stand out from less populated, sometimes even rural, remote areas. Regions with the highest population density are in fact cities, urbanised region such as Munich or Bucharest. Areas with the lowest population density are usually either mountainous areas such as Alpine or Dinaric landscapes or socio-economic peripheries (e.g. along the Danube in the bordering regions of Serbia, Romania and Bulgaria). Also, many sparsely populated regions are border regions, in the Balkans especially. It has to be noted that both heavily urbanised, over-populated areas and rural, remote areas have special type of challenges to face.

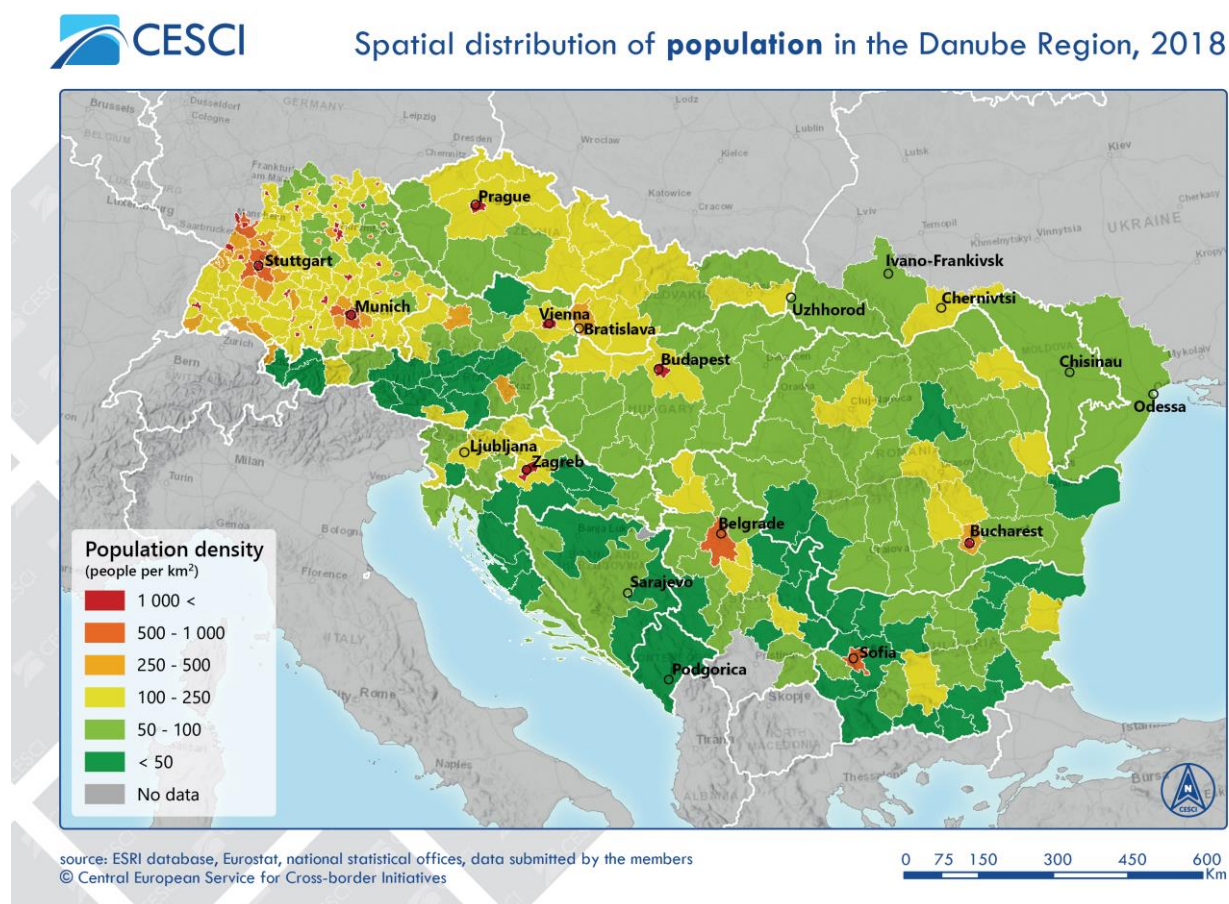


Figure 83: Spatial distribution of population in the Danube Region

Migration has become a major demographic issue which is considered as one of the most challenging issues in contemporary Europe as a severe both social and political issue within and in the neighbourhood of the European Union. The causes and effects of migration are

having impacts on both the reception and sending areas of domestic and international migrants. On a more Europe-wide and global scale transcontinental migration from the Middle East and Africa towards western and northern Europe including Germany and Austria from the Danube Region, while on macro-regional level the migration from Ukraine and south-eastern states towards westerly countries are important major directions of the movements. Furthermore, 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. However, emigration from the macro-region also needs to be battled against (in the case of moving to the UK, Ireland, Spain, Italy, France, the Netherlands, other parts of Germany in particular). A new phenomenon because of the conflict in Ukraine is the large number of working age population appearing even in central European labour markets e.g. the Czech Republic, Slovakia, Hungary).

There are still strong spatial inequalities in terms of migration. Regions with positive migration balance are typically 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 the regions with significant immigration are from Germany.⁵¹ In contrary, 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 work performing regions are from Croatia.⁵²

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 the map of Europe characterised by low population retention force and

⁵¹ 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.

⁵² 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).

weak economic structures. This all result in a massive depopulation and stressed 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 (and security issues globally) 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.

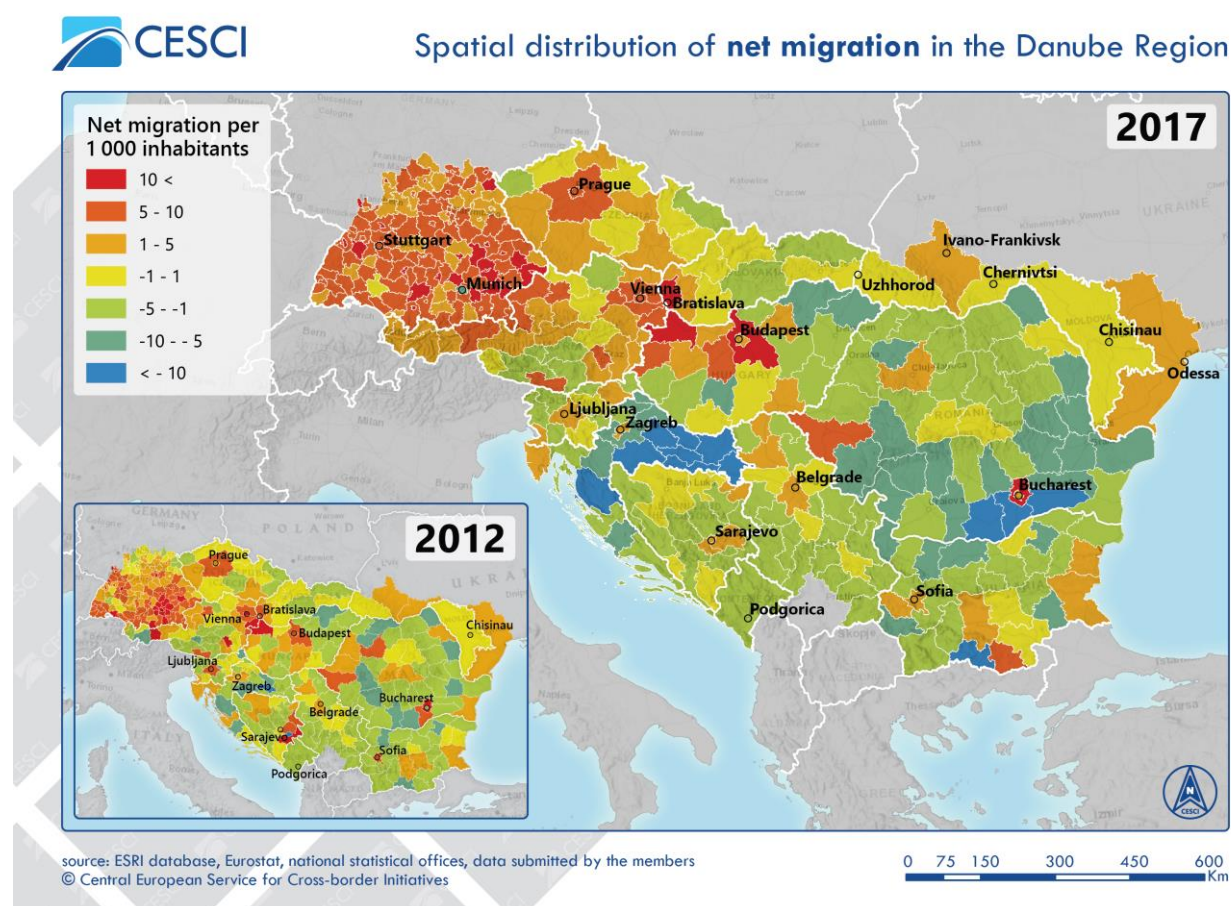


Figure 84: Spatial distribution of net migration in the Danube Region

The Danube Region is a part of Europe where large shares of population are currently living abroad partly because of regional conflicts such as the Yugoslav wars and partly because of differences in employment and living conditions. Many of the states with the largest “missing” population is from the Danube Region: Bosnia and Herzegovina, Montenegro, Moldova, Croatia, Romania and Bulgaria are all among those which have lost a significant amount of people due to mass outmigration in the very recent decades. There is a strong east-west

divide in terms of size of emigration; Germany, Hungary, Slovakia, Austria and Czech Republic are less affected by this international migration movement.

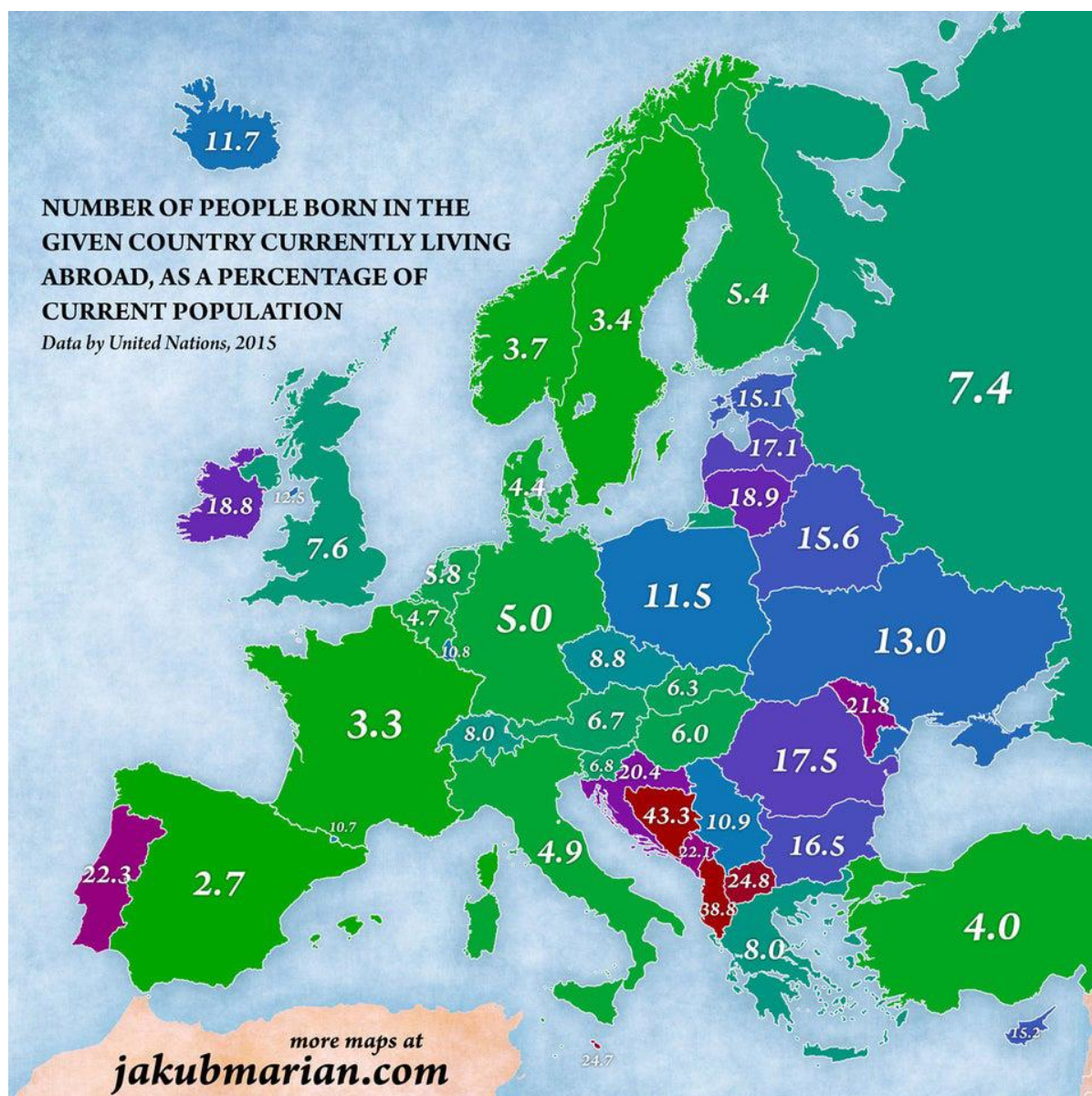


Figure 85: Number of people born in the given country currently living abroad, as a percentage of the total population⁵³

The relevance and importance, or in other words, the seriousness of this issue, can also be underlined by the population gained/lost due to migration as a percentage of population. Severe population loss from migration balance has taken place in Bosnia and Herzegovina, Moldova, Romania, Bulgaria, but the high share of emigrants are also relevant in Montenegro and Croatia. On the contrary, Austria and Germany along with Slovenia have experienced larger numbers of immigrants than emigrants. The cohesion of the Danube Region is very much related to intensifying transnational migration links, flow of workforce creating new spatial and social relations across Europe and within the Danube Region itself. However, recent

⁵³ source: <https://jakubmarian.com/>

demographic changes create an increasingly unbalanced restructuring of citizens creating new challenges and potentials.

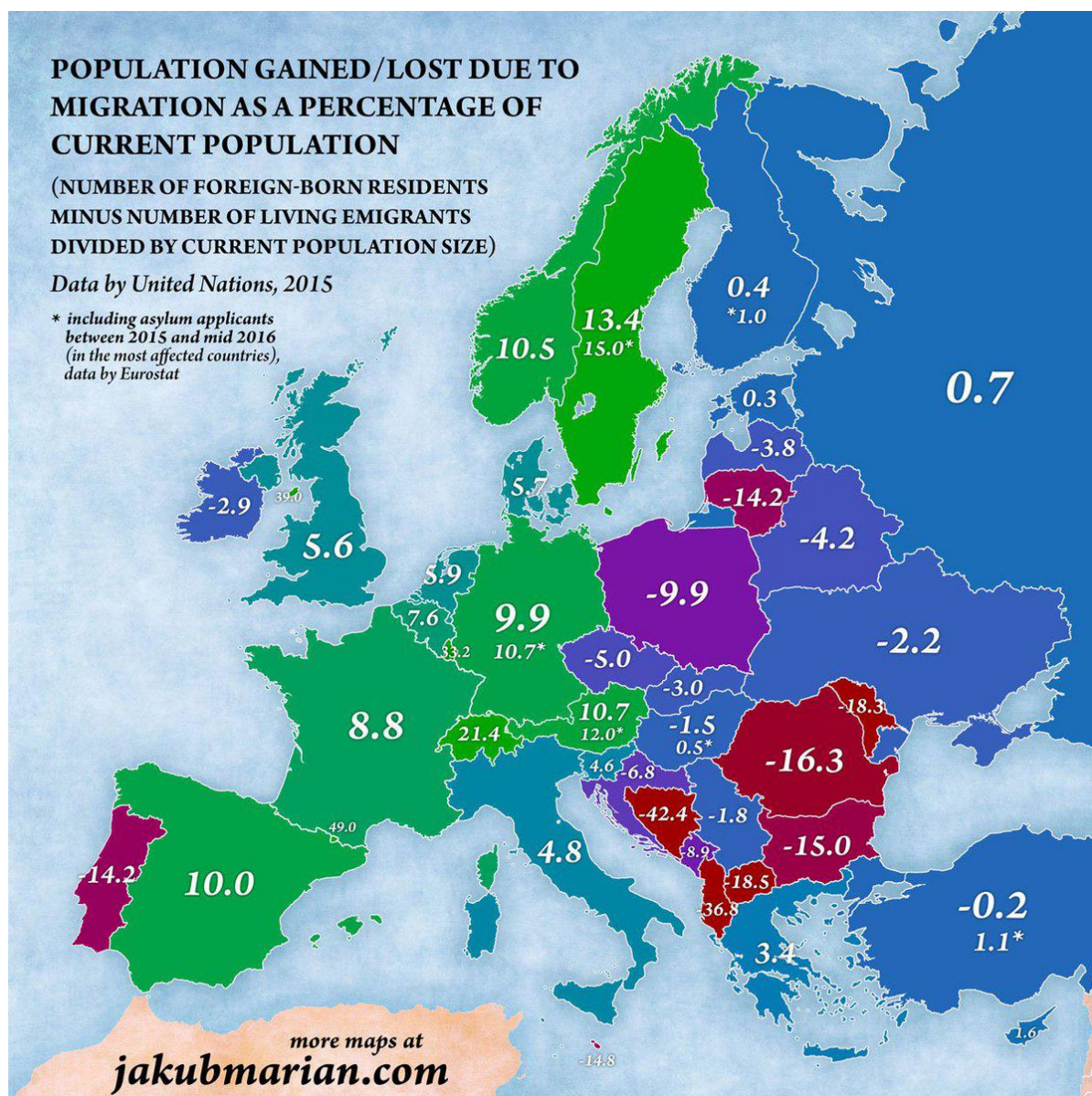


Figure 86: Population gained/lost due to migration as a percentage of current population ⁵⁴

Owing to low fertility and high emigration the one of the most common characteristic of the Danube Region is the process of **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 of the share of the elderly population compared to the young population has resulted in that there are almost no regions left where the population under 15 years outnumber the population with 65 or more years.⁵⁵ Ageing is a social phenomenon which has turned out to be one of the least selective across

⁵⁴ source: <https://jakubmarian.com/>

⁵⁵ 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.

the macro-region; large areas regardless geographic location. Ageing has become a severe challenge in many countries, including the border regions of Serbia and Bulgaria for instance. In the most ageing regions of Bulgaria, Serbia and Germany the indexes indicate that more than two time larger elderly people population is living in the most ageing part of the macro-region.⁵⁶ The extreme level of ageing result in challenges needs to be solved in relation to population retention, local employment, social and health care services, silver economy since radical change in demographics has not been foreseen.

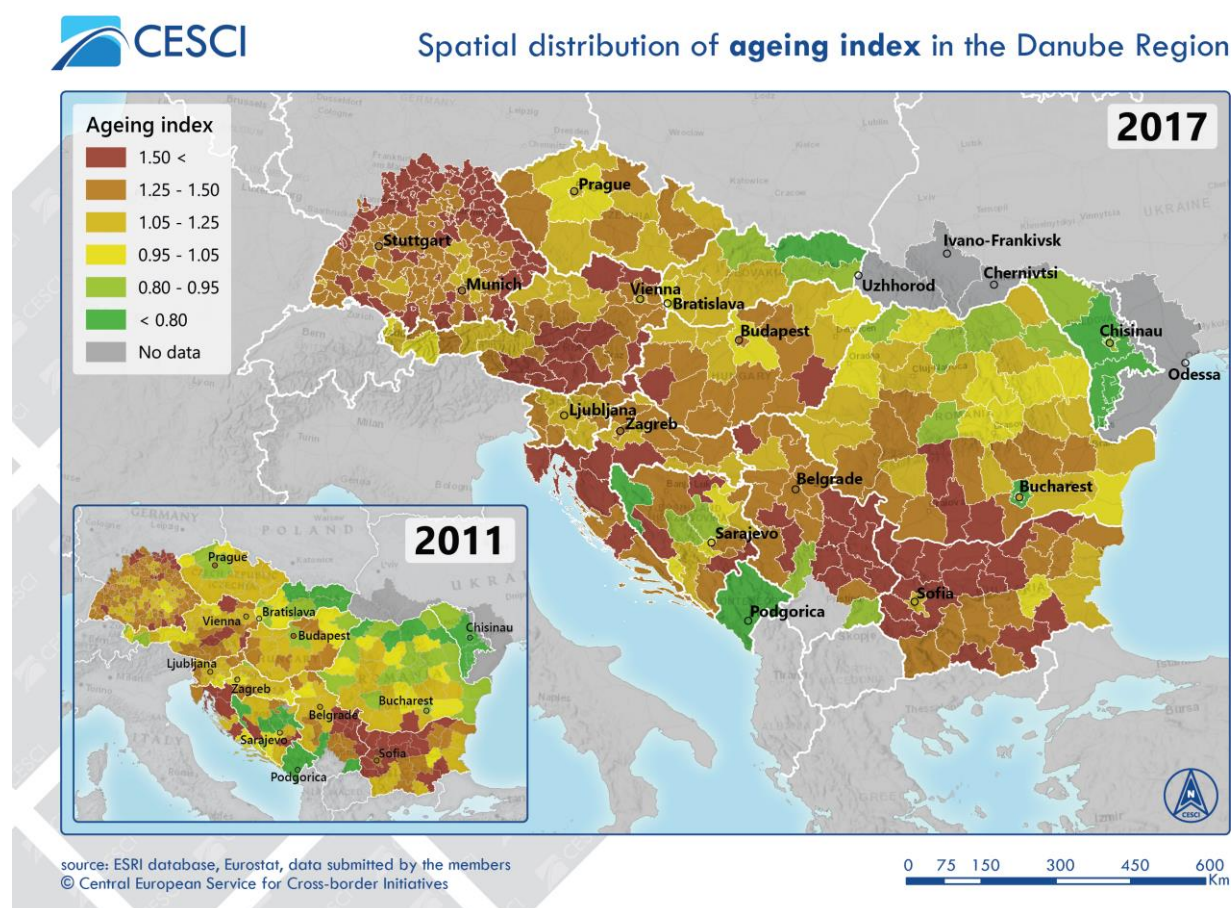


Figure 87: Spatial distribution of ageing index in the Danube Region

Apart from Slovakia, Bosnia and Herzegovina and some other regions the proportion of working-age population (ages between 15 and 64) is now lower than 70% in the vast majority of the analysed regions.⁵⁷ Romanian, Bulgarian, Serbian and Croatian regions suffer the most from low share of working-age population.⁵⁸ Taking into account recent changes, there was a

⁵⁶ Region 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).

⁵⁷ Regions with the highest share of working-age population are as follows: Unsko-Sanski Kanton (72.4%, Posavski Kanton (72.1%), Srednjobosanski Kanton (71.5), Zeničko-Dobojski Kanton (70.5%) and Tuzlanski Kanton (70.5%) from Bosnia and Herzegovina, Heidelberg City (71.9%), Regensburg City (70.6%), Freiburg im Breisgau City (70.3%), furthermore Timiș County (70.2%) from Romania.

⁵⁸ Regions with the lowest share of working-age population are as follows: Šibensko-Kninska Županija (61.8%) from Croatia, Yambol (61.5%), Kyustendil (61.1%), Montana and Pleven (60.5% each), Gabrovo (60.3%), Lovech (60.1%) and Vidin (58.7%) from Bulgaria, Zaječarska Oblast (60.9%) from Serbia, Teleorman County (60.4%) from Romania.

huge decrease in the size of the working-age population mainly due to low fertility rates causing weak support to supply working-age generations. Regions with the highest decrease included mainly Romanian and Czech regions.⁵⁹

Other reason is the emigration of such populations from the eastern part of the macro-region to the westernmost states, or even to external regions. It all has already resulted in insufficient labour market supplies in several related countries. In the near future shrinking numbers in this population is going to make employment and economic growth goals difficult to reach, or even to maintain the current levels. Thus, technology-intensive instead of labour-intensive solutions could enjoy priority.

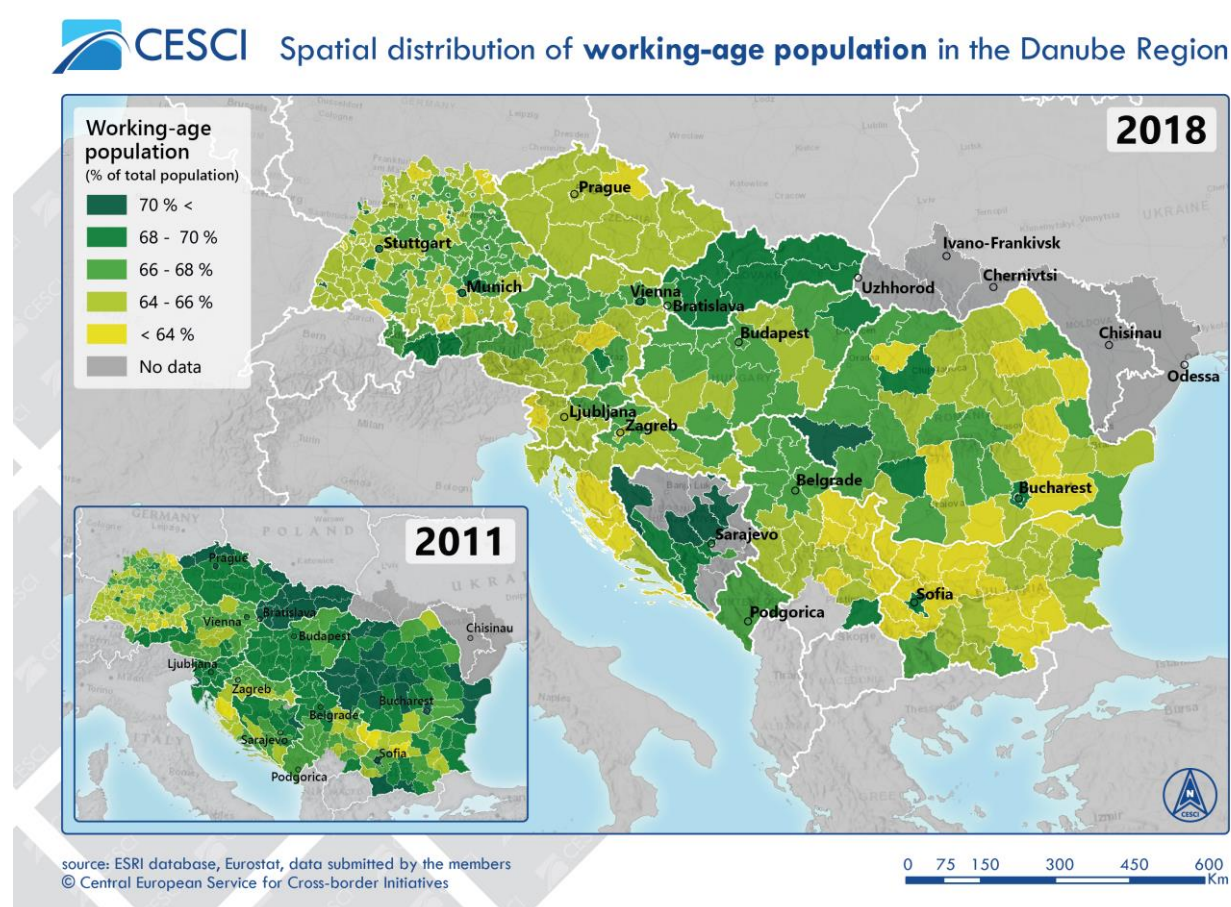


Figure 88: Spatial distribution of working-age population in the Danube Region

⁵⁹ Regions with the highest decrease between 2011 and 2018 are as follows: Braşov County (-6.5% points), Tulcea County (-6% points), Neamţ County (-6% points), Brăila County (-5.3% points), Vrancea County (-5.2% points), Bacău County (-5.2% points), Hunedoara County (-5.2% points), Constanţa County (-5.2% points), Galaţi County (-5.1% points), Bratislava Region (-5.9% points), Liberec Region (-5.7% points), Ústí nad Labem Region (-5.4% points) and Karlovy Vary Region (-5.2% points) from Chechia, Smolyan from Bulgaria (-5.3% points).

3.5.2 Social disparities

High proportion of **low-skilled people** means difficulties for a few regions in shifting to a more developed economy with higher added value, more stable jobs and higher salaries. In a couple of regions poor qualification makes almost impossible to reach social mobility knowing that education is a key in battling poverty and unemployment. People with low education level are concentrated to eastern Romania and Bulgaria, Bosnia and Herzegovina, Moldova, Ukraine, and southern Serbia.⁶⁰ The most favourable data can be found in the case of Czech Republic (Prague 2.9%, Jihovýchod 4.9%, Střední Čechy 4.9%, Střední Morava 5.4%, Jihozápad 6.1%, Severovýchod 6.6, Moravskoslezsko 7%), Slovakia (Bratislava Region 3.9%, western Slovakia 7.2%) and Budapest (7.1%).

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 excluding some regions such as Montenegro or Yugozapaden from Bulgaria. Regions with the highest decrease in people with low qualification levels are from Romania (Sud-Vest Oltenia decrease by 4.7% points between 2013 and 2018, Muntenia 5, Vest 5.1), Hungary (Southern Great Plain 3.5), Austria (Burgenland 3.4, Tyrol 3.5), Slovenia (eastern Slovenia 3.7), Croatia (Continental Croatia 4.3), Bulgaria (Severen Tsentralen 4.9), Serbia (Belgrade Region 3.7, Šumadija and western Serbia 3.9, Vojvodina 4.3, southern and eastern Serbia 5.5).

⁶⁰ Regions with the highest share of people with low level of education are as follows: Nord-Est (29.2), Sud-Est (26.6%), Šumadija and western Serbia (24.1%), Severoiztochen (23.5%), southern and eastern Serbia (23.2%).

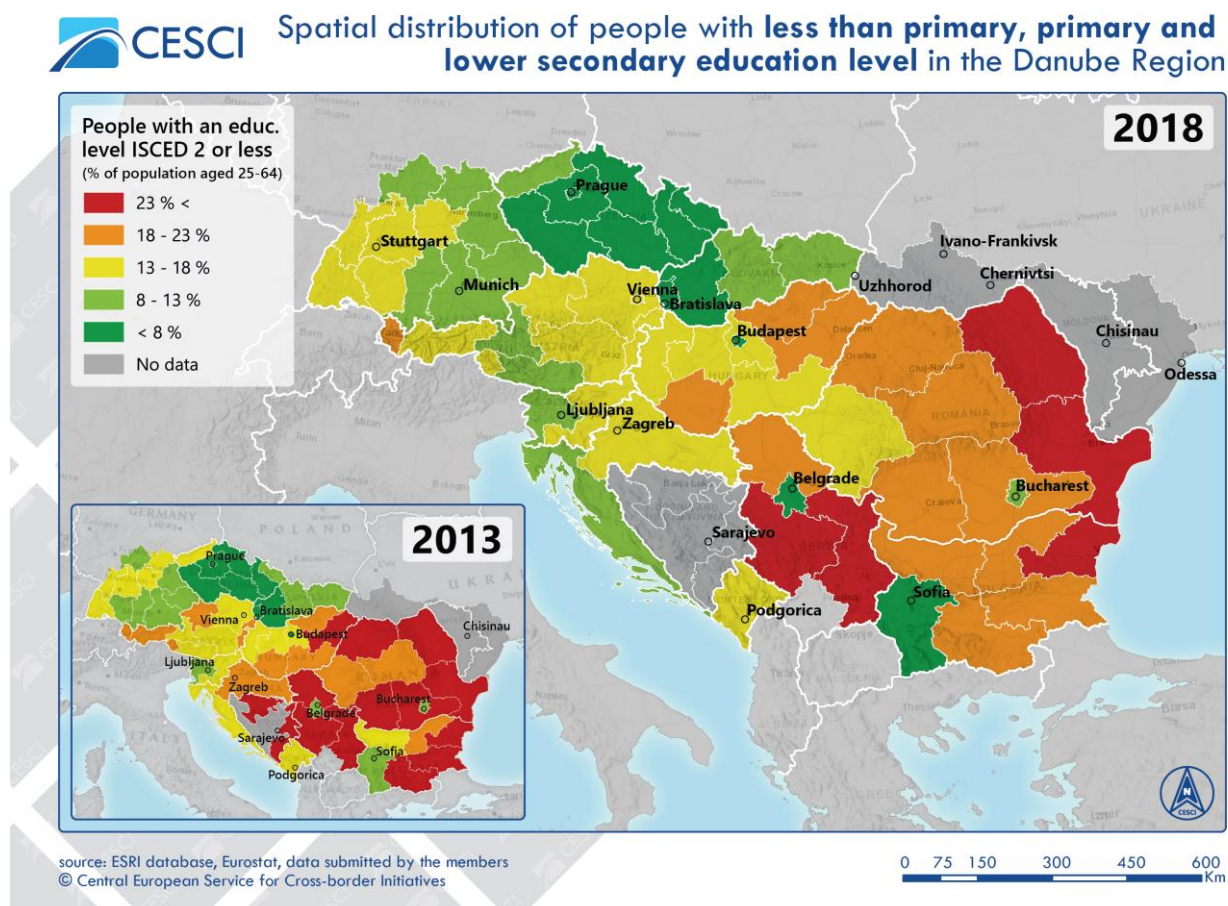


Figure 89: Spatial distribution of people with less than primary, primary and lower secondary education level in the Danube Region

The Danube Region consists of nation states with a very heterogeneous socio-economical background and abilities to fulfil their citizen's need for a long and healthy life, knowledge and a decent standard of living. Taking into account life expectancy at birth, mean years of schooling and expected years of schooling, GNI per capita (PPP), the region gives unequal standards and opportunities to the citizens. While Germany is ranked as high as the 5th regarding the **Human Development Index** ranking, Moldova is only the 112th on the list. The region is heavily divided into different groups of countries, e.g. to a western and an eastern part: the former is formed by the outstanding Germany (0.94), the group of Austria (0.91), Slovenia (0.9) and the Czech Republic (0.89), plus Slovakia (0.86), Hungary (0.84) and Croatia (0.83), the latter is formed by the group of Montenegro, Bulgaria, Romania (each 0.81), Serbia (0.79), Bosnia and Herzegovina (0.77) and Ukraine (0.75), while Moldova is the very last (0.7). Bulgaria and Bosnia and Herzegovina has been the most successful in reaching better standards and quality of life, both managed to increase its index by 0.2% points from 2013 to 2017.

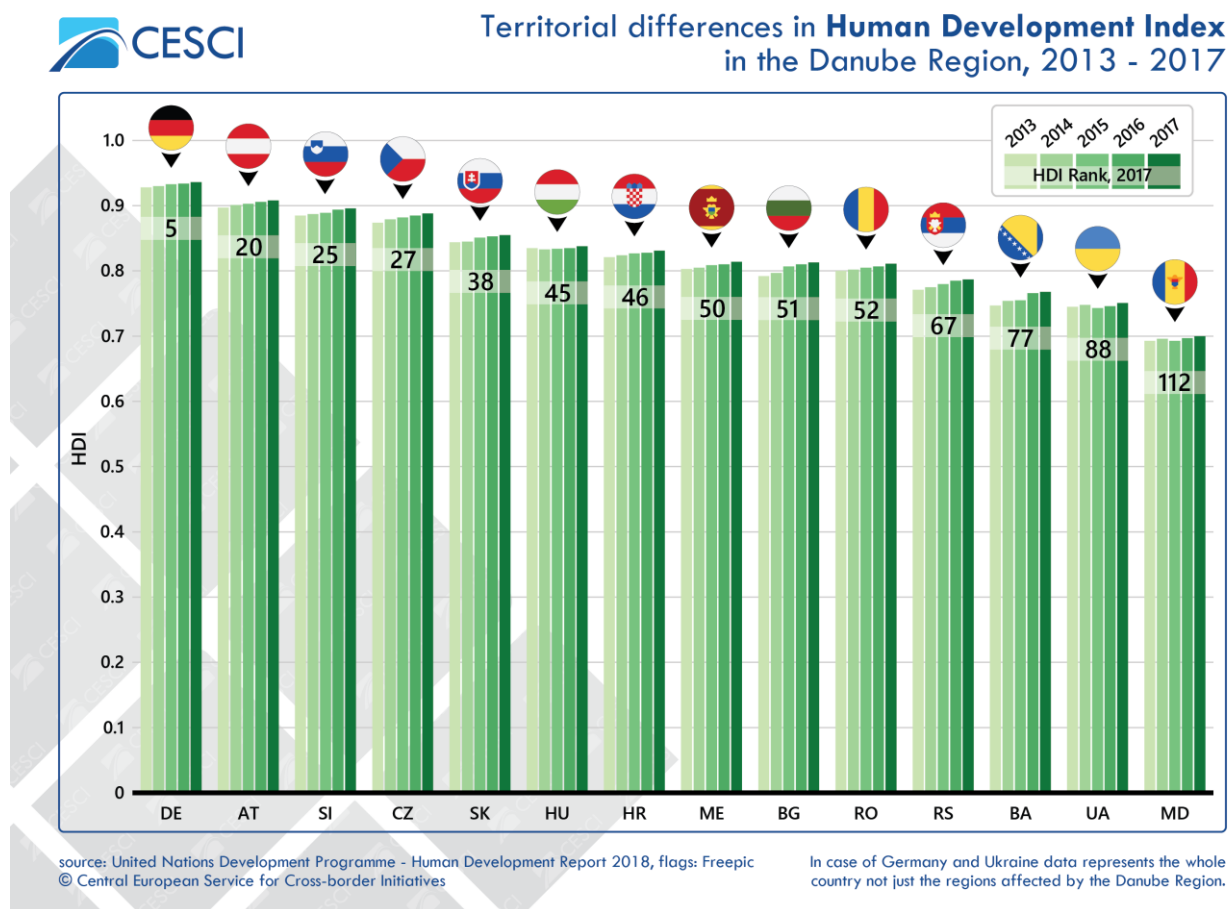


Figure 90: Territorial differences in Human Development Index in the Danube Region

Long-term unemployment is a permanent challenge to be tackled within the macro-region. The original pattern of inequality has not changed much regarding the macro-regional level differences and the group of worst performing regions, the latter includes Montenegro, regions from Slovakia, Bulgaria and Serbia mostly (and from Ukraine and Moldova presumably).⁶¹ South of the line of the Danube and in eastern parts of Slovakia this phenomenon has remained to be combated. Austria, Germany and the Czech Republic were known for their relatively low long-term unemployment, but owing to recent changes, regions with medium or low level of such unemployment can be found now in Hungary, Romania, Croatia and Serbia as well. It has to be noted that while thanks to the significant employment growth the general picture of unemployment has changed to a similar extent across many parts of the macro-region, the spatial distribution and the rate of change was different in the case of long-term unemployment. Decrease in long-term unemployment was a more selective and a less wide-spread process, and the rate of change was more diverse, many times lower, than general unemployment. In quite a few regions, especially where vulnerable population is

⁶¹ Regions with the highest long-term unemployment rates: Severozapaden 76.8%, Severen Tsentralen 62.8%, Severoiztochen 55.4%, Yugozapaden 53.8%, Yugoiztochen 49.1%, Yuzhen Tsentralen 48.7% from Bulgaria, Montenegro 75.2%, central Slovakia 67.1%, eastern Slovakia 65.7%, Sud-Vest Oltenia 56.7% and Sud-Muntenia 50.1% from Romania, southern and eastern Serbia 55.1%, Šumadija and western Serbia 53.7%, Belgrade Region 51.2%, western Slovakia 50.9%.

living⁶² (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. These are the regions of the Danube Region which still 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. Social entrepreneurship is still not a commonly-used practice to find innovative solutions to employment and other social challenges.

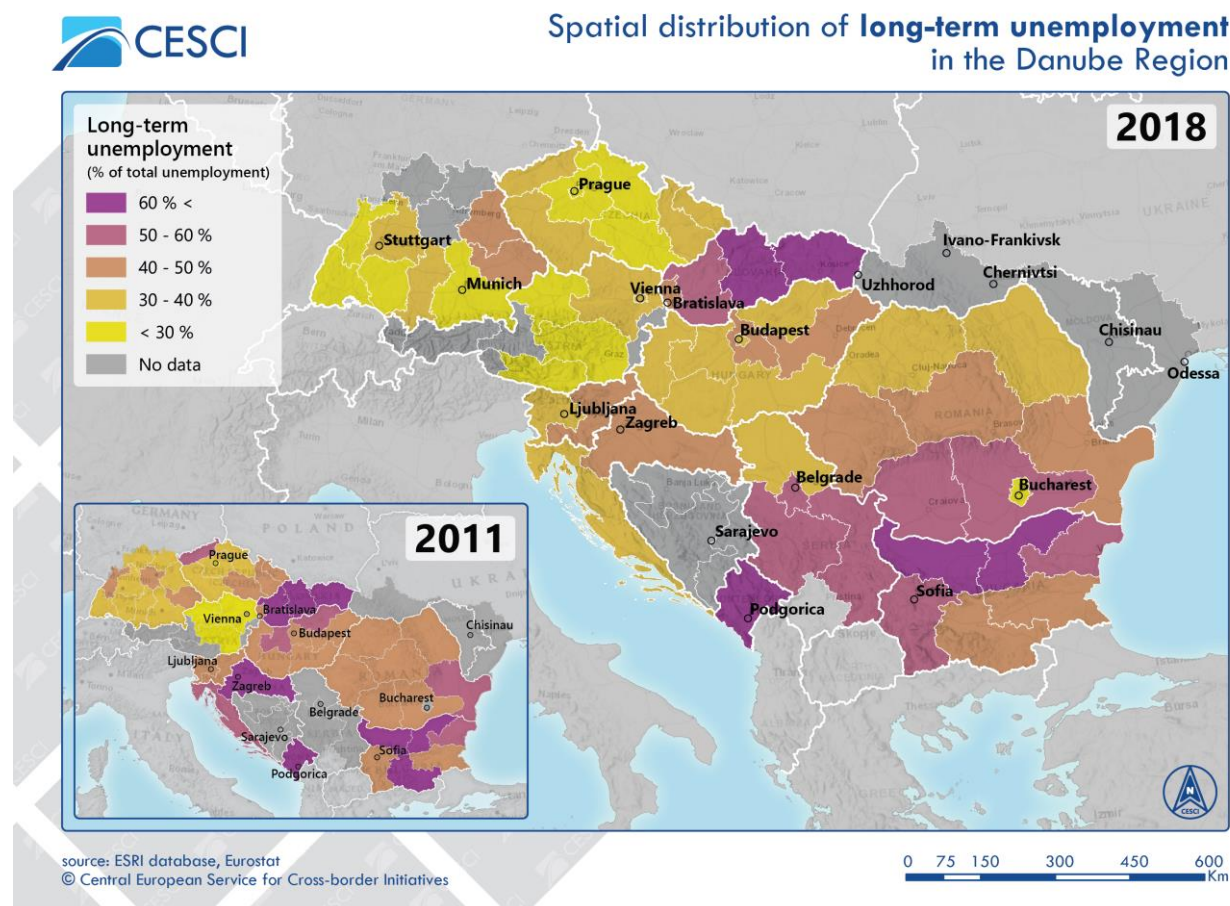


Figure 91: Spatial distribution of long-term unemployment in the Danube Region

First, it has to be noted that the matter of **poverty** should be treated with reservations due to missing data from Germany, Ukraine, Moldova, furthermore Bosnia and Herzegovina. Still, it can be stated that the Danube Region has been incorporating several regions with high share of population at risk of poverty.⁶³ 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

⁶² Regions with the highest decrease in long-term unemployment between 2011 and 2018: Continental Croatia (decrease by 22% points), Adriatic Croatia (decrease by 18.4% points), central Transdanubia (decrease by 18.6 points) and western Transdanubia (decrease by 15.9% points), northern Hungary (13.6%) and Budapest (12.8%) from Hungary, western Slovakia (decrease by 20.2% points), Severozápad (20.3% points), Jihovýchod (14.2% points) from the Czech Republic, Karlsruhe (14% points) from Germany.

⁶³ People at risk of poverty or social exclusion were in at least one of the following situations:

- at risk of poverty after social transfers (income poverty);
- severely materially deprived; or
- living in households with very low work intensity.

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. In spite of some changes between 2014 and 2017, high social inequalities especially between north-western and south-eastern states persist. In many cases, risk levels and territorial inequalities have remained high, or even got intensified. While in Bratislava Region the at-risk-of-poverty rate was 4.6%, the values were 5-7 times higher in Romania, Bulgaria, Serbia and Montenegro (considering the available data).⁶⁴ There has been a negative change in relation to many regions already battling with high share of population with poverty risk, namely the Bulgarian regions of Severozapaden (+5.8% points), Severen Tsentralen (2.8% points), Yugoiztochen (2.3% points) and the Romanian region of Sud-Vest Oltenia (5.1% points) in particular. Significant decrease took place in relation to Hungarian (northern Hungary -8.7% points, Northern Great Plain -6.7% points), Romanian regions (Vest -6.1% points, Sud-Est -4.4% points, Centru -3.1% points), and the Bratislava Region (-3.2% points).

It is worth underlining that improvement in employment and economic growth does not necessarily go hand in hand with social inclusion. It can be a warning sign that when labour market integration seems to be reached in many regions across the macro-region, income poverty and low purchasing powers, expensive housing and household costs could be major setbacks in reaching a higher quality of life and convergence within the Danube Region. Consequently, combating impoverishment is a phenomenon that needs quick answers in the macro-region.

⁶⁴ Regions with high poverty risk include Nord-Est 33.4%, Sud-Vest Oltenia 33.4%, Sud-Est 29.6%, Sud-Muntenia 24.9% from Romania, Serbia (25.7%) Severozapaden 32.8%, Yuzhen Tsentralen 29.9%, Yugoiztochen 26.2%, Severen Tsentralen 24%, Severoiztochen 23.7% from Bulgaria and Montenegro (23.6%).

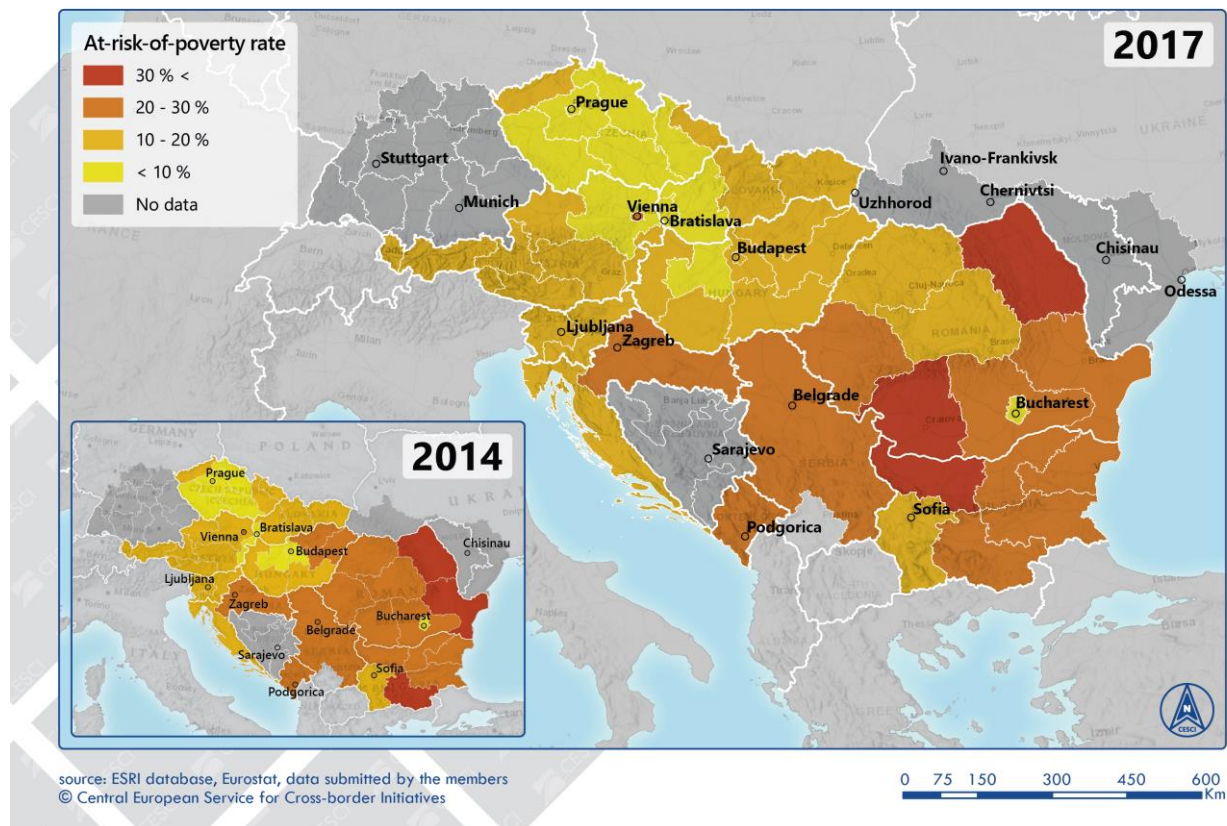


Figure 92: Spatial distribution of at-risk-of-poverty rate in the Danube Region

3.5.3 Labour force migration, training and employment

Considering territorial differences in **unemployment**, high inequalities can be detected; which shows an unbalanced labour market on a macro-regional scale. Both extremities are present in the Danube Region, namely very high and very low, almost non-existing unemployment with regard to the basic rules of market economy. To highlight the huge differences in the territorial structure of labour market supply and demand, in Bosnia and Herzegovina the unemployment rate (18.5% in 2018) is more than 8 times higher than Czech Republic (2.2%). In relation to EU average the rate is below average in all Member States apart from Croatia. In the last few years huge shift took place, eliminating the formerly one of the main socio-economic problems within the macro-region, the high unemployment, in the majority of the given countries. Owing to positive changes as well as a challenge in the form of mass emigration of working age population to mostly western economies, the reduction in the rate has been higher than on EU level (decrease of 3.4% points, while e.g. 9.1% points in Bosnia and Herzegovina, 8.7% points in Croatia, 6.7% points in Slovakia, 6.6% points in Serbia, 6.2% points in Bulgaria). Only in Austria (decrease of 0.7% point), Germany (decrease of 1.6% points), furthermore in Romania (2.6% points) and Montenegro (2.8% points) the change was lower than the EU average in the period between 2014 and 2018. Still, unemployment is a relevant problem in some countries, in the Balkans (and in Ukraine and Moldova presumably) especially. The lack of local workplaces, low wages and disharmonised educational and employment opportunities are often end up in foreign employment, contractual works on the westernmost parts in the macro-region in high numbers. This all underlines a macro-regional field of manoeuvre in cooperation in job creation and a more balanced labour market.

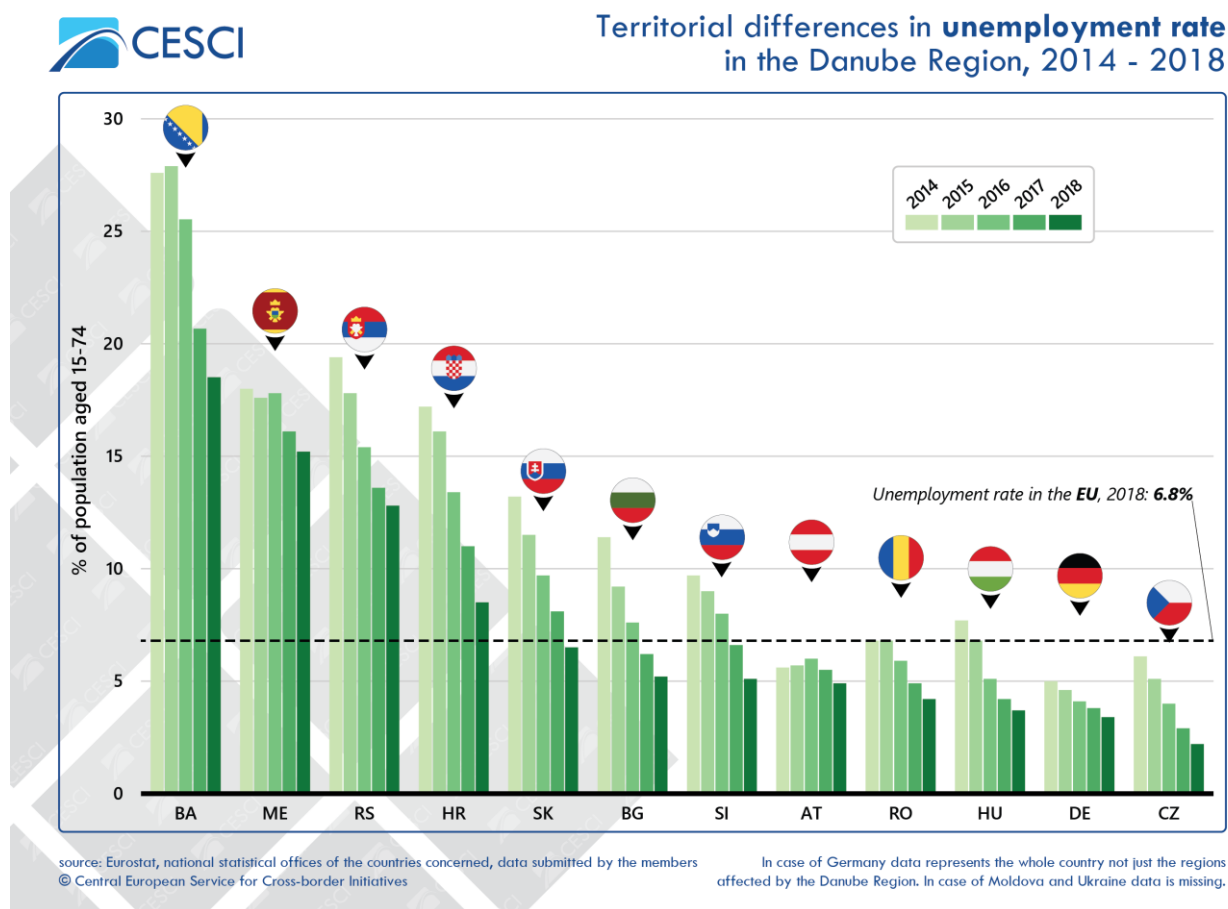


Figure 93: Territorial differences in unemployment rate in the Danube Region

In spite of the comprehensive changes, the spatial distribution of unemployment is still characterised by high inequalities. The previously strong north-west versus south-east divide persists. The most significant positive change and also a sign of recovery from the economic crisis and economic boom in some cases is that many Hungarian, Slovakian, Czech, Romanian and Bulgarian regions have managed to push down the formerly notably higher unemployment rates. Serbia, Bosnia and Herzegovina, Hungary and Slovakia have been especially successful in terms of decreasing unemployment.⁶⁵ Due to current changes in spatial distribution, areas with low unemployment have shown up on the central parts of the macro-region as well; further such territories can be found in Bavaria, Czech Republic and Hungary.⁶⁶ Thus, in large areas unemployment ceased to exist as a major socio-economic issue, while new challenges have emerged in the form of working age population retention force, emigration of workforce and need for an economic transition to a less labour-intensive growth.

⁶⁵ Highest decrease in unemployment rates between 2011 and 2018 in percentage points: Brčko 19.2, Vojvodina 13.1, northern Hungary 11.7, Federation of Bosnia and Herzegovina 10, southern and eastern Serbia 9.3, Belgrade Region 8.9, eastern Slovakia 8.6, Šumadija and western Serbia 8.5, Central Slovakia 8.4, Northern Great Plain 8, Severoiztochen 8, Southern Transdanubia 7.3, Republika Srpska 7.3, Central Transdanubia 7.3, Southern Great Plain 7.2.

⁶⁶ Regions with the lowest unemployment rates: Prague 1.3%, Jihozápad 1.5%, Middle Franconia 1.8%, Tübingen district 1.9%, Upper Palatinate 1.9%, Lower Bavaria 2%, Lower Franconia 2%, Střední Čechy 2%, Severovýchod 2%, western Transdanubia 2%, Střední Morava 2.2%, Pest County 2.2%.

It has to be underlined that as a relatively new phenomenon, owing to the significant employment growth and emigration of working age population from some Central and East European countries, extremely low unemployment rates formed. In southern Germany, in the Czech Republic and 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 of recently dynamic markets. In emerging markets, regardless of some major improvements, high unemployment seems to remain a permanent problem in the Balkan and former Yugoslav states in particular.⁶⁷ The highest rates are in Bosnia and Herzegovina, Montenegro and Serbia. Long-term unemployment, lack of new labour-intensive investments, low average salaries and uncompetitive economic structures harden labour market integration of specific groups.

Taking into consideration the unemployed by sex, in the majority of regions the distribution is quite balanced. However, there are 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, while in a few regions unemployment among men is higher e.g. in Romania, Bulgaria.

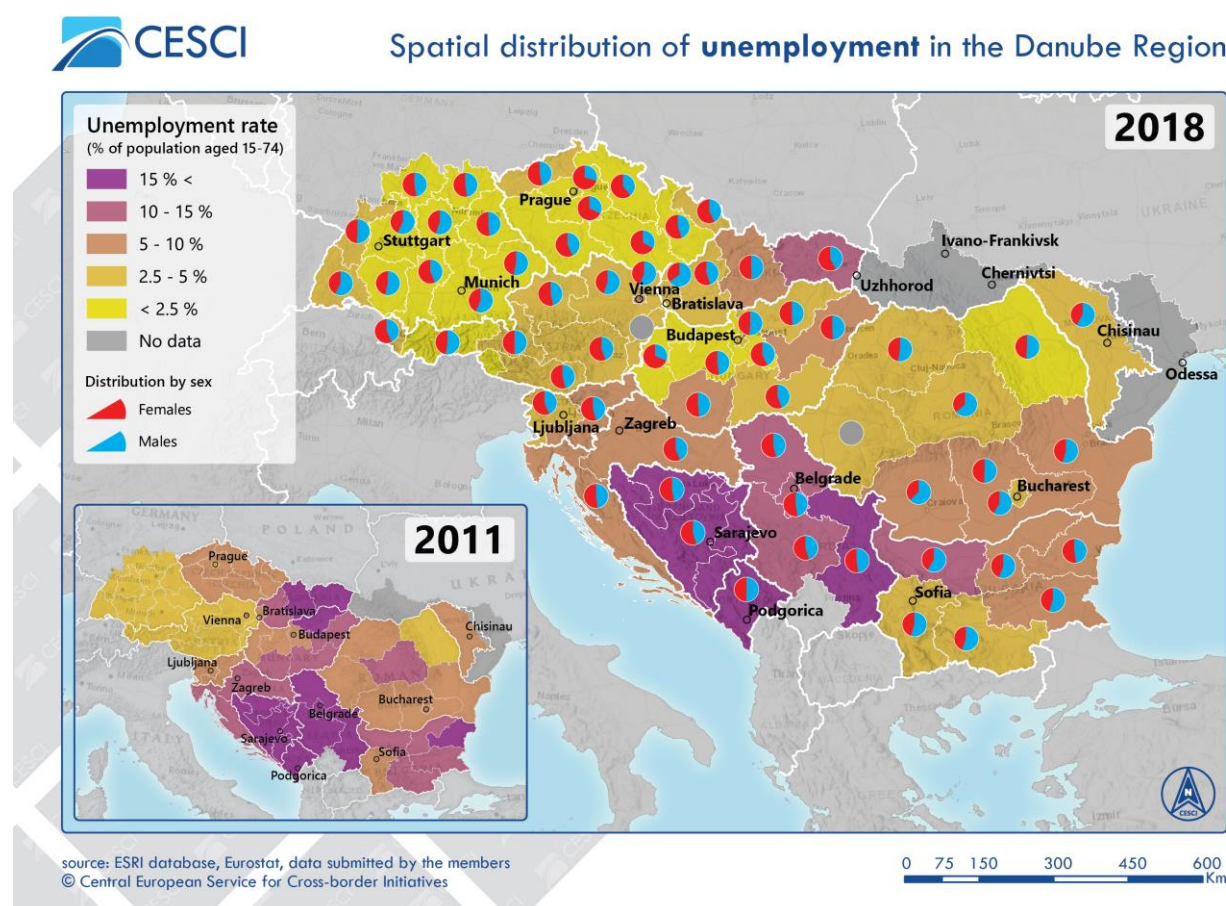


Figure 94: Spatial distribution of unemployment in the Danube Region

⁶⁷ Regions with the highest unemployment rates: Brčko District 19.9%, Federation of Bosnia and Herzegovina 19.2%, Republika Srpska 17.2%, southern and eastern Serbia 16.4%, Montenegro 15.2%, Šumadija and western Serbia 14.1%, Severozapaden 11.3%, Belgrade Region 10.9%, Vojvodina 10.5%, eastern Slovakia 10.1%.

Beside regional differences, there are inequalities in **unemployment according to the degree of urbanisation**, too. Two distinctively different groups of countries can be named. One group consists of those in which urban unemployment acts as a larger problem than rural, especially in Austria (cities: 2.5%, rural areas: 8.9%) and Germany (cities: 2.4%, rural areas: 4.6%). The other group consists of those states where rural unemployment is a much larger problem, where urbanisation means high employment chances. Therefore, there is no single solution for the macro-region, but it is clear that in more and several countries the rate of unemployment in rural areas is outstandingly high and should be tackled (e.g. in Bulgaria the rate is 9.3% in cities and 3.2% in rural areas, in Romania the rates are 5.1% and 3%). In comparison with the EU average the macro-region is characterised by more notable differences in terms of employment based of urbanisation levels, and high unemployment is much more concentrated in rural areas.

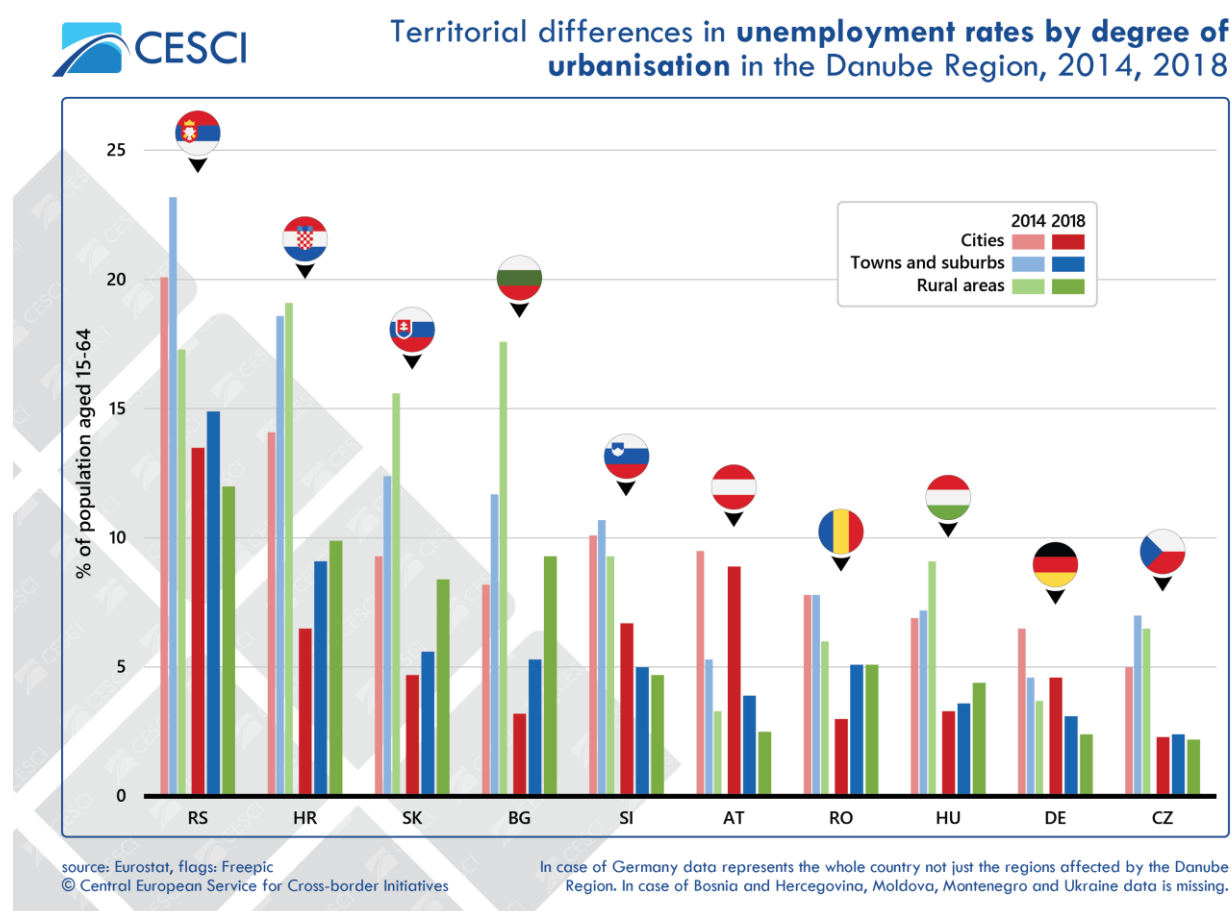


Figure 95: Territorial differences in unemployment rates by degree of urbanisation

Owing to significant **employment** growth across the countries which used to have mediocre or even low data regarding employment rate, territorial differences have decreased in the macro-region. The highest change, which exceeded the EU average (3.8% points in 2018) was registered in Serbia (8% points), Hungary (7.4% points), Slovenia (7.2% points), Bulgaria (6.7% points) and Slovakia (6.6% points). Among the analysed states only in Germany and Austria the

increase of employment stayed below the EU28 average. In contrary to the positive changes across the macro-region, the overall picture is still unfavourable due to still low employment levels in the majority of labour markets. The overall spatial configuration has not changes significantly on state level, and the eastern and south-eastern parts of the macro-region are a permanently under-performing area in terms of employment. While in Germany (75.9% in 2018), Czech Republic, Austria, Slovenia and Hungary the rate is higher than the rest of the EU reaching 70% or higher, in the case of Romania, Croatia, Serbia, Montenegro and Bosnia and Herzegovina (48.8% in 2017) it is below 65%.

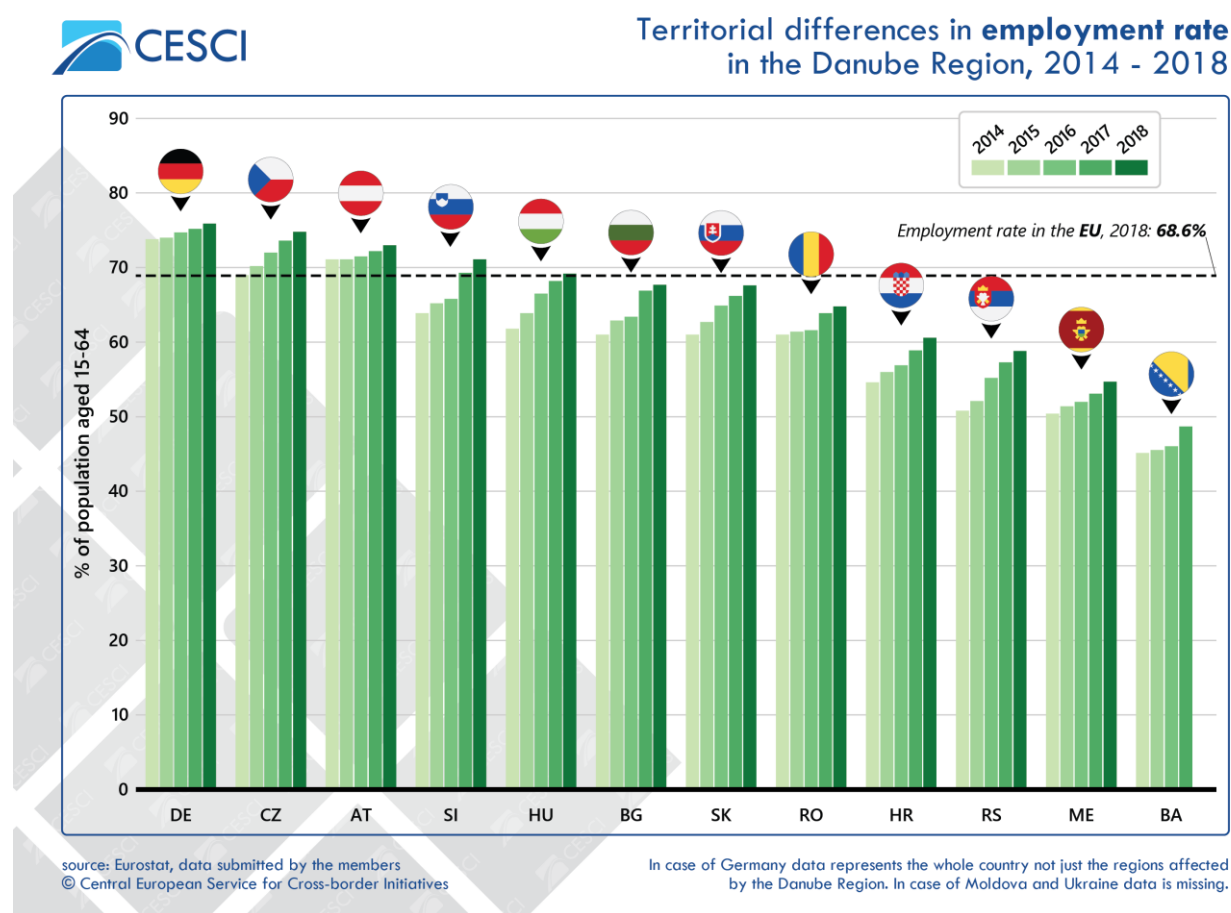


Figure 96: Territorial differences in employment rate in the Danube Region

The **share of employees by educational attainment** has some differences across 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 the Czech Republic, Slovakia, Croatia and Bulgaria and some other regions, employment growth has not affected the less educated strata of the population successfully due to disharmonies in the supply and demand sides. Owing to mass guest worker flows and transnational labour migration, many formerly inland workers became economic migrants in Germany and Austria supporting higher employment rates among the less qualified, often manual labour, who struggled to be employed due to either low salaries or unfavourable economic structures.

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.⁶⁸ 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. As a relatively new challenge, low tertiary employment appears in a significant number of regions, namely Slovakia, Serbia and Montenegro in particular, but Bulgarian, Czech and Hungarian region are affected too.⁶⁹

Since the transition to market economy in post-communist countries there have been severe inequalities in terms of employment within the Danube Region. The level of the very apparent and regular north-west versus south-east fragmentation however have become less relevant in particular by the significant improvement of the Czech, Slovakian, Hungarian, Bulgarian and Romanian labour markets. The biggest improvements between 2011 and 2017 took place in regions that used to be the worst performing ones with constant struggles of how to integrate more people to the labour market. On the other hand, regions with originally high employment levels could only slightly increase employment (generally by less than 3 percentage points during the analysed period). Currently it seems that the severe macro-region level employment crisis, which had hit the central and eastern parts of the region hard, was over by 2017. Germany, Austria, the Czech Republic, Slovenia and Hungary have the highest number of well-performing regions, while Montenegro, Serbia and Croatia form a peripheral region regarding employment. Hungarian regions lead the list of regions with the highest employment growth between 2011 and 2017, which is followed by Bulgarian and Czech regions.⁷⁰ In comparison with Upper Bavaria (80.2%), Lower Bayern (79.2%) and Tübingen (79.1%) in the Federation of Bosnia and Herzegovina (43.2%), Brčko District (39.2%) from Bosnia and Herzegovina, Montenegro (53.1%), southern and eastern Serbia (54.2%), Vojvodina (57.2%), furthermore Šumadija and western Serbia (57.3%) low employment is still a main problem.⁷¹

⁶⁸ Regions with the lowest employment levels (age category 15 to 64) in relation to educational attainment of level 0-2: Federation of Bosnia and Herzegovina 11.9%, Východné Slovensko 17.2%, Severozapaden 20.4%, Republika Srpska 21.2%, Strední Čechy 22.3%, Jadranska Hrvatska 22.3%, Bratislavský kraj 22.5%, Jihovýchod 23%, Stredné Slovensko 24.1%, Západné Slovensko 24.3%, Montenegro 24.4%, Prague 24.5%.

⁶⁹ Regions with the lowest employment rate for working age (15-64) population with tertiary education attainment: southern and eastern Serbia 71.5%, Šumadija and western Serbia 73.3%, Stredné Slovensko 75%, Východné Slovensko 75.6%, Vojvodina 77%, Belgrade Region 77%, Montenegro 77.7%, Západné Slovensko 79.3%

⁷⁰ Regions with the highest employment growth between 2011 and 2017, in percentage points: Northern Hungary 15.1, Northern Great Plain 14.5, Budapest 13.8, Southern Great Plain 13.3, Southern Transdanubia 11.9, Central Transdanubia 11.4, western Transdanubia 11.1, Pest County 9 percentage points from Hungary, Yuzhen Tsentralen Planning Region 11.5, Severoiztochen 9.6, Severen Tsentralen 8.8 from Bulgaria, Moravskoslezsko 9.2, Střední Morava 8.6, Severozápad 8.4, Jihovýchod 8.4, Severovýchod 8.1 percentage points from the Czech Republic.

⁷¹ % of population aged 15 - 64

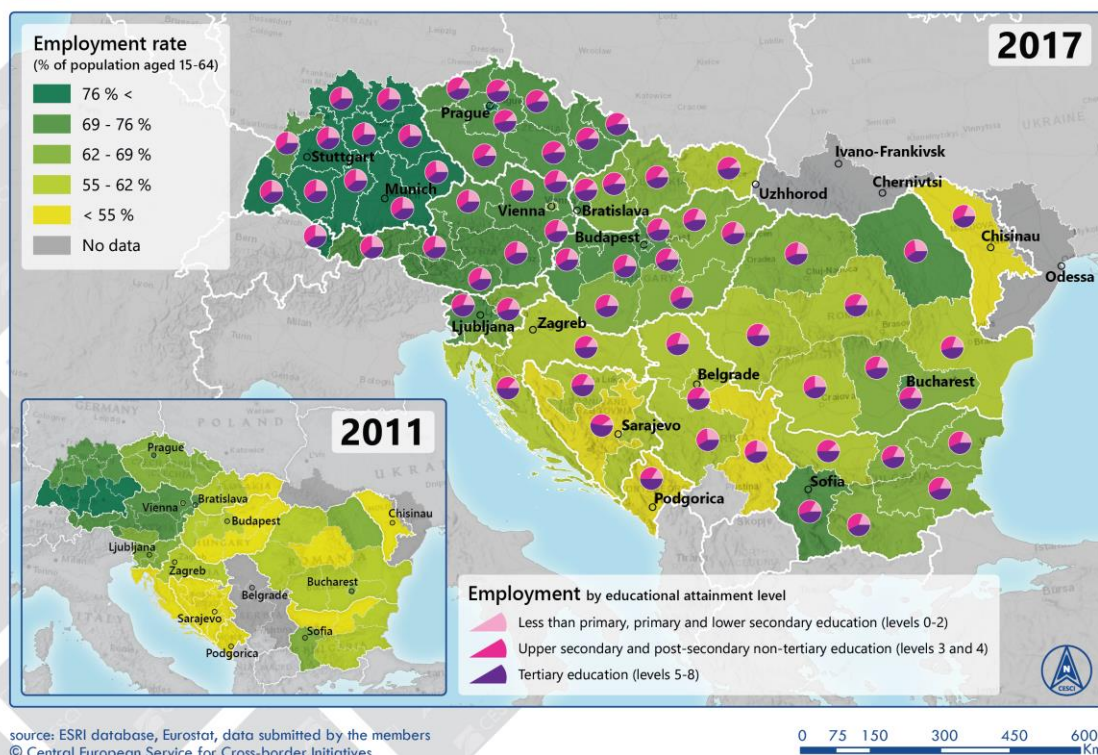
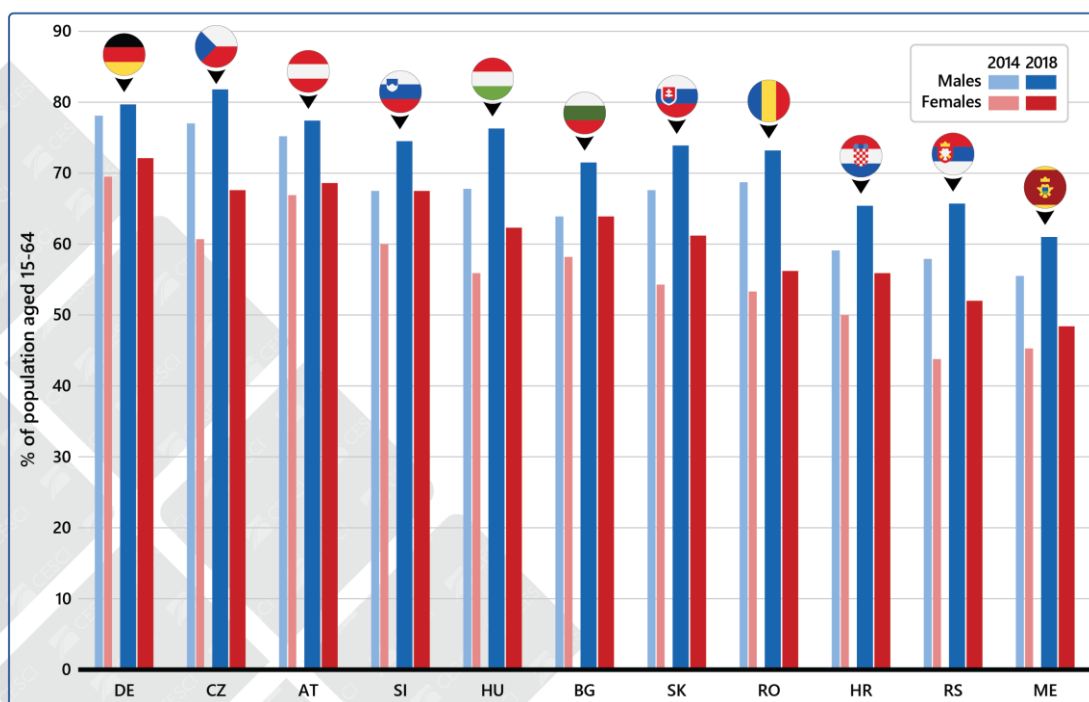


Figure 97: Spatial distribution of employment in the Danube Region



source: Eurostat
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In case of Germany data represents the whole country not just the regions affected by the Danube Region. In case of Bosnia and Herzegovina, Moldova and Ukraine data is missing.

Figure 98: Territorial differences in employment rate by sex in the Danube Region

In the Danube Region **gender inequality** is a real problem taking into account employment levels. In every country the employment rate of women is lower than men. While among men employment levels are more similar to each other, there are huge gaps between the two sexes in many countries. In Czech Republic (14.2% points), Hungary (14% points), Slovakia (12.7% points), Romania (17% points), Serbia (13.7% points) and Montenegro (12.6% points) the gap is still significant in comparison with the EU average (10.5% points). The employment rate for females is under the EU28 (63.3%) in the case of Hungary (62.3%), Slovakia (61.2%), Romania (56.2%), Croatia (55.9%), Serbia (52%), and Montenegro (48.4%).

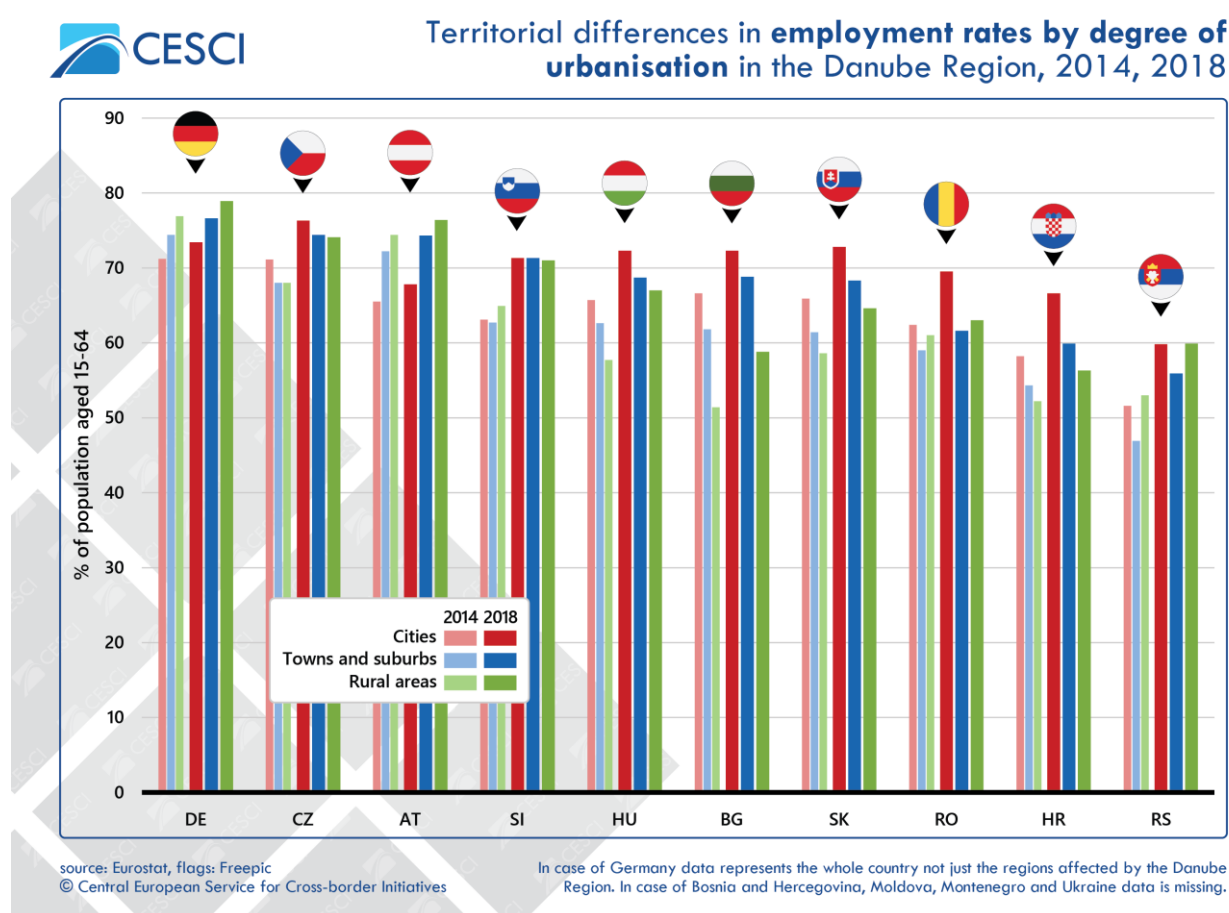


Figure 99: Territorial differences in employment rates by degree of urbanisation

Relatively low employment is more of a challenge of rural areas across the macro-region. Excluding Germany and Austria the employment rates are usually higher in cities (and in the case of many towns and suburbs). There are major differences between rural areas and urban centres, larger than between town and suburbs and rural areas in the related countries. There are smaller inequalities between the possibilities of employment considering cities among the countries than considering rural areas. For example, while in Germany the employment rate is 78.9% for the rural areas, it is only 58.8% in Bulgaria. Compared to the EU28 (cities 68.7%, towns 68.6%, rural areas 68.4%) there are larger fluctuation in data in the macro-region. Along

with Bulgaria in Hungary (67%), Slovakia (64.6%), Romania (63%), Croatia (56.3%) and Serbia (59.9%) the rates for rural areas are lower in comparison with the EU average.

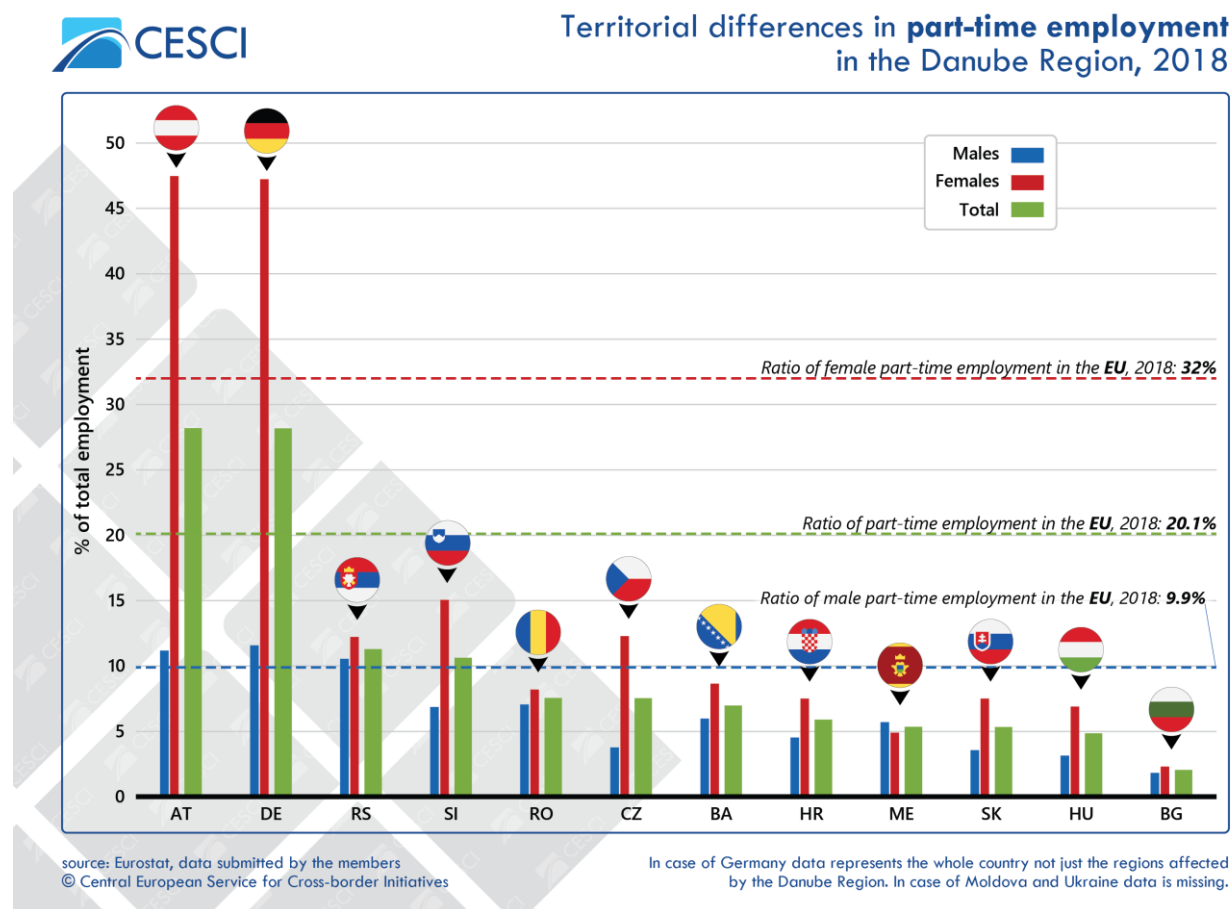


Figure 100: Territorial differences in part-time employment in the Danube Region

There are enormous territorial differences with regard to **part-time employment** in the macro-region. The Danube Region is not known for this type of employment; not including Germany and Austria (28.2% each) the rates in all countries are very low, and are way below the EU28 (20.1%). Excluding the aforementioned states plus Serbia and Slovenia the rates are even lower than of the ratio of male part-time employment in the EU (9.9%). Except for Bulgaria in all countries the ratios for females are significantly or at least slightly higher than of men. The majority of countries are having a total ratio between 4.8% (Hungary) and 7.5% (Romania). While in the case of men the ratios are lower by between -2.9% points and -8.1% points compared to the EU28, in the case of women the difference is even larger; the ratios are lower by between 17% points and 29.7% points. Thus, part-time employment solutions have not been sufficiently introduced in the vast majority of the macro-region.

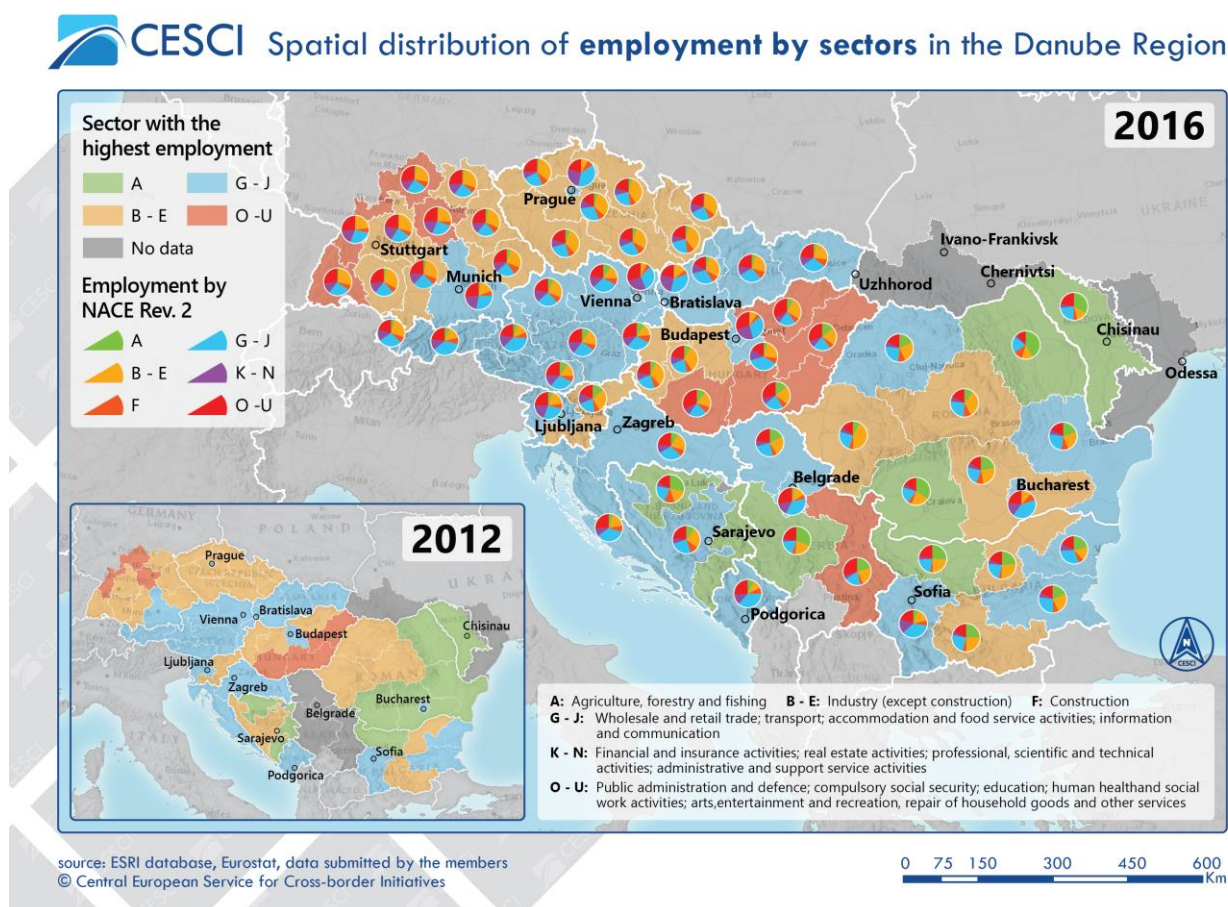


Figure 101: Spatial distribution of employment by sectors in the Danube Region

Based on the NACE categories of **employment sectors**, there are distinctively different types of regions; there are still some massively agricultural regions (e.g. Nord-Est in Romania), historical (e.g. Moravian-Silesian Region in Czech Republic) and new (e.g. Sud-Muntenia in Romania) industrial regions, as well as region with strong service activities. The Danube Region is very heterogeneous in terms of employment by sector. There are countries, where a category dominates in employment; in Austria, Croatia, Slovakia and Montenegro it is wholesale and retail trade, transport; accommodation and food service activities; information and communication, while it is industry in Czech Republic. Agriculture, forestry and fishing have high shares in Romania, Bulgarian, Serbia, and to a certain limit in Bosnia and Herzegovina, and in some regions of Hungary. Industry is very strong in Czech Republic, Germany, and some other parts of the macro-region including e.g. western Transdanubia in Hungary or Sud-Vest in Romania. However, its share is relatively low in the western Balkan states, the most agricultural areas and some tourist regions in the Alps. Sectors G-J represents high shares in tourist regions such as the Alpine Tyrol or the Adriatic Croatia or the seaside of Romania and Bulgaria. Also, these sectors because of retail trade have high shares in many other regions. Categories U-O, i.e. public and social service sectors, give the majority of

employment in many regions of Hungary and Germany, but much less important in Czech Republic, Romania and some Balkan regions.

Compared to the spatial distribution of 2012 of the leading employment sectors, by 2016 the strong north-west and south-east divide became less apparent, but still remained. On the western part, apart from the highly industrialised Czech regions, the share of financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support services activities have significantly higher shares compared to the eastern regions. In some regions (e.g. Upper Bavaria with Munich, Bratislava Region), their shares are close to, or reach, even 20-25% of the total employment.

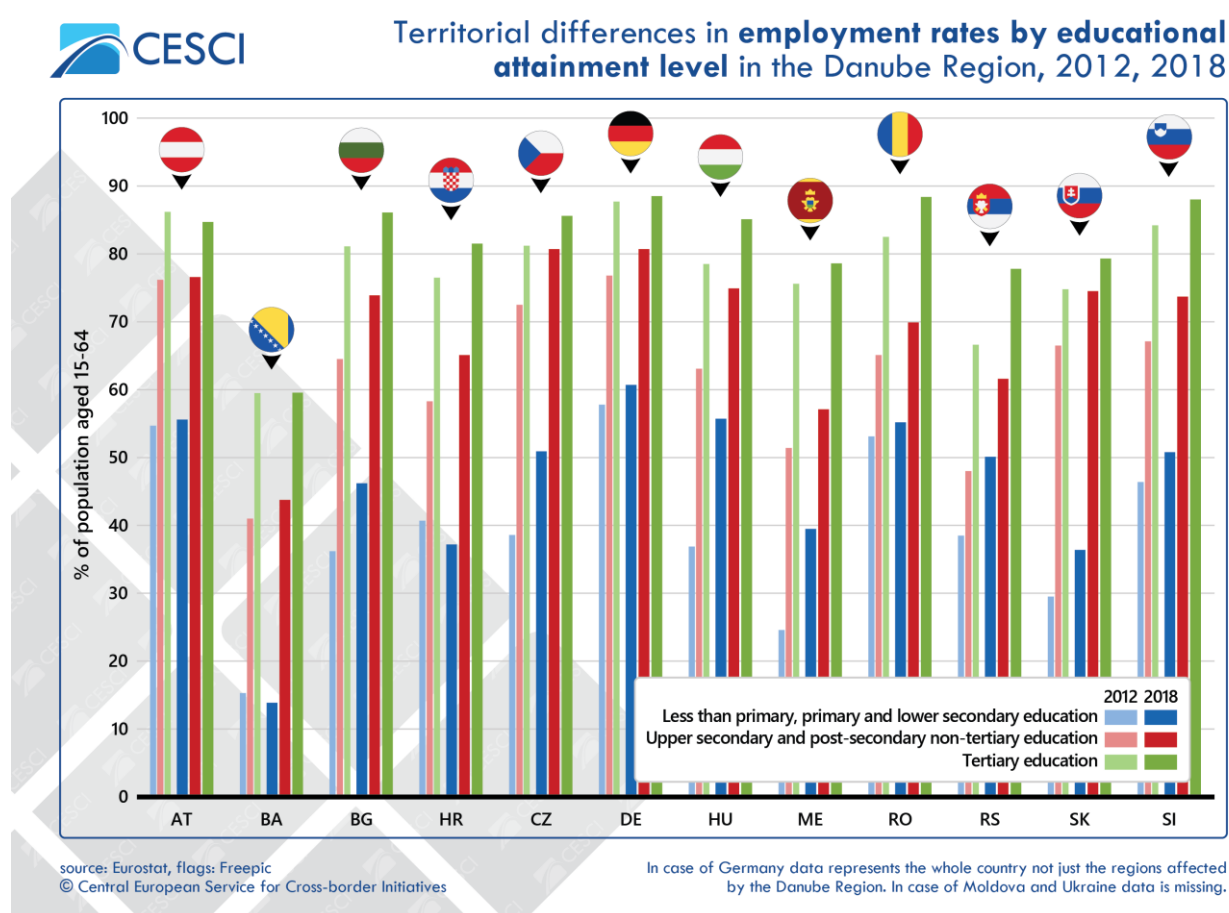


Figure 102: Territorial differences in employment rates by educational attainment level

In the macro-region **educational attainment** largely determinates employability. The higher the educational attainment level is, the higher the employment level is. 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. Excluding Slovakia (42.9% points), countries with huge challenges in the employability of the least qualified and skilled people are from the Balkans; Bosnia and Herzegovina (the rate is higher by 45.7% points in favour of the most skilled compared to the least skilled), Croatia (gap of 44.3%

points) Bulgaria (gap of 39.9% points), and Montenegro (gap of 39.1% points) are all struggling to catch up. Germany (60.7%) is the only country where the employment rate of people with lower secondary education at most exceeds that of EU28 (56.1%).

Regarding increase in employment rates, it can be stated that the largest positive impacts have been reached in the lowest qualified strata of the population, across the majority of the macro-region. In seven countries out of the analysed ones the increase in employment rates between 2012 and 2018 was the highest in the type of population with less than primary, primary and lower secondary education. Compared to the EU28 (increase by 7.7% points) in many countries (Montenegro 60.5% points, Hungary 50.9% points, Chechia 31.9% points, Serbia 30.1% points, Bulgaria 27.6% points, Slovakia 23.4% points, Slovenia 9.5% points) the growth in employment among the people having education with lower secondary education at most was the largest among all three levels. The increase was the lowest among people with tertiary education, but it can be attributed to the already higher chances of employment of people with tertiary educational attainment.

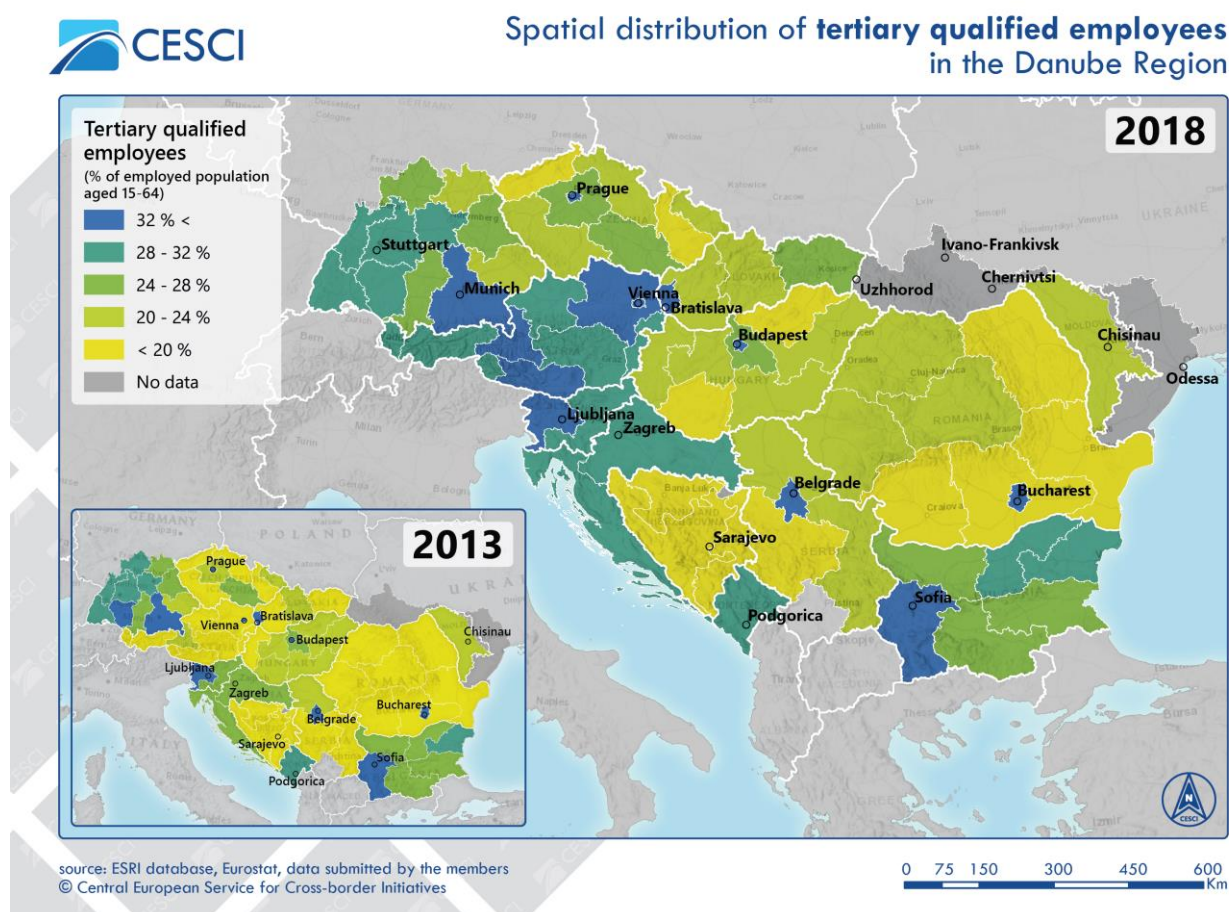


Figure 103: Spatial distribution of tertiary qualified employees in the Danube Region

There are high levels of inequalities in terms of **tertiary qualified employees**; the western region of the macro-region can boast with higher shares, while on the eastern part capital

regions tend to stand out except for Bulgaria.⁷² In addition, many western regions managed to increase employment for tertiary qualified people, and apart from eastern Slovakia (increase of 6.2% points from 2013 to 2018), all the best performing regions were from Austria, Lower Austria (16.4% points), Carinthia (15.4% points), Burgenland (14.8% points), Upper Austria (14% points), Styria (13.7% points), Tyrol (12.1% points), Vienna (12.1% points), Salzburg (11.7% points) and Vorarlberg (10% points). Among the top ten regions, it is only Upper Bavaria (39.3%) and Lower Austria (34.5%) which is not a capital region. All the other, namely Budapest (48.8%), Prague (45.9), Vienna (45.3), Bratislava Region (43.9), Bucharest-Ilfov (43.7), Belgrade Region (41.7), Yugozapaden with Sofia (41.5), western Slovenia with Ljubljana (39.7). Except for Střední Morava (19.9%) and Severozápad (14.7%) from Czech Republic, northern Hungary (19.2%) and southern Transdanubia (19.9%) are capital city regions. All the regions with the lowest share of such employees represent the more eastern and southern part of the macro-region, namely Šumadija and western Serbia (19.7%), Federation of Bosnia and Herzegovina (18.8%), Sud-Vest Oltenia (17.5%), Sud-Est (16%), Sud-Muntenia (15.4% and Nord-Est (13.2%) from Romania, Republika Srpska (14.3%). Furthermore, it also has to be underlined that high share of skilled labour force also could mean better employability, better and more crisis-proof job conditions, higher wages and income level for the households, higher innovation potential and added value.

⁷² The relatively high data from Bulgaria, Montenegro and Croatia is owing to the high share of less qualified workforce employed abroad, who represent high numbers. More educated labour have better chances at the inland, local labour markets to be employed. Furthermore, tertiary level (higher) vocational trainings could have bigger role in education as well as regarding labour market in the related states.

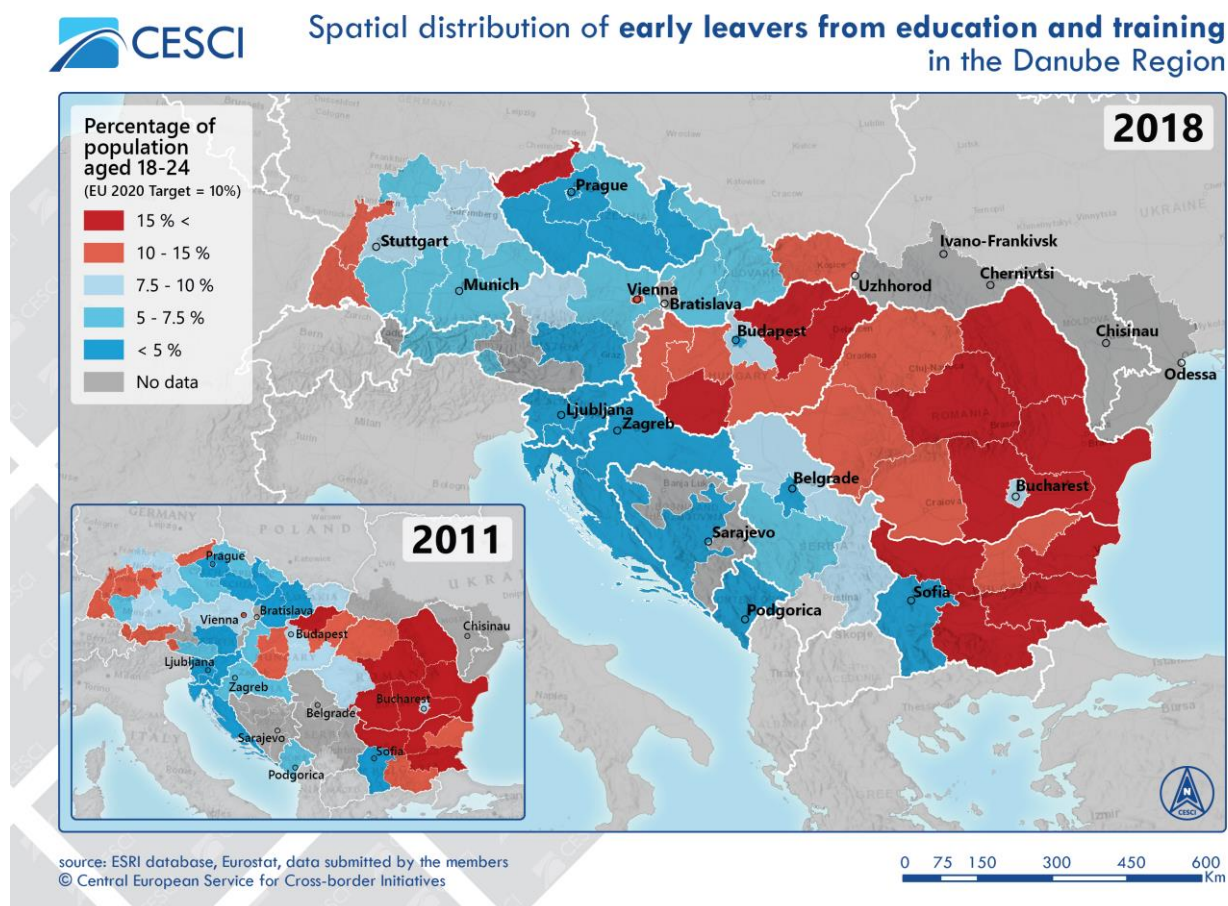


Figure 104: Spatial distribution of early leavers from education and training in the Danube Region

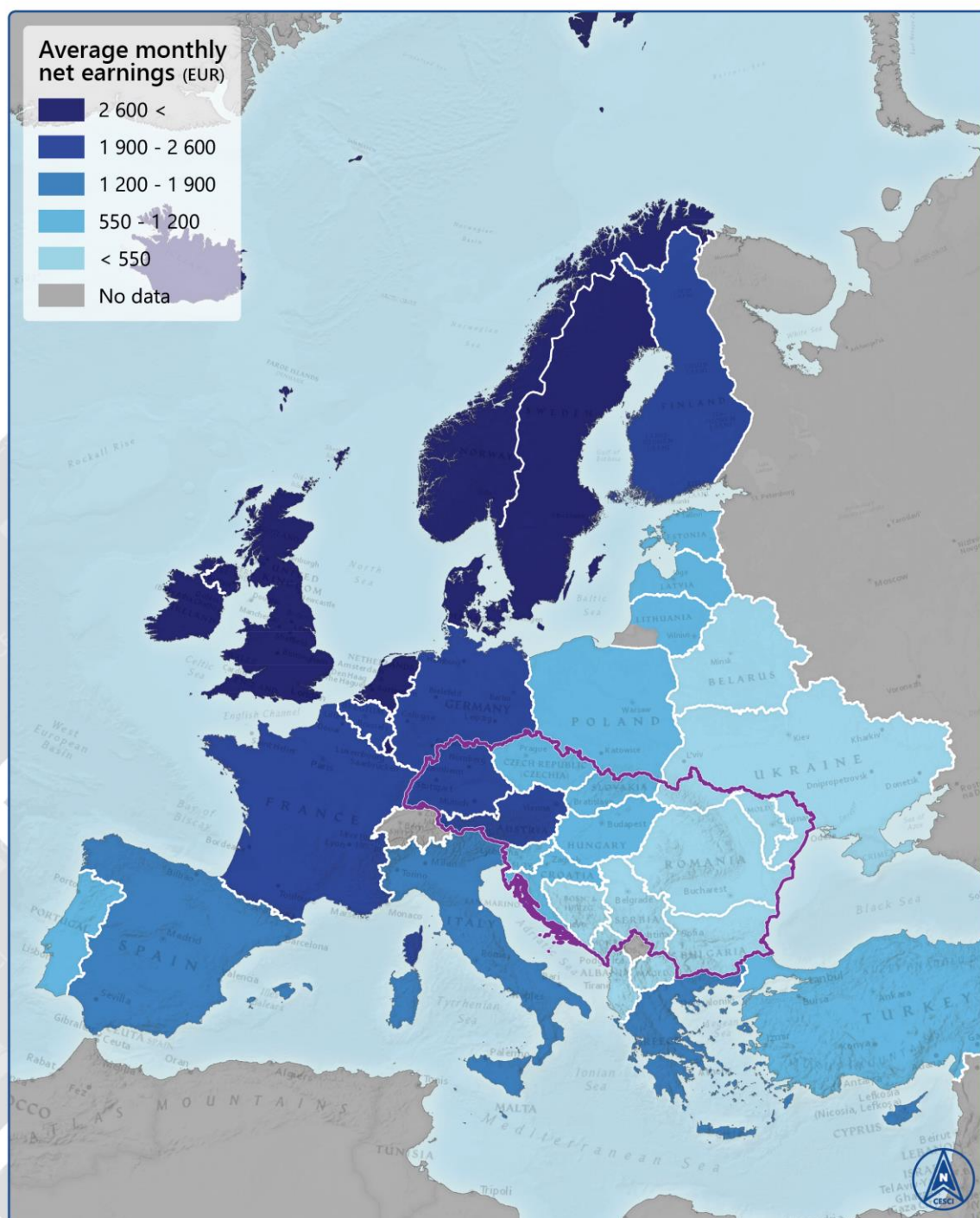
The **ratio of early leavers** from education and training is an informative indicator on a society's current economic situation as well as its labour market prospects. The higher percentage of population aged 18-24 are considered as early school leavers, the less likely it is that the given region can maintain or raise its competitiveness and productivity even on the short, but especially on the long run.

From this point of view, the Danube Region certainly has room for improvement especially in terms of cohesion since on the western parts (apart from Germany, Austria and Czech Republic also including the Balkan Peninsula with Slovenia and Croatia) the ratio is strikingly lower, averaging around 7.5-10%, while from the western border of Hungary towards the east almost everywhere this value varies between or surpasses the 10-15%. While this tendency seems to be overarching, there are also outlier regions: Karlsruhe (10.1%), Freiburg (11.4%) and Severozápad (17.1%) have considerably worse values than its neighbouring regions, while Yugozapaden (4.7%) or Bucharest (8%) reaches better results than their surroundings.

Taking into account the temporal changes, interestingly a deteriorating tendency is observable especially on the eastern regions. Compared to the data from 2011 in most of the Hungarian, Bulgarian and Slovakian regions there are more early school leavers by 2018. The deepest deterioration can be observed in northern Hungary, Severozápad, Východné Slovensko and

southern Transdanubia. Positive changes are also detectable, mostly in German and Austrian regions but also in Central Hungary and Severen Tsentralen. These regions usually contain remote rural areas with high fertility rate of disadvantageous population, which increases its size, but little has taken place in better and longer integrating 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 have been taken with the parents to capital regions and economically more dynamic areas of the respective countries. Furthermore, administrative regional or state level decisions on compulsory school age differ across the Danube Region, and some changes in regulations have resulted in increasing number of school leavers (e.g. because of social necessity of having additional household income instead of focusing on studying). This phenomenon can also lead to further disharmony with the labour market needs and emerging segregation in specific areas of the school networks.

Spatial distribution of net earnings in Europe, 2017



source: ESRI database, Eurostat
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0 250 500 750 1 000 Km

Figure 105: Spatial distribution of net earnings in Europe

The major disparities in earning make the Danube Region the most divided macro-region of Europe. While in Austria (2 590 EUR)⁷³ and Germany (2 464 EUR) the average earnings are higher than of the EU28 (2 013 EUR), in the rest of the Danube Region the level is much lower, and reach as low as 268 EUR in Moldova and 234 EUR in Ukraine. Even in Slovenia (1 041 EUR), which leads the income statistics after the German-speaking states, have the half of the earnings considering the EU28. As a consequence, severe inequality in earnings boosts labour migration from south-eastern, eastern countries to the labour markets of the western states, namely Austria and Germany in particular, but in recent years e.g. Czech Republic and Hungary also became a receiving region as well for Ukrainian workers. Instead of a cyclic migration, by time, the target countries become permanent residence for the workers and their families many occasions. This results in severe labour market disharmony (as well as integration issues in social spheres) on the level of the Danube Region as well.

⁷³ Not the general picture and spatial distribution but the actual data of countries can be subject to reservations especially in relation to the differences between Member States and non-Member States. For candidate countries and potential candidates average nominal monthly wages and salaries are used (in national currencies which had to be changed to EUR, check http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=cpc_pslm&lang=en), while for EU countries annual net earnings were used (single person without children, 100% of AW, check http://appsso.eurostat.ec.europa.eu/nui/show.do?wai=true&dataset=earn_nt_net).

3.5.4 Interethnic conditions and cultural relations

The Danube Region has been characterised by a large diversity of languages, religions, cultures for centuries, which had an influence on the identity of population during the birth of modern nations in the 19th century. 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.

As a consequence of the considerable ethnic mixing, the ethnic minorities can be identified to a certain extent in all countries of the region. It gave rise to numerous conflicts during the modern history the impact of which is reflected even in the present way of thinking of the populations in the region. 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. This would enhance the social cohesion within the Danube 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 disadvantaged 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 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. 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 whole Danube Region regardless the geographic location.

The diverse ethnic conditions can be mapped with good approximation, however, identification and comparison of minorities is impeded by a number of difficulties due to the differences in the methodology of data collection procedures.⁷⁴

⁷⁴ In most countries survey question has reference to the national affiliation and/or native language of respondents, however, in Austria respondents are asked to specify the language most frequently used by them. The data are also influenced by the fact that the question relating to the national affiliation is mandatory. In certain cases this distorts the survey to a great extent; in the Czech Republic almost one third of the population refused to answer, in the recent census of Slovakia the ratio of non-respondents was relatively high. In 2001 the notion of multi-identity was introduced in the practice of ethnic data collection in Hungary, which means the respondents can specify more than one nationality according to their own choice. Respondents with multi-identity were assessed in relation to each ethnic group marked

Beyond the problems relating to the data collection it is important to take into account the fact that identity is a complex and multidimensional notion, however, respondents are classified according to national categories, defined in advance, in the survey. It is quite common, especially in a multilingual environment and cross-cultural communication that people use different languages in different situations, consequently, affiliation may be developed to more than one ethnic community. In such cases a one-time response could be accidental; it is a simplified manifestation of the respondent's ethnic identity unless they have an opportunity to specify more than one nationality they are affiliated to.

It should also be emphasised that various language communities cannot be considered homogeneous. For instance, the largest one of such communities in the region are formed by the Germans, however, due to the different cultural effects being German is quite different in southern Germany, in Austria or in the case of German communities in Hungary or in Romania. On the other hand, most important point in relation to this survey is other than the above but the fact that the central European German minority – despite its shrunk number – is an important connecting link among the German speaking regions and Hungary, Romania, Serbia and Croatia due to the language identity and cultural closeness. Most of their descendants have dual identity, speak several languages and they can undertake an essential role in the implementation of the social cohesion or in the development and maintenance of the cultural and economic relations. In this aspect it could be worth paying more attention to mobile and open foreign employees and students as well.

The largest ethnic minority of the Danube Region is formed by the communities of Hungarians living outside the borders of Hungary. The Hungarian minority numbering near 2 million persons can be an intermediary group between the populations of the Carpathian Region and so they can play an important role in the development of the macro-regional cooperation.

There are several other ethnic groups in the region which functioning as connecting links, similarly to the above mentioned, might promote the cooperation of various cultures. The majority society of Moldova has a strong affiliation to the Romanian nation due to language and cultural similarities; however, it had close political and economic relations with East Europe several times during the history. The eastern Slavic communities living in the country also maintain the interfaces toward the national communities in the eastern region; the Moldavians can promote the communication among the Romanians, Ukrainians and Russians and strengthening cooperation.

by them, so the simple summation of the data could have produced a result exceeding the number of the entire population. In order to avoid this, we ranked the respondents with multi-identity into the group of minorities. The census in Bosnia and Herzegovina is still in progress, that is the reason why there are only estimated values available in relation to ethnic composition of the country. Apart from this, different times of data collection also cause difficulties in the comparison of the data.

Table 4: Nations of the Danube Region⁷⁵

ETHNIC GROUP	POPULATION
Germans	21 209 700
Romanians	17 006 184
Hungarians	11 255 296
Czechs (group of "not declared" included)	9 384 657
Serbs	7 694 184
Austrians	7 088 743
Bulgarians	5 860 884
Ukrainians	5 076 757
Slovaks	4 601 536
Croats	4 447 111
Moldavians	2 905 075
Bosnians	2 197 833
Slovenes	1 633 019
Roma	1 053 081
Russians	901 022
Turks	892 584
Moravians	525 087
Montenegrins	294 109
Gagauz	159 507
Rusins	35 989
Vlachs and Aromunians	32 204
Albanians	30 705
Muslims	28 582
Poles	26 820
Istrians	25 195
Bunjevci	13 553
Italians	12 545
Russians-Lipovanians	10 342
Macedonians	5 600
Others and not declared	8 909 336

The data of the above table clearly show that the largest ethnic group of the region, the Germans (along with the Austrians) makes up only a quarter of the total population. The ratio of the other larger nations (Romanian, Hungarian and Czech) ranges only between 10 and 15%. A large proportion of the total population can be classified as a national minority out of the listed ethnic groups (e.g. Hungarians living in Romania, Romanians living in Ukraine). Nearly half of the Danube Region's population belongs to nations of which population size is below 10 million. The high diversity and mosaic-like ethnic composition is underlined by that

⁷⁵ source: national statistical offices of the countries concerned

17% of the population belongs to ethnic communities with less than 5 million members within the Danube Region.

There are approximately 30 identifiable ethnic groups in the macro-region, which indicates significant national diversity. However, this diversity is related primarily to the variety of culture and identity, and language barriers are slight in the case of certain languages (especially Slavic ones). This can be considered as an advantage in the communication between nations. On the other hand, 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. People-to-people type of initiatives, exchanges and media activities supporting mutual learning, organisation and developing transnational communities and civic initiatives can be of great importance.

At the level of subregions it can be stated that considerable ethnic diversity appears in several areas beside the ethnically homogeneous regions. The coexistence of the Bosnian, Serbian and Croatian people in Bosnia and Herzegovina complies with the framework established by the Dayton Agreement, however, apart from the aforementioned communities there are also other nationalities intensifying the ethnic diversity of the country. Just in Vojvodina, Serbia, 6 official languages are in use. The former historic unit called Banat of Temeschwar (Temesvár, Timișoara) is an area, which is shared between Romania, Serbia and in a small part Hungary. In spite of that in recent decades its ethnic structure has become more homogeneous, but even today more than 20 nationalities can be found there. The historical coexistence of cultures has resulted in the development of a unique social structure; almost every nation of the macro-region is represented in the society of Banat, consequently, it provides a kind of narrowed copy of the ethnic diversity of the entire Danube Region.

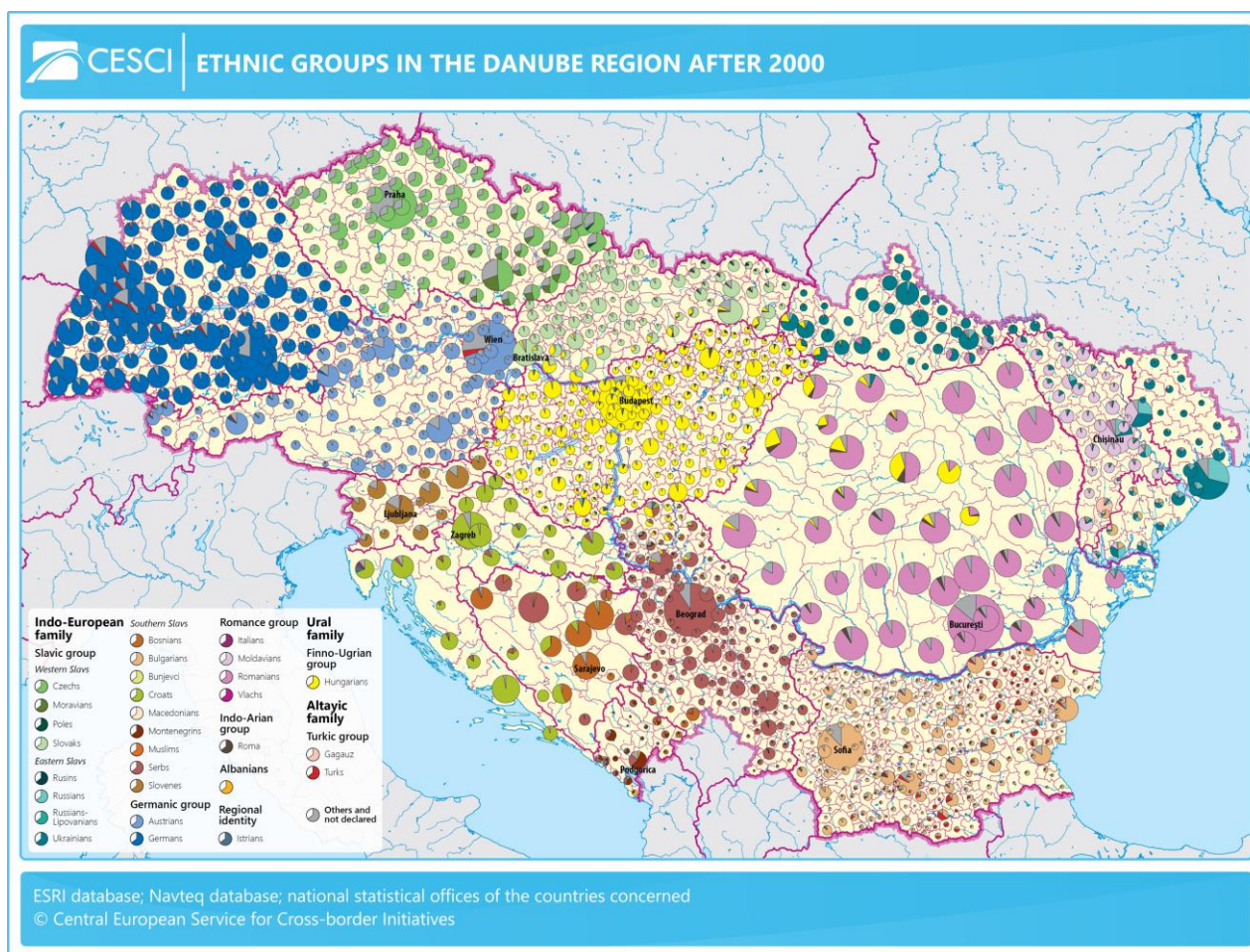


Figure 106: Ethnic groups in the Danube Region

3.6 SWOT analysis and main cohesion challenges of the Danube Region

Once the challenges are identified, strategic directions can be drafted for the programming phase. Due to this section, we are not speaking about separate, national or sectoral development needs: we concentrate on only one objective: that of cohesion. Consequently, the logic is that the transnational cooperation needs are considered as responses to the main challenges of stronger cohesion identified by cohesion analysis. The row in the table named “transnational cooperation needs” can be regarded as a group of suggested strategic directions for the programming phase of the Danube Transnational Programme to be carried out mainly after the finalisation of this given document. The proposed actions are based on the endogenous resources of the transnational area and grouped along by the three aspects of cohesion, by which we will be able to define the potential transnational cooperation needs of all fields. Of course this is not the structure of the future programme, but a full list of possible and territorially relevant fields of transnational challenges and the linked cooperation needs, which should be the source of the further programming process.

3.6.1 Territorial challenges in the Danube Region

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
Landscape and environment factors, climate change, hydrography	hydrography, water management	Shared water catchment areas with important cross-border water resources. The rivers connect various upstream and downstream areas.	Strong cross-border vulnerability and poor water quality especially concerning eastern water bodies.	The elaboration and implementation of a joint water management system for flood protection and a river basin management plan is encouraged by the EU and coordinated by strong international river basin policy frameworks of ICPDR and ISRBC.	Increasing frequency of extreme water levels.	High risk of flood damage.	Activities encouraging cooperation in joint, integrated river basin management and flood risk management along transnationally relevant river systems.
					The lack of international cooperation increases the threat of the	Threat of transboundary contamination and water pollution diffusion.	Support for joint transboundary water management initiatives linked to joint water catchment areas

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
					diffusion of cross-border contamination and water pollution.		including joint actions in monitoring, prevention and reduction of water pollution and emergency response.
			Damaged wetlands as a result of flood protection and creation of trans-European waterways with low regard for environmental considerations. Spread of invasive species and their increasing share creating unbalanced aquatic fauna.		The fragmentation of wetlands increases as a result of construction works. Changing ecological and environmental conditions favourable for the emergence and diffusion of invasive species.	Weakening connections between wetland habitats. Invasive species endanger(ing) ecological balance in water bodies (of the Danube river system).	Revitalization and rehabilitation of transboundary water streams' habitats and adjacent wetland systems in the Danube river-basin. Development of joint solutions to deal with invasive species.
		WEI levels are acceptable in the entire region.	The value of WEI is still close to the disturbing level in some countries	There is no long term risk concerning the balance of water use in the region.	Water use is increasing due to the global warming.	Increasing water use across the region, decreasing ground water levels and shrinking supplies	Support measures for sustainable management of transboundary water abstraction together with water-saving and water retention solutions in agriculture and industry, reducing also groundwater overexploitation

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	climate change	Since the majority of the Danube Region is part of the same southern-central climate change region, the area can be managed jointly. Climate change is considered to be one of the major factors in regional and international politics.	The Mediterranean and south-eastern areas are heavily exposed to the expected impacts of climate change, while the impacts of climate change have become even more profound and apparent despite of intensified combat against climate change	Joint actions to combat climate change are supported by the goal of sustainable growth in the frames of EU policies.	Faster pace of climate change results in more significant territorial inequalities in impacts and abilities such as flood risk or desertification management. The negative processes could accelerate in the near future.	Increasing negative effects and impacts of climate change.	Support for macro-regional initiatives that aim to decrease the effects of climate change (researches, policy recommendations, joint strategies, actions, territorial action plans, development/improvement of forecasting tools).
		Good climate change adaptation abilities in the western countries.	Unfavourable adaptation abilities in the eastern countries in spite of some successful local initiatives.			Low climate change adaptation abilities on nation state level	Propagation of best practices in relation to climate change adaptation methods and strategies.
	landscape and environment factors	Low level of fragmentation in the eastern territories.	High level of fragmentation in the western territories.	The utilization of green infrastructure on EU level.	Infrastructural developments of the transport network increase fragmentation of the eastern areas.	Fragmentation of transnational habitats and ecosystems, insufficient measures to secure biodiversity of the region.	Support for the improvement of ecological connectivity between habitats, nature protection areas along transnationally relevant ecological corridors.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		High percentage of agricultural areas and biologically active areas on a macro-regional level.	Above average proportion of artificial surfaces. Decreasing proportion of arable land and still low share of eco-friendly agricultural lands.	A bigger emphasis is put on the preservation of biologically active surfaces in investment policies.	Economic investments are realized in greenfield areas. Further intensification of agriculture resulting in shrinking biodiversity.	Decreasing biologically active surfaces, increasing artificial land covers.	Knowledge sharing in order to promote ecologically sound farming and the protection of biodiversity.
		Natura2000 sites and the system of Emerald sites have already been designated in the major part of the region.	Large size preserves cause difficulties in regions dependent on intensive farming.	Turning protection status into an economic development factor.	Countries may reduce the size of protected areas for economic reasons.	Low economic utilisation of protected areas.	Supporting solutions for sustainable economic development of (transnationally relevant) protected areas.
		Relatively high biodiversity on macro-regional level, existence of several joint transboundary biogeographical and ecological regions with autochthonous populations.	The presence of invasive species is significant in most countries. Some natural habitat types are not recognised as areas of transnational intervention and cooperation.	Appreciation of the natural and ecological values, habitat types of the macro-region.	Devaluation of preservation on national levels, insufficient funds to restore and protect the original natural ecological values.	Weak management capacities and skills for ecological regions of transnational relevance (e.g. Pannonian landscapes or the Mura-Drava-Danube Transboundary Biosphere Reserve).	Support for transnational management schemes, creation of institutionalised management networks of the ecological regions. Joint conservation and preservation techniques and planning schemes. Institutionalised, long-term management network(s) of 'Danubian' transboundary ecological regions.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	natural and cultural heritage	Potentials for heritage management: large number of cultural heritage sites with joint cultural roots; large number of natural heritage sites with similar natural endowments.	Lack of common heritage maintenance and management in the region.	Valorisation of the shared heritage with transnational relevance results in positive economic and social effects such as growth, development of creative industries, preservation of historical heritage sites etc.)	Uncoordinated valorisation resulted in the emergence of overused and forgotten sites, elements. Territorially unbalanced valorisation.	Weak coordination of management of cultural and natural heritage in the Danube Basin area.	Cooperation of stakeholder institutions on heritage valorisation.
					Uncoordinated management of sites results in unbalanced utilisation and economic development based on heritage (emergence of over and underutilised transboundary heritage)	Lack of transnational risk management plans for sites exposed to climate change and overtourism.	Coordinated preservation and (destination and heritage) management of heritage sites and cultural landscapes.
		Elaborated Cultural Routes recognised by the Council of Europe.	Non-sustainable, underutilised routes in terms of tourism development; areas excluded or weakly integrated into the	Potential in the joint development of new cultural heritage routes, better integration of potential heritage elements and sites creating better tourist products and attractions.	The cooperation and the level of integration in the frames of cultural routes remain low, or even get	Still low level of transnational management and integration of sites and heritages connected by designated routes.	Support for the cooperation, integration and promotion of existing World Heritage Sites and thematic routes.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
			transnational network of Cultural Routes.		weaker, the interconnection on a transnational level loosens up.		
Characteristics of urban network	poly-centrism	Existing and potential cross border polycentric metropolis regions. Huge number of forming functional urban areas and strong metropolitan European growth areas (MEGAs).	Monocentric urban networks are dominant in the region due to the lack of transnational networking. Uneven development processes favourable only for major urban hubs.	Potentials for constructing a polycentric settlement network on macro regional scale.	The idea of polycentrism stays at nation state level; developments would focus solely on metropolis and capital city regions.	Large peripheral areas with lack of central settlement functions, uneven development processes in the settlement hierarchy in favour of already large major urban centres.	Support for a more balanced urban development incorporating not just the capital city regions in order to support a more polycentric development of the transnational settlement network (mainly by supporting middle-sized cities and a better provision of functions across the macro-region). Improvement of transnational networks and cooperation between cities including regional and secondary centres apart from capitals.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	urban-rural relationship	Cities with extensive influencing zones, cities with comprehensive urban functions to supply their hinterlands. Good examples of coordinated and comprehensive rural-urban cooperation.	Extensive inner and outer peripheries with low number of urban functions and unsatisfactory level in terms of provision of central urban functions. Core urban areas and hinterland connections have weaker functionality on the eastern part of the Programme area.	Technological and infrastructural developments encouraging new urban-rural relations.	Cities will not fulfil their role of expanding development impulses to their surrounding influencing zones. Deepening gap among cities and rural settlements mainly due to further population and functional loss considering villages and fast-growing urban centres.	Weak urban-rural partnerships, unfavourable conditions for rural hinterlands.	Development of urban-rural governance solutions.
	smart cities	The western cities except for some eastern best practices have been more successful in implementing smart solutions in many areas of action.	On the south-eastern part of the Programme area the smart city concept has weak recognition and traditional urban management solutions are still dominant.	Information technologies and the creative classes could gain higher importance and role in the development and management of the relevant cities in the East in particular. Transnational cooperation may be developed between	Smart city solutions remain secondary in nationwide policies, the technologies remain available for the already more	Slow integration of innovative urban technologies in the planning, management and development of cities, low level of innovation even in cities.	Supporting innovation partnerships and urban platforms in smart city research and management.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
				towns of the macro-region in the fields of science and industry (e.g. automotive), research and development in order to achieve more favourable macro-regional innovation diffusion.	innovative urban centres while others would be excluded from innovation-oriented developments.		
Status of the borders	border regime	De-bordering processes along the internal border sections of EU Member States especially within the Schengen Zone including less strict border regimes and improving border infrastructure.	Reinforced separation role of external EU borders; emerging discourses about implementing stricter border control and nation state security policies; delayed Schengen enlargement. The Schengen area enlargement strengthened border control along the EU's external borders, thus creating a strong separating role within the Danube Region.	Abolition of visa requirement and the cancellation of other travel restrictions, especially towards non-EU member states and along external borders. New potential impetus for the accession to the EU and to the Schengen Zone with regard to the Balkan states.	Disharmonised geopolitical interests and state policies in relation to international borders due to long-term migration crisis in particular. Slowdown of European integration processes in relation to the non-member states. Increasing migration pressure would put barrier functions to forefront again.	Macoregion fragmented by borders with different statuses (e.g. internal and external) and permeability, various border regimes.	Transnational cooperation in policy-making concerning border-related management and infrastructure matters.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
Territorial cooperation and governance framework	governance	There are multiple bilateral intergovernmental, interdepartmental (educational and/or cultural) connections. Improvements in using e-solutions for governance and public services. Knowledge, expertise and institutions to be created, developed, maintained and shared.	There are significant differences in the administrative system. Non-existing transnational institutions and networks. Lack of territorial governance among national stakeholders.	Establishment of vertical and horizontal cooperation/coordination between different government levels, sectoral policies, areas, governmental and non-governmental organizations and the public enable integration and the distinction of responsibilities, competencies and makes territorial vision more coherent. Inter-institutional cooperation and creation of new transnational institutions where it is needed would help increase the efficiency and impact of the Programme (e.g. in relation to territorial observation).	Cooperation between countries fail to improve, separation effects are conserved.	High demand for inter-institutional cooperation, establishment of joint transnational institutions, multi-governance cooperation to overcome administrative and sectoral barriers based on a territorial approach.	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-sectoral challenges of the macro-region (such as ageing, labour migration etc.)

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	EGTCs and Euroregions	High number of euroregions and EGTCs.	Weak cooperation in the eastern and south-eastern peripheries which started only recently.	The Danube Region will be a hub and focal point in case of European Territorial Cooperation and EGTCs, elaboration of sustainable cooperation models.	Formation of artificial cooperation slows down the cross-border integration process.	Deficient support of the institutionalized cross-border and transnational cooperation	Capacity development of the institutionalized cross-border and transnational cooperation and knowledge networks.
			Collaborations in the Danube Basin cover a relatively small area, in some cases to also overlap each other.	Especially EGTCs, unite actors from border areas contributing to the interoperability of borders.	Administrative and financial hindering factors harden real cooperation with high added value on cross-border issues.		Share of best practices in management and governance solutions.
		Some cooperation integrates their programs into macro-regional strategies.	Huge disparities in the level of institutionalization, activities carried out by them.	The internal cohesion of the region is strengthened by local cooperation and regionally integrated interventions that support the lifting of border lines.	Isolated cooperation contradicts each other's work without having any effects on the macro-region.	Need for harmonization of vertical and horizontal cooperation.	Supporting local cooperation in the information and knowledge exchange on a macro-regional level.

3.6.2 Economic challenges of the Danube Region

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
Economic – Danube Region in the EU	geo-economic conditions	The macro-region can act as a hub of east-west and north-east axes, and a contact zone and gateway to the eastern, south-eastern markets (eastern Europe, Balkans, Middle East and Central Asia). High inequalities can be the basis for outsourcing economic activities to the less developed regions.	The region is located at the intersection where economic disparities between the east and the west become acute. Still profound inequalities among those who benefit from the current geo-political conditions. Sharpening differences in economic interests between the more developed and the catching-up national economies.	The economic and EU integration processes would result in a higher importance of the macro-region due to its dynamic economic development. Chance for the emergence of new development axes on European level.	Descending role in trans-European economic flows including transit, capital as well. Alienating geopolitical situation between the West and the East blocking economic cooperation (Russian embargo, Middle Eastern wars, slowdown of EU enlargement).	Need for overcoming disparities in development. Better utilization of the transit position and closeness to both eastern and western markets. Insufficient actions in taking advantage of the dynamically growing markets on the peripheries and neighbouring the EU.	Investment promotion, marketing and development of economic relations of the macro-region for the surrounding external economies and for companies within the macro-region interested in market expansion to support trans-European business ties.
	economic performance	The Danube Region, especially the majority of new Member States can be the economic driving force/powerhouse of the EU. Growing share in GDP production	The distribution of GDP per capita in the Danube Region (disregarding the strong internal differences) is below the EU28 average.	The resources and territorial capital of eastern markets, less developed regions would be exploited resulting in high growth rate compared to western Europe.	Failing to take advantage of the growth potential, thus the distribution of GDP per capita remains permanently below the EU average. The resources of growth would be fully	Still insufficient measures to take advantage of comparative advantages and economic peculiarities on a transnational level to support more efficient catching-up	Cooperation in smart specialisation with special focus on SMEs. Support for transnational alignment of S3 strategies.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		owing to higher growth rates compared to the EU28 average.			utilised thus no space for further growth remain. The North American direction of economic cooperation would decrease the role of the macro-region.	policies.	
	sustainable growth after crisis management	On macro-regional level the global economic crisis has been overcome successfully, still available growth potentials.	Different development paths after the crisis. Uncertainties in relation to the sustainability of more resource intensive growth policies.	Finding solutions to support long-term economic growths, transition from extensive to intensive economic development.	End to economic prosperity due to insufficient macro-regional resources, uncertainties due to Brexit and the world economy (e.g. US-China trade war, depression of traditional car industry) Low resilience in relation to a potential new crisis.	Unelaborated crisis management models, transnational strategy for crisis mitigation despite of highly exposed economies within the macro-region.	Better analysing the exposure and resilience to an upcoming economic crisis, elaborating of a toolkit and policy how to better mitigate crisis effects.
	foreign economic affairs	The region is a transit and interface zone, a gateway to both western Europe and Russia. Strong ties with certain non-Danube Region national	The intensity and sectoral structure of foreign economic relations are unequal between the east and west. American and Russian influence blocks the	Revaluated geographical position (closeness) to external markets, further integration of the western Balkan states, Ukraine and Moldova to EU	The sectoral and intensity-based imbalance of the external economic relations will be further enhanced in east-west direction.	Uncoordinated western and eastern market interests, no support in a joint market expansion policy as a united macro-region. Slow emergence of new and non-German	Coordinated development of SME support policies on transnational level for their market penetration and foreign trade with the neighbouring region, both with the western

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		economies. Integration to transnational business networks.	emergence of a Danube Region pole. There are large differences between the countries' foreign economic openness. Non-EU countries are less open. The Russian embargo and the economic downturn of Ukraine effects negatively.	markets. Use of internal macro-regional markets as growth factor especially in the Balkans.	 Stronger vulnerability against economic openness due to external geopolitical reasons. Reinforcing protectionist trade policies.	transnational companies seated and operated within the macro-region mostly.	and the eastern markets to the Danube Region.
	FDI flows within the region	Existing relatively strong FDI interactions between countries in the region. Role of German capital and FDI in connecting national economies. The western half of the programme area plays a leading role in the flow of capital in the macro-region as the source of capital. Some	The national economies heavily rely on the German economic area. The structure of FDI flows within the region is disadvantageous for the eastern countries. Missing relevant companies capable of investing in the western countries from eastern economies. Limited number of companies with strong capital flows originated from the	Great potentials in the eastbound transfer of capital, goods, knowledge and technology and the economic convergence of the eastern and Balkan region. Further development of decisive TNCs connecting the macro-region's local economies.	Weakening FDI flows towards the developing regions due to low capital and slow European integration. External FDIs (American, Chinese, Russian, etc.) create hegemony in some developing markets instead of regional stakeholders. The economic decline of areas with a previously good performance can drag the economy	Low intensity of internal FDI flows within the macro region. Unbalanced east-west capital relations, untapped inner potentials to increase growth by FDI coming from inner, macro-regional sources.	Increasing the capacities of the policy making level in advancing policies to facilitate internal FDI.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		national economies and TNCs of the region have started targeting market expansion within the macro-region.	macro-region, while external (American, South Korean etc.) investors have stronger connections and capacities to rule the national markets		of the whole region down. Further vulnerability to German companies' production.		
	added value	High share of certain services (tourism, transportation etc.), high share of industry, reindustrialisation processes. On-going positive structural changes in several national economies.	Insufficient structural changes: still weak technology and innovation intensive activities, low share of business services, products with low added value in eastern economies. Extensive growth only reinforced manufacturing and assembly industries in particular. Uncoordinated, many times weak smart specialisation initiatives.	The production and the demand of manufactured goods, machines and equipment with higher added value will be increasing in relation to the Balkan and eastern European States. Smart specialisation brings synergies for further economic cooperation.	There is a lack of demand on products that represent higher added value and increasing demand on crude, agricultural and semi-finished products. The current extensive developments could be difficult to be sustained given the lack of workforce in particular. Smart specialisation will be regarded less relevant and one-sided favourable for few national economies only.	Low added value of economic activities because of structural problems.	Transnationally coordinated policy support for the production of higher value-added products and services.
		Strong and developing manufacturing industry.	Still high share of low and semi-processed products. Weakly developed	Market demand for products with higher added value increases	Economic relations would not support the development of catching-up		Support for the exchange of best practices. Development of smart specialisation policies.
						Still low level of cooperation in trade and production of higher value-added	Support for joint policies on high end product manufacturing as well

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		Potentials to further production and market integration in relation to many industrial activities and products.	value chains and manufacturing industry, production technologies. Weak knowledge and technology transfer and sharing of expertise on a transnational level.	significantly. Industry 4.0 technologies support transnational product management cooperation.	economies but support the emergence of few centres.	products.	as for transnational exchange on markets, ideas and product development.
	SME sector	Compared to EU averages the number and share of SMEs among total enterprises have remained significant. SMEs are relatively widespread in the macro-region.	The share of innovative SMEs is below the EU average.	Emergence of innovative enterprises, start-ups, entrepreneurs ready to do business. Better integration into transnational supplier networks and emergence of regional companies with increasing number of subsidiaries within the macro-region.	The further weakening of SMEs can cause the region to be more exposed to some of the global economic processes. Economic and trade wars on the global and European markets cause disintegration. Further concentration of innovation potential and capital in the hands of large and transnational companies.	Still low innovation and added value for SMEs.	Supporting transnational business infrastructure policies and transnational business development services to increase value added and innovation potential.
			SME density is lower than of the EU average. SMEs typically have insufficient capital and poor developmental potentials. Low growth potential and weak networking functions.			Non-supportive business eco-system for SMEs.	Support for transnational cooperation in supplier networks and cluster policies in order to integrate the SMEs into vertical and horizontal value chains.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	tourism	Formation of popular mountain and seaside tourist regions, resorts with developed accommodation facilities and high number of overnight stays.	Extensive areas are left out from major tourist flows, lack of sufficient tourism infrastructure and services (e.g. accommodation, tourist routes). Weak capacities in destination management.	Increasing incomes from sending regions, the macro-region becomes even more attractive to both macro-regional and external guests, markets.	Deteriorating tourist sites and destinations (e.g. due to overtourism). Terrorist attacks, growing xenophobia. Growing labour shortage.	Uncoordinated, dot-like investments, not interconnected attractions, infrastructures and services. Lack of territorial approach, inland developments.	Enhancing cooperation in the field of destination management for sustainable integrated development of tourism products.
	RDI and innovation	Conditions for innovation-oriented smart growth are primarily given in the west, which is also displayed in the proportions of RDI expenditures.	The eastern states are modest innovators, and knowledge transfer is still weak, excluded stakeholders and countries from transnational RDI initiatives. Weak transnational cooperation regarding the whole innovation cycle and knowledge production.	Increased innovation potential and the rate of spin-offs due to the favourable territorial structure and specialization of high education institutions.	The investments in RDI remain western and city-oriented, reducing the competitiveness of the Danube Region. Further centralisation and concentration of innovation capacities.	Uncoordinated profiles and capacities of the countries' RDI. Unbalanced RDI expenditures and knowledge management capacities.	Support of joint innovation cluster policies, transnational knowledge production, management and knowledge transfer.
			Lack of ability to implement knowledge-based and technology-intensive activities in the south-eastern	Creation of joint solutions in sharing, developing and managing joint RDI capacities and projects.		Hindering factors in the diffusion of knowledge and innovations (ability to implement knowledge-based	Promoting cooperation, experience exchange between and capacity building of innovation actors, hubs and RDI

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
			regions. High share of regions as technology followers.			and technology-intensive activities).	centres.
		Existence of RDI centres, hubs and clusters, innovative regions and human resources in hi-tech industries.	The proportion of employment and skilled workforce in technology- and knowledge-intensive industries decreases from north-west to south-east, south.	Synergies derived from the connection of nodes associating scientific-technological centres strengthen the cohesion of the region.	Further brain drain from western EU Member States hardens the possibilities of investing in innovation infrastructure in the eastern part. Decreasing financial allocation to sectors influencing RDI expenditures.	Fragmented human resources and financial expenditures for innovation. Weak transnational innovation ecosystem with lack of joint and designated management, scientific research and valorisation.	With a strong focus on policy learning and policies development, strengthening and development of the synergies and cross-relationships between enterprises, RDI centres, clusters, higher education and the public sector, knowledge transfer, triple/quadruple helix approach.
	industry 4.0	Western part of the programme area has taken important steps to the preparation for the fourth industrial revolution. Some countries have developed related strategies and measures.	Vast territories have been lagging behind in realising the importance of industry 4.0 and in introducing comprehensive solutions.	Some research and manufacturing centres could be the forerunners in developing and using new production techniques making them competitive on European scale. By adapting new solutions the least innovative areas could gain new growth impetus.	Further polarisation of the macro-regional industries already known for high inequalities in productivity and competitiveness.	Unprepared economies 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.).

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	economic policies and interests	Increasingly articulated economic policies, realisation of macro-regional economic interests in eastern states, instead of cheap labour and manufacturing industry some governments intend to create more competitive economies.	Conflicts in economic interests between the western and south-eastern national economies. Eastern states cannot maintain high quality of life and wages due to weak economies.	Finding joint solutions for a mutually benefiting macro-regional economy which does not pump out regional resources but builds on territorial capital within the programme area.	Weakly articulated interests in many countries conserve their role as markets and human capital resources for western European economies.	Uncoordinated economic policies based on the retention of regional workforce to settle outside of the macro-region.	Transnational economic planning.
Economic infrastructure	education	High probability for skilled, trained professionals for employment. There are working examples concerning the harmonization of demand and training structures.	High long-term unemployment and sever mismatches due to unfavourable educational, vocational conditions especially in south-eastern states in relation to labour market needs.	The harmonization of labour market demand and training structures contributes to a long-term unemployment reduction in the south-eastern countries. Implementation of better training structures boost regional economies and incomes.	The on-going loss of educated and skilled workforce due to higher economic attractiveness in western European countries while only unskilled and undereducated people remain making their reintegration harder.	Need for harmonisation of labour demand and training structures, the active adaptation of western good practices particularly in the countries of south-east.	Support for the exchange of experiences on vocational training systems; improvement of adaptability of professions; development of dual training schemes; promotion of life-long learning programs.
		Pick-up in student	National education	Strengthening	Uncoordinated	Weak linkages in the	Mutual student

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		migration within the programme area, western and central European university centres are attractive to the most foreign students.	networks with different educational profiles, uncoordinated capacities.	student mobility.	parallel capacities in the education.	use of capacities in institutions of education, further spatial development of the educational and training system based on network cooperation.	mobility programmes, cross-border trainings in synergy with the Erasmus+ Programme.
	accessibility	Western regions and Central-European capital cities with good accessibility between each other and the economic backbone of EU. Significant improvement of road and air links from central European states to western Europe.	Strong east-west inequalities in accessibility in favour of the western part of the macro-region. Unfavourable accessibility among south-eastern networks. Severe lack of sufficient transport links between the northern and southern part of the macro-region. Significant cross-border bottlenecks regarding speedway connections in particular on the eastern part of the region.	The north-south and east-west trans-European transport corridors gain higher importance. New infrastructure elements integrated to TEN-T.	Failure in connecting the separated national sections and the permanent lack of political willingness to support the permeability of borders to eliminate bottlenecks on European level.	Strong east-west inequalities in accessibility and bottlenecks in transport infrastructure.	Activities related to the development of transport corridors within the macro region especially in supporting north-south connections (elaborating studies, strategies, plans and action plans).
	transport -	The trans-	The missing cross-	The new continental	Due to the uneven	Deficiencies in the	Support of

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	inland	European transport network crosses the region in the form of multiple corridors.	border links hinder the intensification of east-west and north-south trans-European economic cooperation, and the expansion of a network economy.	corridors currently under construction will improve the region's accessibility. CEF-like European financial opportunities, EIB sources for comprehensive infrastructure developments.	availability of the TEN-T networks, the impact of developments is not uniformly enforced within the macro-region. Lack of national resources, increasing construction prices and labour shortages blocks major improvements in the network.	implementation of connecting to TEN-T networks according to macro-regional interests.	transnational transport actions focusing on secondary and tertiary missing links in synergy with the relevant CEF developments.
		Railway goods transport still represents a relatively high share.	Road freight transport is still dominant and its share is growing. The national transport development plans in the region are very different (e.g. western countries are more focused on electro-mobility, smart urban transport, freight transport).	Huge potentials in connecting to Balkan and Ukrainian railway lines. Investments in (high speed) train connections between Visegrad Four countries, Budapest–Belgrade.	Further expansion of road freight transport because of uncompetitive rail transport. Decreasing transit role regarding gauge change between Ukraine and EU member states.	Lack of competitive, environment-friendly and low-carbon transport systems.	Joint actions in developing smart, sustainable and green transport technologies and networks, as well as e-mobility solutions.
		High density of railway lines on	Stagnating or decreasing role of	Increasing role of railway transport as	Decreasing role of railway transport	Missing links and service deficiencies in	Harmonisation of rail infrastructure/ service

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		the western part of the macro-region in particular. Still high share of rail transport in public and freight transport in the majority of the related countries.	railway transport in many countries, inequalities in the density and spatial distribution of national networks. Low number of transboundary lines in operation on the eastern and southern part of the Danube Region.	a measure to support more sustainable modes of transport. Increasing development funds from regional and state governments.	because of favourisation of road traffic. Further deterioration and amortisation of railway infrastructure, especially transboundary ones.	the railway system on macro-regional level.	quality standards.
	transport – mobility systems and management	Existence of transport hubs, intermodal centres, introduction of new technologies supporting multimodality and interoperability. Growing number of transboundary transport service and related infrastructure.	Poor interoperability of different transport modes, insufficient number of transport hubs/ interchange points, existence of urban nodes hindering smooth corridor transport and lack of traffic management systems, low level of e-mobility. Lack of integrated and multimodal transport systems on the southern-south-eastern part of the Programme area in particular.	Emergence of smart and e-mobility solutions (e.g. electric vehicles, e-ticketing, electronic passenger information systems, digital traffic management systems)	Even larger technology and management gaps in creating more efficient transport systems.	Lack of system approach leading to poor connectedness of different transport nodes and modes.	Support for transnational policy and strategy development with a special focus on interoperability and multimodality.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	transport - inland navigation	Existence of large number of ports and extensive port infrastructure suitable for a better coordination and use of joint and complementary capacities.	Uncoordinated port management and non-harmonised developments. It is either characterized by the lack of capacity and or its surplus. Parallel developments instead of finding synergies.	Economic development impacts of the mutually beneficial use of port logistics and related infrastructure.	Significant environmental risks and impacts due to river regulations, worsening navigability due to low water levels. Decreasing competitiveness compared to other modes of transport as they gain more support and impetus because of lack of cooperation and coordination in water transport.	Uncoordinated development of port infrastructure.	Support for transnational, environmental-friendly harmonisation of intermodal port development.
	logistics	Existing capacities in multimodal logistics Opportunities with the help of integrated transport modes in major transport nodes. Central Europe's geographic transit position, junctions of major European logistics routes.	The logistics nodes have an uneven spatial arrangement, different quality and different technological capacity. Low ownership in major logistics companies, the infrastructure also serve external stakeholders.	High potentials for creating new cross-border industrial-logistics zones and transnational integrated logistics systems.	The logistics system would not serve better connection to less developed countries, economies marked as less important markets. Decreasing logistic needs in relation to Ukraine, Russia and Middle East, the east-west connections will be intensified out of the region (in favour of Poland and Belarus).	Missing coordination of major trans-European freight transport and related logistical capacities.	Transnational coordination of logistics, development of information, investment and management capacities for the macro-region.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	ICT	High-paced development of virtual accessibility and ICT infrastructure in countries less equipped with ICT infrastructure.	Still existing deficiency in the field of info-communication technologies in the non-EU member states.	Continuing fast convergence of the least developed regions in the fields of digital society and information economy with more economic technologies.	Slow worldwide spread of the ICT exclude countries from technology-intensive development and electronic business information systems.	Macro-regional differences experienced in the field of ICT.	Supporting e-innovation, transnational ICT systems and cooperation.
		Call for development on ICT infrastructure development across the entire macro-region.	Individual ICT systems.	Potential utilization of e-solutions to overcome accessibility problems.	Independently developing, incompatible e-solutions.	Missing coordination of ICT systems in the region.	Identifying ICT development needs on a transnational level, coordination of macro-regional systems.
	energy energy-efficiency, renewable energy	Strong existing connections in the field of east-west energy infrastructure.	North-south energetic connections that can ease the disparities between the northern and southern grids are still largely absent. Dysfunctional newly built connectors.	Approaches on EU level for higher level of diversification of sources and energy safety with the help of macro-regional plans in order to create new north-south connections and a single market in the energy sector. Receiving of American LNG (ports, terminals) to be built within the region.	Failure in integrating the separate national networks owing to nation state interests resulting in dysfunctional infrastructures. Further Russian sanctions, the decrease of the Ukrainian transit. New transnational infrastructures would avoid the macro-region.	Lack of sufficient development and macro-regional integration of different energy networks and of the internal market in order to have more favourable prices.	Support for exploring the energy landscape and framework for a better combination of existing and new energy systems in the macro-regions with a special focus on RES.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		Relatively high rate of biofuels and hydropower utilization. The network to receive and transmit energy and energy sources is available within the region.	High level of polarisation in terms of energy sources and countries, high share of fossil fuels in final consumption. Strong dependence on Russia's hydrocarbons, great need to diversify resources. Russian sanctions, Ukraine's transit position in danger.	The macro region has a sufficient geographic size for the efficient transnational information sharing between the flexible mechanisms, the system operators and transmission system operators.	Growing dependency on Russian oil and gas imports. Growing external (Russian, Chinese etc.) economic interests and management in core infrastructure elements.	Significant energy-dependency on external (e.g. Russian natural gas) energy sources.	Policy and networking support for an increased use of renewable energy resources, encouraging the development of sustainable energy production and transfer systems.
		Existing good practices in building of smart grids (Germany, Austria, Czech Republic and Slovenia)	The smart grid construction is slow in the majority of the region.	The expansion of the smart grid can lead to reduced emissions and energy consumption.	The failure of network development also blocks the potential to utilize renewable energy sources.	Underdeveloped smart grids and storage capacities.	Support for discovering innovative smart and sustainable solutions, technologies.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		Technologies and best practices to support more efficient heating and cooling systems.	High level of fossil fuel consumption, low energy efficiency, especially in the eastern regions and in relation to thermal power stations.	The exploitation of significant potentials in other green energies such as geothermal, wind and solar energy will be carried out with the help of EU funds. Reducing prices support the level up in renewable energy production. Further EU integration and market integration processes facilitate the creation of a more common energy market.	The fossil fuel-dependent energy structure and the slowness of the transition to low-carbon energy use causes low supply-security and energy-security. Divergent national energy policies. The energy market remains fragmented and integration fails to be reached.	High level of energy consumption and low energy efficiency.	Support for harmonised actions and transnational cooperation in order to decarbonise the buildings' heating and cooling system.
		Potentials in developing green transport infrastructure and services (large share of water transport, railway transport, public transport).	Increasing share of non-environment-friendly, private transport solutions. Increasing negative environmental impacts.	Introduction and spread of e-solutions (e.g. electric vehicles). Development of joint electronic and green transport technologies.	Heavily motorised, combustion engine-based transport gain more public and business support. The high price and difficult availability of new solutions will not support the introduction of initiatives regarding GHG reduction.	Still relatively high GHG emissions by the transport sector.	Introduction of alternative fuels and new technologies in transportation.

3.6.3 Social Challenges in the Danube Region

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
Demographic conditions	migration - internal	Positive migration balance and no fear of population loss on the developed western part of the region due to higher income levels.	Severe emigration from less developed eastern, southern regions causing massive population loss and irreversible depopulation of vast areas.	Economic and social capital, knowledge gains for guest workers, economic migrants which could be invested in the sending regions of migrants. Remote/telework instead of relocation.	The differences between the urban and the rural areas are aggravating further. External targets of immigration would cause population loss in the entire macro-region. Further wage gap in favour of western states.	Need for evidence-based policymaking and mitigation of the effects of internal migration. Intensification of internal migration causing challenges in both population gaining (western and urban) and population losing (eastern and rural) regions. Over- and depopulating regions. Call for better service provision regarding life events connected to migration.	Support for better coordinated policies to enhance the circular movement and smooth sociocultural and economic integration of migrants coming from another Danube state (e.g. information and service provision related to administration such as residence permit, social benefits, and other life events).
		Positive migration balance of metropolitan regions, high attractiveness of major urban agglomerations.	Severe emigration from rural areas causing massive population loss and irreversible depopulation of vast areas Intra-regional migration is dominantly among mobile, highly skilled working-age population.	Development of rural economies based on well-preserved natural areas, ecotourism, sustainable agriculture etc.			
	migration - external	Immigrants keep the balance of labour supply and could stop population decrease.	The target areas of immigrants are unevenly disposed on the territory of the region. Growing tensions and fear for national security	The natural population loss of the region is balanced by increased immigration. Integration of	Increasing African and Middle Eastern immigration and even bigger outflows from the macro-region due to the strengthening	Unmanaged influx and integration of immigrants.	Transnational cooperation in the field of border control systems and capacities. .

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
			among governments and local inhabitants. Emigration from the macro-region to external destinations (e.g. UK, Ireland, The Netherlands, Spain, Italy, other parts of Germany).	immigrants could enrich countries with new citizens with higher fertility rates and additional workforce.	pull factors in other part of the World. Additional financial sources are required to support integration or to reinforce border controls and internal security services. Increasing populism and xenophobia.		
	brain drain	Skilled labour force available to generate growth and higher income levels for households; large proportion of skilled labour employed within the macro-region in another country of origin.	Outmigration of skilled labour from the macro-region; unbalanced brain drain effects (weakened and missing strata at the supply areas, weakened social ties in the country of origin)	Massive decline of tertiary unemployment across national economies with weak such sectors; further development of skills and qualifications of such migrants; decreasing labour shortage in highly developed countries.	Complete depopulation of skilled and qualified workforce, further loosening social and relationship capital; lack of educated workforce hinders further catching-up in terms of economy and income level.	One-way migration of (highly) skilled workforce towards the western and urban parts of the macro-region, as well as outmigration of skilled labour from the macro-region.	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 schemesuitable for the needs of the tertiary educated living in rural regions).

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	ageing	Potentials in silver economy: health care, social and tourism facilities to fulfil the special needs of elderly people.	Low fertility rates and negative migration balance resulting in intensifying ageing processes across the whole macro-region, in rural regions especially. High rate of ageing causes growing expenditures on social care systems and social benefits.	Growing development potential in the increasing demand for medical tourism and market-based health care services.	Ageing acts as an even stronger hindering factor for economic development due to lack of workforce which causes global un-competitiveness. Failure in harnessing the elderly in social and economic activities.	Severe ageing is a global problem in the macro-region.	Coordinated policies and strategies for active ageing (e.g. social entrepreneurship) and family friendly functional regional planning policies considering the urban-rural differences.
			The level of social welfare institutions shows significant differences. Deficiencies in provision of public health and social welfare functions.			Deficient social care system.	Support for joint testing of new or re-organized social services and transnational experience exchange with a special focus on solutions which would be capable of complementing the public social care networks (social innovation, social enterprises).

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
Social disparities	low-skilled people	Positive trends in education indicators, higher educational attainment. High share of people with higher education in many regions.	There is still high number of early dropouts in some countries. Low educational attainment is a major hindering factor for employability in some regions, thus it result in low income levels, less crisis-proof jobs for respective people	Further harmonisation of educational systems and mutual recognition of diplomas and qualifications.	Education indicators deteriorate due to the increasing emigration of educated people to already developed western and major urban regions, which results in growing social differences. Increasing number of institutions and study programmes with tuition fees.	Low educational attainment and thus low social mobility of some specific groups (e.g. unemployed and Roma people).	Cooperation of 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), focus on the quality aspect of education.
	poverty	The rate of poverty risk has decreased in many parts of the region.	Still large number of people at a risk of poverty and huge inequalities in the share of poverty. New factors generating further inequalities (e.g. housing poverty, employee poverty, increasing energy and food prices).	Techniques which support higher income rates, alternative and new income sources for the poor, self-supporting economic activities.	Social disparities within the region continue to grow; the lagging countries are less able to decrease their handicap due to the aggravating problems. Further factors could polarise the population, growing income differences.	Need for transnational antipoverty actions that decrease the inequalities and the characteristics of poverty.	Social innovation (Addressing specific groups/fields e.g. ageing society, youth unemployment, minorities, disabled persons, education for all, active labour market policy, social entrepreneurs/SMEs).

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	basic residential infrastructure and supply system	Well-functioning social systems and harmonization of social policies in the western part of the programming area.	The availability of essential public infrastructure decreases from west to east. Underdeveloped, not built basic infrastructures resulting in lower quality of life on the south-eastern part especially.	Recognition of the importance of a profound rural development policy based on the basic residential infrastructure as well. Development of electronic, mobile services.	Increasing appearance, quality of life and thus population retention force in areas with less developed infrastructural background.	Need for development of basic public infrastructure in less developed parts of the programme area.	Promotion of cooperation between the relevant infrastructure development organisations both in east-west and rural-urban dimension.
Labour force migration, training and employment	black economy	The average share of the black economy is below the EU average share of shadow economy in some countries (Germany, Austria, Czech Republic and Slovakia).	The presence of black economy serious problem in central and eastern Europe.	Controlled investments disable the participation of the black economy.	Spreading black work from the peripheries of the Danube Region.	Still high presence of black economy.	Promotion of integrated regulatory and control mechanisms, legal cross-border labour movements.
	employment structure	Potentials in taking advantage of regions with distinctively different employment structures (e.g. industrial regions, tourist resorts), potentials in joint	Still high share of agriculture mainly in the south-eastern part of the region. Slow restructuring. Compared to industries tertiary and quaternary sectors did not grow significantly and	Potentials for forming cross-border economic and employment zone in competitive economic fields (e.g. automotive industry).	Danger of job losses in less global crisis-proof economic activities such as the primary sector or tourism. High vulnerability as only few sectors are responsible for employment	Dependence of the labour market on few particular economic sectors. Need for restructuring and diversification of employment.	Implementation of territorially integrated action plans for employment with special focus on enhancing the spreading of innovation structures targeting mono-

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
		and complementary endowments.	remained insignificant on the eastern parts. Still high level of mono-functional regions, unsuccessful diversification.		because of focused economic developments. Decreasing global demand for e.g. automotive products due to frauds or protectionist policies.		functional (e.g. industrial, tourist) regions in particular.
	(un)employment	Low unemployment levels across the macro-region, unemployment under EU average in many labour markets.	Still high unemployment in some states, persisting long-term unemployment in some regions.	Still available groups for employment and economic growth in case of successful labour market integration.	Stronger structural unemployment due to the emigration of skilled workforce due to better employment opportunities outside the macro-region.	Insufficient development in labour cooperation in tackling long-term unemployment, unemployment for low qualified people.	Support for transnational cooperation and coordination of education/ academia, labour market (supply and demand of professional qualifications coordination)
		High probability for employment in case of high educational attendance.	Growing youth unemployment, graduate unemployment.				
		Intensifying labour market relations between the Balkans, Ukraine and the rest of the macro-region	Uneven, one-sided migration patterns from the east, south-east towards west. High share of vulnerable employee groups (e.g. low or unpaid wages, violation of labour and employment laws, bad living conditions)	Economic stability and growth in Ukraine and in the Balkans resulting in higher income levels. Increasing capital and knowledge transfer, skills development among (former) guest workers in their respective countries of origin.	Long-term uncoordinated flow of such workers towards more western economies. Such outmigration hardens the catching-up of their native economies.	Uncoordinated mass migration from Ukraine serving private interest, still untapped potentials in guest worker systems.	Danube Region level employment services and labour market integration solutions for employees coming from non-Member States.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	labour shortage	High productivity in western economies, employment centres with high attraction resulting in surplus in working age migration balance.	Slow shift from labour intensive activities to technology intensive production. Uncoordinated integration of mass Ukrainian and refugee workers.	Industry 4.0 and other innovative methods, alternative employment options (e.g. telework).	Even growing emigration of working age population from the macro-region, breakdown in the whole macro-regional economy due to intensifying lack of workforce.	Lack of employable active age workers particularly in the eastern and rural parts of the macro-region.	Joint coordination of policies aiming to re-integrate elderly people to the labour market and of less labour-intensive technology developments.
Interethnic conditions and cultural relations	cultural diversity	Development potential based on cultural diversity (e.g. nearly 30 ethnic groups). Recognition of the importance of strengthening national cultures, appearance of cultural and heritage management, cultural industry.	Few opportunities for inter-ethnic dialogues due to the antipathies inherited from the past. Insufficient funds for the preservation of indigenous minority groups, still insufficient measures to support creative industries.	Establishment of cultural bridges, dissolution of formerly strong mental borders; intensification of cultural relations could facilitate cooperation in other topics.	Homogenization processes. Re-emergence of strong assimilation processes and nation state policies.	Underutilised potentials in cultural diversity of the Danube Region and unsettled antipathies inherited from the past.	Support for joint actions promoting and advancing cultural diversity for economic development. Valorisation of cultural values.
	linguistic and ethnic minority groups	Historical coexistence of numerous ethnic, language and religion groups. These groups can serve as connecting links and make communications easier.	In some cases, minority group relations characterized by unilateralism. Still relatively high level of segregation in social networks.	Economic and touristic utilisation of the diverse social atmosphere formed by ethnic and religious diversity.	Neglecting multiculturalism in the region. Suppressing national and official language policies in some countries.	Underutilised linguistic identities and cultural proximities to create growth within the region.	Promoting multilingualism between cultures for economic growth.

		Strengths	Weaknesses	Opportunities	Threats	Main challenges	Transnational cooperation needs
	roma integration	Roma people and culture connects most countries, and there are various programmes to tackle Roma segregation and poverty.	<p>Deepening poverty, poor housing conditions, low education level, high unemployment rate, low incomes and dependency on social transfers.</p> <p>Still no significant achievements in Roma integration on macro-regional level.</p>	Sharing good examples and best practices via and trans-European dialogues. Slowly shrinking, restricted racism and xenophobia towards Roma people with the mass appearance of (illegal) migrants.	Migration crisis puts Roma integration secondary compared to Middle Eastern and African refugees and economic migrants.	Poor integration of disadvantaged groups (e.g. Roma, elderly employed, youth unemployed people) in the Danube Region and missing improvements of their social conditions.	Elaboration and implementation of joint comprehensive programmes, actions for their integration.

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