



Inspire Policy Making with Territorial Evidence

TARGETED ANALYSIS

CE-FLOWS

Spatial dynamics and integrated territorial development scenarios for the functional area of central Europe

Final report // October 2021

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The final version of the report will be published as soon as approved.

Table of contents

Abbreviations	VI
Executive summary	VII
1 Introduction	1
2 Spatial dynamics in the CE area.....	2
2.1 Economic interactions and networks.....	2
2.2 Flow of people.....	5
2.3 Environmental hazards	9
2.4 Accessibility and connectivity.....	13
2.5 Conclusions	19
3 Spatial development scenarios for central Europe	21
3.1 Modelling of the scenarios	21
3.1.1 Regional forecasts of the COVID-19 pandemic	21
3.1.2 The “ <i>New normality</i> ” scenario	24
3.1.3 The integration scenarios and the role of COVID-19	26
3.1.4 Future developments for society, environment and infrastructure.....	28
3.2 Conclusions	31
4 Proposals for transnational policy implementation	33
4.1 Complementarities and synergies with other EU instruments and policies	33
4.1.1 Recommendation 1: Managing Authorities should provide incentives for synergies and joint strategic approaches, especially by involving national and regional policymakers in a systematic assessment of cross-funding opportunities	34
4.1.2 Recommendation 2: Managing Authorities should support the coordination of strategies and plans by designing tailored calls aimed at combining different funding opportunities	35
4.2 Territorial coverage of cooperation initiatives.....	35
4.2.1 Recommendation 3: Managing Authorities should support less-developed regions to test innovative solutions.....	36
4.2.2 Recommendation 4: Managing Authorities should consider territorial typologies in project calls’ design	39
4.3 Territorial evidence on CE as a functional area	41
4.3.1 Recommendation 5: Managing Authorities in cooperation with National Contact Points should consider building a territorial observatory of the CE.....	41
4.3.2 Recommendation 6: Managing Authorities and National Contact Points should organise and promote further research on CE features and raise awareness of its potentialities.	42
References.....	43
List of Annexes	50
Annex 1: Analysis of different typologies of partnerships	51
Main results of the analysis of partnerships	51
Detailed analysis of the typologies of partnerships identified.....	67
Cooperation forums/initiatives and working communities	67
European Groupings of Territorial Cooperation (EGTC)	69
Macro-regional strategies	74
Cross-border cooperation (Interreg A)	78
Transnational cooperation	84
Interregional cooperation	89
Cooperation at the external borders of the EU.....	90
Euroregions.....	92

European Employment Services (EURES)	96
Statistics of partnerships: Horizon 2020, LIFE and Interreg programmes	100
Environmental hazards and flows	100
Commuting patterns.....	103
Research and development	106
Tourism and cultural & natural heritage	109
Electricity and renewable energy	111
Manufactured goods and transportation flows (incl. economic cooperation).....	115
Institutional cooperation	118
Annex 2: Spatial dynamics of ageing in the CE area.....	121
Annex 3: Cluster analysis – manufacturing flows	123
Annex 4: Assumptions for scenario modelling.....	127
Annex 5: Regional disparity trends in the three scenarios.....	129
Annex 6: Additional results of the MASST4 model on the costs of the COVID-related lockdowns.....	134
Additional results for the non-economic foresights.....	135

List of maps, figures and tables

List of maps

Map 1. Major Horizon 2020 partnerships and research and development patterns	3
Map 2. Innovation and socio-economic development: untapped potentials (missed GDP).....	4
Map 3. Population density and net migration in the CE Area in 2019	6
Map 4. Number of partnerships on tourism and cultural & natural heritage between CE countries during 2014-2020 programming period	8
Map 5. Number of partnerships on environmental hazards and flows between CE countries during 2014-2020 programming period	11
Map 6. Energy flows and powerplants in the CE area	13
Map 7. Manufacturing specialisation in the CE Area and rail transport linkages from Stuttgart manufacturing cluster to other clusters.....	15
Map 8. Commuting patterns in CE (international road accessibility)	17
Map 9. Accessibility and socio-economic development: untapped potentials (missed GDP).....	18
Map 10. Difference of regional GDP contraction in CE compared to EU 28 (2020), in GDP percentage change.....	23
Map 11. Average regional GDP growth rates in CE in the New Normality scenario, 2021-2030	25
Map 12. Difference between average annual GDP growth rates in CE compared to EU 28 on the basis of the integration scenario and the New Normality scenario	27
Map 13. Difference between average annual GDP growth rates of the Partial Integration scenario and the Integration scenario	28
Map 14. PM10 emissions in CE in 2030 as a difference difference between the Integration scenario and the New Normality scenario.....	29
Map 15. Multimodal accessibility in CE in 2030 in the Integration scenario	30
Map 16. Transnational cooperation in CE in 2030 in the Integration scenario	31
Map 17. Number of projects and partnerships between CE area regions during 2014-2020 programming period	58
Map 18. Number of projects between CE area regions and non-CE area regions during 2014-2020 programming period	59
Map 19. Ageing in the CE Area.....	122
Map 20. Manufacturing goods and rail transport: Stuttgart manufacturing cluster	123
Map 21. Manufacturing goods and rail transport: Specialised manufacturing cluster (west).....	124
Map 22. Manufacturing goods and rail transport: Specialised manufacturing cluster (east)	125
Map 23. Manufacturing goods and rail transport: Peripheral regions with low manufacturing specialisation.....	126
Map 24. PM10 emissions in 2030 in the new normality scenario.....	136
Map 25. Trust in 2030 in the new normality scenario.....	137
Map 26. Trust in 2030 in the integration scenario	138
Map 27. Transnational cooperation in 2030 in the new normality scenario.....	139
Map 28. Percentage of waste recycled in 2030 in the Partial Integration scenario	140

List of figures

Figure 1. Distribution of projects by thematic cooperation areas in which CE area regions are involved, 2014-2020	60
Figure 2 Top 10 programmes by the number of projects in which CE area regions are involved during the 2014-2020 programming period	61
Figure 3 Top 10 programmes in which CE area regions are involved by total available budget (in mil. Euro) during the 2014-2020 programming period.....	61
Figure 4. Territorial cooperation programmes in which CE area regions are involved, decreasing order by number of projects* **	64

Figure 5 Territorial cooperation programmes in which CE area regions are involved, decreasing order by number of organisations* **	65
Figure 6. The Territorial Dimension of EGTCs	71
Figure 7. The territorial coverage of Macro-Regions	76
Figure 8 Number of projects in the 2014-2020 programming period by cross-border cooperation programme*	79
Figure 9 Number of projects in the 2014-2020 programming period by transnational cooperation programme*	85
Figure 10. Area of the Cross-border Cooperation Programme Poland-Belarus – Ukraine 2014-2020 (dark green – core area, light green – adjoining area)	92
Figure 11. EURES TriRegio map	98
Figure 12. EURADRIA map	99
Figure 13. Total, between Countries, and within Countries Theil index for the three scenarios	132
Figure 14. EC (X-Axis) and MASST4 (Y-Axis) forecasts of expected GDP contraction in 2020	135

List of tables

Table 1. Assumptions for forecasting the regional costs of the COVID-19 pandemic	21
Table 2. Overview of the main typologies of existing partnerships	52
Table 3. EGTCs in CE countries	72
Table 4. Territorial coverage of EGTCs	73
Table 5. Euroregions in CE countries	93
Table 6 Partnerships and cooperation: environment thematic cooperation area during 2014-2020 programming period	100
Table 7 Partnerships and cooperation: environment thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	102
Table 8 Partnerships and cooperation: commuting patterns thematic cooperation area during 2014-2020 programming period	103
Table 9 Partnerships and cooperation: commuting thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	104
Table 10 Partnerships and cooperation: research and development thematic cooperation area during 2014-2020 programming period	106
Table 11 Partnerships and cooperation: research and development thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	108
Table 12 Partnerships and cooperation: tourism thematic cooperation area during 2014-2020 programming period	109
Table 13 Partnerships and cooperation: tourism thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	110
Table 14 Partnerships and cooperation: electricity and renewable energy thematic cooperation area during 2014-2020 programming period	111
Table 15 Partnerships and cooperation: electricity and renewable energy thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	113
Table 16 Partnerships and cooperation: manufactured goods and transportation (incl. economic cooperation) thematic cooperation area during 2014-2020 programming period	115
Table 17 Partnerships and cooperation: manufactured goods and transportation (incl. economic cooperation) thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	117
Table 18 Partnerships and cooperation: institutional cooperation thematic cooperation area during 2014-2020 programming period	118
Table 19 Partnerships and cooperation: institutional cooperation thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)	119
Table 20. Assumptions for the New Normality scenario	127
Table 21. Assumptions for the integration scenarios	127
Table 22. Average yearly regional GDP growth rates for the period 2021-2030 in the three scenarios	130

Table 23. Forecasted national growth rates in EC (2020) and according to the MASST4 model simulations	134
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Abbreviations

CE	Central Europe
ESPON	European Territorial Observatory Network
GIS	Geographic Information System
MASST	MAcroeconomic, Sectoral, Social, Territorial
MRS	Macro-Regional Strategies
NUTS	Nomenclature of Territorial Units for Statistics

Executive summary

The CE-FLOWS targeted analysis focuses on the Interreg CENTRAL EUROPE programme area that encompasses the territory of nine EU Member States, (i.e. Austria, Croatia, the Czech Republic, Hungary, Poland, Slovakia and Slovenia, as well as parts of Germany and Italy) making up 23% of the EU territory. It provides in-depth insights into the spatial dynamics and existing flows across regions in Central Europe (CE) and identifies main development potentials, drivers and bottlenecks in this functional area. Emphasis is placed on how transnational cooperation structures, governance mechanisms and solutions could be tailored to reduce economic and social disparities and foster integrated territorial development in CE. Through a set of quantitative and qualitative methodologies, the project team developed a regional characterisation of the NUTS2 regions in CE, identifying regional patterns (e.g. territorial, socio-economic, demographic). These regional patterns comprise as well the connections between CE regions on different thematic areas, highlighting the existing transnational cooperation structures and projects in which CE regions were involved over the 2014-2020 programming period.

The identified characteristics of the CE regions and their regional resources (natural, human and economic) were then analysed linking socio-economic development to regional assets and mapped.

Spatial dynamics in the CE area

This study highlights **significant discrepancies between regions of CE in terms of research and development patterns, accessibility and labour commuting, pollution, energy production and consumption**. In particular the East-West divide, rooted in the historical, political and economic development of these countries, is still visible despite decades of interactions between regions. The highly urbanised manufacturing and innovation hubs of the western regions are strongly endowed with researchers and well-connected in Horizon 2020 networks and Interreg partnerships. **The drivers of innovation are urbanised regions in the western parts of the CE area**, which generally feature well-integrated private and public R&D efforts. **The disparities in terms of human capital endowment between more urbanised and less urbanised regions are even sharper in the eastern part of the CE area**: human capital in those regions (Poland, Czech Republic, Croatia, Slovakia, and Hungary) tends to emigrate to other regions in the west and north-west of Europe (e.g. Rhineland, Benelux) which are attractive because of their very high innovation output and private R&D expenditures. The degree of innovation is closely linked to the level of economic specialisation and specifically to manufacturing activities, which constitute a fundamental economic sector as the **CE area produces around 68% of total value added in manufacturing in the whole EU**. Manufacturing activities in the CE area are driven by **hubs featuring high economic specialisation in terms of gross value-added generation and employment**. These hubs are in more urbanised areas and largely in northern Italy, southern Germany, and central Poland. However, these manufacturing hubs are partly hampered by **insufficient transport interlinkages between far eastern and western regions** due to issues of **transport interoperability and deficient car and rail infrastructures**. In terms of demographic change and migration patterns in the CE area, urban regions generally face higher levels of net migration and lower rates of ageing (share of individuals aged 65 years and more), particularly in western areas. Furthermore, there is a clear East-West split, with more eastern regions facing faster population ageing between 2014 and 2019 although these regions also feature (on average) lower shares of the population aged 65 years and over. Even if commuting flows between Member States are rapidly increasing in the CE area, **the absolute number of cross-border commuters remains relatively low compared to other regions in the EU**. Metropolitan areas close to national borders in CE do not attract as many cross-border commuters compared to other parts of Europe, and the **lower (compared to western Europe) population density in the CE area** generates low demand for public transport. The regions of the CE area are also characterised by a **concentrated generation of pollution in urban and industrial centres, mostly around northern Italy, Poland and southern Germany**, and in **regions with high artificial surface area share**. Uneven patterns have been observed also in electricity and energy networks of the CE area, which are country-specific and heterogeneous: **some regions rely largely on fossil fuels** (particularly in the eastern regions of the CE area), **while other are highly specialised in renewables** (e.g. Austria). However, the high installed capacity of non-renewables and transmission grid issues stifle large-scale renewable development across the whole CE area.

Spatial development scenarios for central Europe

Statistical analysis allowed to forecast different trends and scenarios of the future integration process within the CE area in view of 2030, highlighting what is going to be the territorial impact of the predicted/expected development trends, considering also the impact of the current COVID-19 pandemic and the related lockdown measures taken across Europe. The results of this analysis are three scenarios characterised by different levels of economic, social and environmental integration of the CE area: the *New Normality* scenario, the *Integration* scenario and the *Partial Integration* scenario. The expected outcomes for 2030 in the **New Normality scenario** can be summarised by a **significant economic growth in the CE regions hit the hardest by the health crisis** (e.g. Italian regions), where the **rebound is more significant and offsets the losses accumulated in the first wave of the pandemic**. Despite slightly lower GDP growth rates, the **overall economic performance of central and eastern regions remains stronger in the long run due to the lower losses registered during 2020**. What distinguishes the *New Normality* scenario from the *Integration* and the *Partial Integration* ones is the long-term impact of the pandemic on other economic and non-economic indicators different from GDP. Notably, **PM10 emissions in the *Integration* scenario are expected to decrease, due to the fact that through further integrating CE areas, manufacturing activities could further concentrate in less production plants, thus causing a decrease in transport-induced emissions, and the resulting decrease in freight transportation**. Interestingly, this effect is particularly strong for regions in central Europe, where manufacturing plants still occupy a relevant share of the labour force, and, thus, where a more integrated approach to production would have the greatest benefit. However, the pandemic might have long-term negative effects on trust among people and mobility for different purposes (e.g. leisure and business). In the *Partial Integration* scenario, the overall outcomes for 2030 are weaker growth in FDIs, border effects (e.g. legal, administrative and infrastructural barriers) in high-tech manufacturing activities, lower trust, social capital and tourist flow.

Proposals for transnational policy implementation

A set of proposals for policy intervention has been built based on the results of the analyses and leveraging on existing cooperation patterns, transnational cooperation structures and governance mechanisms, exploiting complementarities and synergies with other EU instruments and policies (such as macro-regional strategies).

Policy makers should focus on **promoting complementarities and synergies between EU funds available in the CE area**. For example, Managing Authorities should focus on providing incentives for synergies and combined strategical approaches. Similarly, **National and Regional Authorities should systematically assess and support synergies across funding opportunities**. As Interreg CENTRAL EUROPE is the **only transnational programme bridging all four current Macro-Regional Strategies (MRS)**, its Managing Authority can play a pivotal role in strengthening the niche of transnational cooperation in view of 2030 by exploiting complementarities between EU Programmes supporting these strategies.

Given its diversity, a **balanced territorial coverage of cooperation should be applied in CE**. Indeed, the different levels of economic development and specific geographic features identified in our analysis should be taken into account when designing policies and strategies in order to **avoid that cooperation is concentrated in few areas**. This would imply that **Managing Authorities should support less-developed regions to test innovative solutions**. For instance, **boosting knowledge sharing and technology transfer on innovation among CE** could narrow the West-East divide in the Central Europe functional area: strengthening the cooperation between universities, companies and business support institutions is crucial, especially in Poland, Czech Republic, Croatia, Slovakia, and Hungary, characterised by low regional innovation scores. **Filling the technological gap of the eastern regions is a priority also to facilitate the transition of the East to “green energies”**. Positive examples of cooperation in this sense are the “multi-lateral gas projects”, trans-border cooperation projects allowing the regions involved to achieve a satisfactory level of diversification of supplies, but also favouring the generation of an **adequate “critical mass” of qualified human capital in the East**: in fact, the deployment of these innovation-intensive projects facilitates the **attraction and the formation of qualified human capital in eastern regions**. Transnational cooperation projects under the Interreg CE Programme play a similar role, for instance projects promoting

infrastructure investments for multi-modal environmentally friendly freight¹, involving project partners from western (Germany) and eastern (Czech Republic, Slovakia and Hungary) regions.

Spillovers of human capital (i.e. in this case, flows of qualified labour force from more advanced to less-innovative regions) are **one of the key mechanisms to improve innovation output and eventually economic growth**. These are not only drivers of competitiveness which improve labour market performances, but might in turn generate enough demand to stimulate the provision of integrated public transport in cross-border regions: this demand boost would offset the current **low demand for public transport**, which is linked to a **population density which is lower in central Europe as a whole, compared to western or northern European functional regions (e.g. Benelux, France, Rheinland)**.

Finally, an **improvement of the knowledge base and territorial evidence on functional relations in CE** would have a twofold aim: on one hand, it would strengthen stakeholders' awareness of the untapped potentials in each CE region, on the other hand it would strengthen stakeholders' recognition of Central Europe as a functional area characterised by a pattern of common opportunities and challenges. Therefore, **Managing Authorities in cooperation with National Contact Points should consider building a territorial observatory of the CE**: by supporting collection of data and information on economic, social and environmental interactions and flows in CE, it is possible to deliver a better and more informed decision-making process (in cooperation with the Member States, regions, and municipalities) which would favour transnational cooperation for an evidence-based development of the CE functional area.

¹ CORCAP, Interreg Central Europe. <https://www.interreg-central.eu/Content.Node/CORCAP.html>

1 Introduction

This targeted analysis provides in-depth insights into the spatial linkages and dynamics of Central Europe (CE) as a functional area, through the application of quantitative and qualitative tools. Section 2 identifies the main spatial development potentials able to reduce economic and social disparities in CE, together with drivers and bottlenecks that can be best addressed by transnational cooperation to further strengthen functional links that are effective for the integrated territorial development of CE. The project team developed a regional characterisation of the NUTS2 regions in the CE area (Section 2), identifying regional patterns. Regions within the same cluster show similarities regarding their territorial, socio-economic, demographic and/or other thematic profiles.

To relate the different typologies of NUTS2 regions to the existing transnational cooperation structures, an analysis of existing partnerships² has been performed. This analysis describes the connections between CE regions on different thematic areas, highlighting the main cooperation dynamics and projects in which CE were involved over the 2014-2020 programming period.

The identified characteristics of the CE regions and their regional resources (natural, human and economic) were then analysed linking socio-economic development to regional assets. Bottlenecks limiting the potential development of the CE area have been highlighted, together with the areas where an efficient exploitation of the existing synergies could drive the integration of the regions from an economic, environmental and social point of view. In addition, we forecasted different trends and scenarios³ of the future integration process within the CE area in view of 2030, highlighting what is going to be the territorial impact of the predicted/expected development trends (Section 3). Notably, this analysis takes into account the current COVID-19 pandemic and the lockdown measures taken across Europe to prevent the spread of the disease in 2020 and in the first quarter of 2021.

Finally, thematic experts, professionals and public authorities from CE regions were asked to give their opinion on the analyses performed. This stakeholder engagement on one hand offered first-hand insights into drivers, bottlenecks and expected developments of the CE area. On the other hand, it contributed to shape and to fine-tune the proposals for future policy recommendations (Section 4). These recommendations build on existing cooperation patterns, transnational cooperation structures and governance mechanisms, exploiting complementarities and synergies with other EU instruments and policies (such as macro-regional strategies).

² The partnership analysis relied on three main data sources (Horizon 2020 programme, Interreg programmes and LIFE programme) over the 2014-2020 programming period.

³ See Section 3 and Scientific Report for a detailed description of the methodology and the results.

2 Spatial dynamics in the CE area

This section presents an overview of the spatial dynamics in the CE area. The findings presented in this section are the result of quantitative and qualitative analyses, presented with the support of maps displaying flows and patterns for the four main topics of this study: **economic interactions and networks** (Section 2.12.1), **flow of people** (Section 2.2), **environmental hazards** (Section 2.3) and **accessibility and connectivity** (Section 2.4).

2.1 Economic interactions and networks

Our analysis of economic cooperation patterns in CE focused on the key role played by innovation in this field. “**Research and development**” is a broad thematic cooperation area and includes:

- Horizon 2020 thematic priorities related to fostering cooperation on the development of joint solutions (referred to as ‘hard’ R&D cooperation) such as future and emerging technologies, ICT, nanotechnologies, advanced materials; and
- Interreg cooperation themes such as new products and services, ICT and digital society or scientific cooperation.

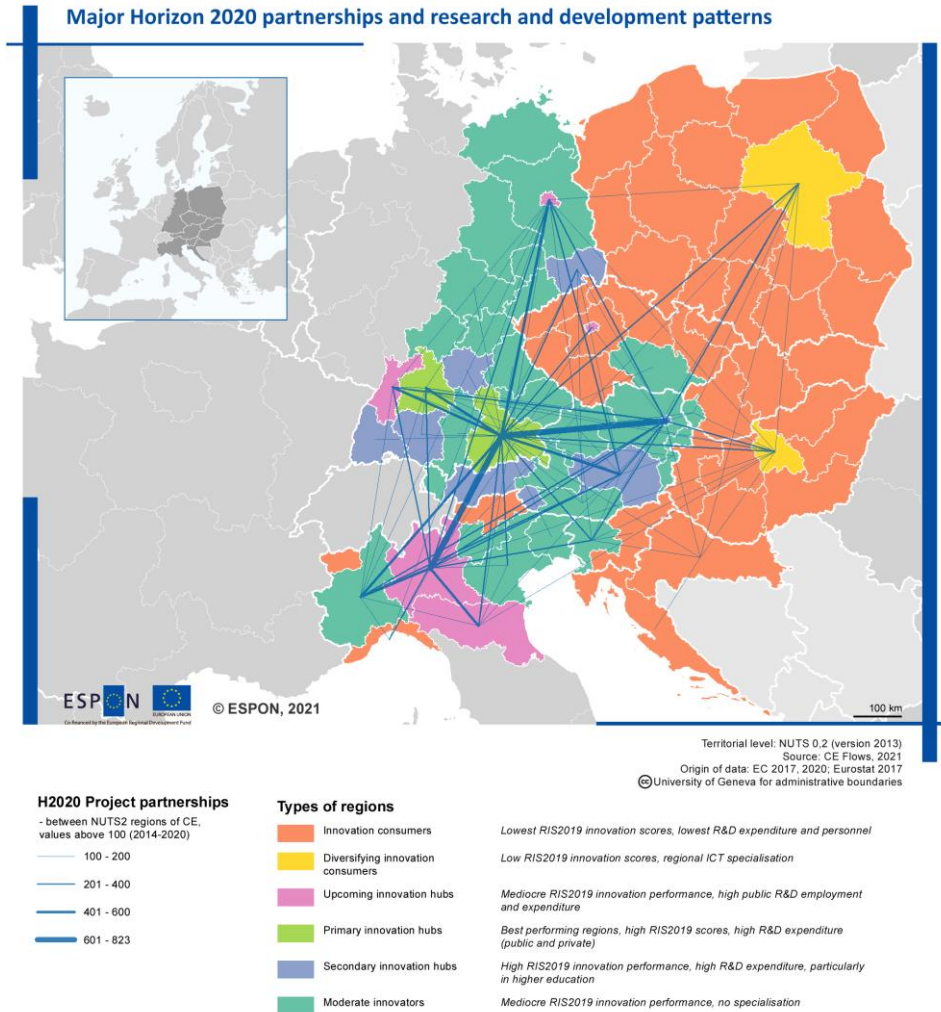
This thematic cooperation area represents 44.4% of the total number of projects in which CE regions were involved during the 2014-2020 programming period. This significant share is on one hand dependent on the fact that most territorial cooperation programmes include a priority on enhancing the R&D potential in the CE regions. On the other hand, it is justified by the successful uptake of Horizon 2020, the EU’s dedicated programme for research and innovation. Cooperation in this programme accounts for the vast majority of projects in this thematic area⁴. As cooperation programme covering the entire EU territory, it is a natural choice of CE regions to use Horizon 2020 as an instrument to foster cooperation in R&D.

Nevertheless, Interreg programmes foster cooperation on this topic, too, with cross-border (Bavaria – Czech Republic), transnational (Interreg CE) and interregional (Interreg Europe) programmes contributing mostly.

⁴ 97% of the projects in our sample are funded through Horizon 2020, only 3% through Interreg programmes.

Unbalanced innovation and research performance across regions

Map 1. Major Horizon 2020 partnerships and research and development patterns



Interreg has a specific role in fostering innovation. Interreg projects in innovation, research and development can synergise with H2020 projects by fostering knowledge transfer across regions, enhancing and creating new partnerships among R&D actors, as well as the transposition of R&D outputs to regions with lower R&D capacities. As displayed in Map 1⁵, the volume of innovation output and H2020 projects in this field varies. The clusters of *upcoming innovation hubs* and *primary innovation hubs* are associated with high volumes of Horizon 2020 cooperation, they are highly endowed with human capital and generally feature well-integrated private and public R&D efforts. As such, judging by the interconnectedness and the innovation output of the regions, the **central innovation hub of the CE area is in Upper Bavaria**.

The other types of regions have very different performances in terms of innovative output and intensity of cooperation in this field. Although *diversifying innovation consumers* and *innovation consumers* are increasingly interlinked in Horizon 2020 networks and Interreg cooperation, they are still significantly less

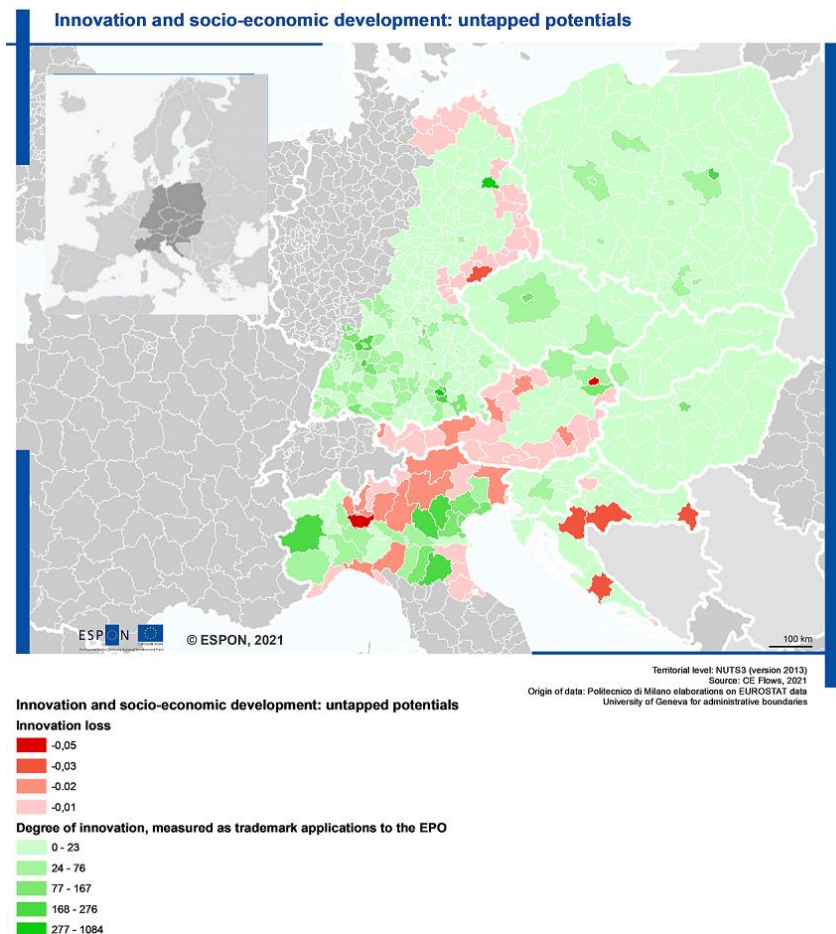
⁵ To ensure legibility of the results, regions with fewer than 100 project partnerships with other regions have not been visualised. As such, the map does not imply that there is no H2020 cooperation in regions with no visible interlinkages.

involved than most other types of regions and they score low on regional innovation scoreboards. Most of *innovation consumers* (most regions in Poland, Czech Republic, Slovakia, Hungary) display in fact a low capacity to develop and implement H2020 projects. For example, Warsaw and Budapest⁶ are two regions where cooperation has not yet yielded significant results (as shown in Map 1, the two regions are characterised by low regional innovation scores and low ICT specialisation). While these regions are involved in a high number of projects, the absence of technical capacity to implement the results of cooperation projects limits their ability to exploit the knowledge acquired, as highlighted by several stakeholders consulted throughout this study.

Untapped potentials in innovation and manufacturing

Our analysis of the unexploited potentials of the CE area not only confirms the concentration of innovative activities in western regions, but it also reveals a specific bottleneck for this functional area: **innovation** in fact does not represent an untapped potential for the whole of Europe, but it does **represent an untapped potential in the CE area**. The economic loss due to unexploited innovation is estimated at 1.34% of the GDP of the entire CE area. This huge potential is most likely due to the non-negligible role played by CE countries in driving EU regional innovation performance. These countries file around 30% of all patent applications to the European patent office and slightly more than 23% of all trademark applications.⁷

Map 2. Innovation and socio-economic development: untapped potentials (missed GDP)



⁶ Detailed list of regions and number of projects are found in Annex 1: Analysis of different typologies of partnerships

⁷ Raw data for 2006, the initial period for the analyses here presented. Source of raw data: EUROSTAT, Authors' elaboration.

As displayed by Map 2, although the countries most directly affected by the presence of untapped potentials are the ones characterised by large markets for advanced innovative activities (i.e. Austria, Italy and, to a lesser extent, Germany and the southern tip of Croatia), it goes without saying that this does not imply that regions located in other countries in the CE area should be denied access to policy support in these fields.

As mentioned above, eastern countries are lagging in terms of their endowment with these growth factors in the first place, and were this lag to be removed, they would likely also suffer from untapped potentials. Closely related to innovation is the untapped potential in manufacturing activities. This unexploited potential is sizeable in most regions in the CE area, as testified by the paramount importance of manufacturing with respect to other industries in this functional area (in contrast to the rest of the EU): Gross Value Added (GVA) in manufacturing (excluding construction) represents 26% of total production in CE countries (17% for the EU).⁸ According to the same official figures, the **CE area produces around 68% of total value added in manufacturing in the whole EU**. The inefficient exploitation of this factor results in a **0.75% loss in socio-economic development for the entire CE area**, with some regions suffering losses of more than 2% on an annual basis.

As for innovation, the CE area continues to be split along an East/West axis even in terms of manufacturing links. The most innovative regions identified (Map 1) roughly coincide with multiple manufacturing hubs of global importance, such as Lombardy, Upper Bavaria, and Stuttgart. It is worth noting that **central CE regions retain a sizeable manufacturing presence and constitute an important crossroads** across the CE area: despite the relatively low degree of manufacturing specialisation, these regions produce and send significant amounts of goods to other regions within the CE area⁹. These significant flows of goods, as echoed by 26 out of 28 respondents to our Delphi survey, are heavily relying on the **automotive sector as a key industry in which these manufacturing links occur**.

2.2 Flow of people

The cooperation patterns and the spatial dynamics analysed in this section focus on two main themes: labour market and employment, and tourism related to cultural & natural heritage. In addition, developments related to demographic change and migration are presented in this section.

Demographic change, in terms of the development of the share of individuals aged 65 years and over, affects regions to various degrees throughout the CE area, with some regions experiencing significant inflows of young people, and other regions experiencing ageing to a stronger degree¹⁰. Data from Eurostat highlight that **regions experiencing a shift to a relatively younger population are located in urban regions in Germany and Austria (such as Vienna and Munich or Berlin)**. These regions can be differentiated into sub-classes: regions with a relatively high share of people aged 65 years and over (e.g. Leipzig and particularly smaller German cities, such as Passau), and regions with a lower population share of this segment (e.g. Vienna and Berlin). There is a **clear split in ageing trends between the more western and more eastern regions of the CE area**: on one hand, most of the ageing regions are located in more eastern parts, also covering more urbanised regions (with the exception of Prague, Warsaw, and Budapest).

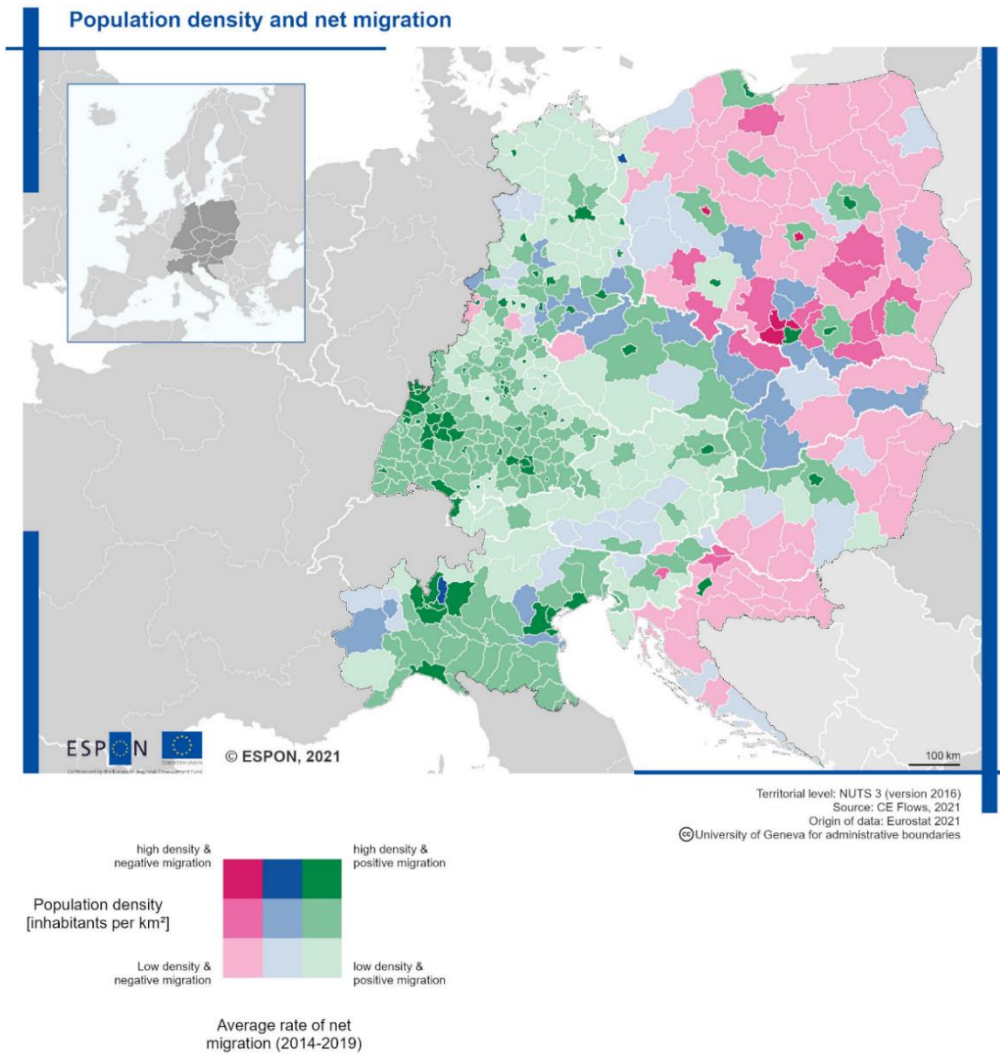
⁸ Source: EUROSTAT data base, data related to average 2015-2016 (the latest full vectors available as of May 26, 2020) gross value added in current Euros.

⁹ Around 21 million tonnes of goods flows (in 2015) between central Poland and northern Italy and around 35 million tonnes of inbound cargo and 24 million tonnes of outbound cargo towards Croatia, eastern Poland, Hungary, Slovakia and Slovenia.

¹⁰

Map 19 in Annex 2: Spatial dynamics of ageing in the CE area displays the spatial dynamics of ageing in the CE area

Map 3. Population density and net migration in the CE Area in 2019



On the other hand, these eastern regions feature less people aged 65 years and older in absolute values compared to the more western regions.

Map 3 above displays population density (2019) and the average annual rate of net migration (2014-2019)¹¹. Generally, the more urbanised regions (i.e. the ones with a higher population density) attracted higher rates of net migration from 2014 to 2019, which is most visible in the more densely populated regions of Northern Italy and Southern Germany, and in population centres and their peripheries (such as Warsaw, Vienna, Prague, Budapest and Berlin). However, there are still finer differences and an East-West split: **more eastern regions are largely less densely populated and generally also feature lower rates of net migration**. Some urban areas (Ljubljana, Poznan, and Lodz) are associated with patterns similar to suburbanisation, with the cities shrinking and their peripheries growing.

¹¹ Red regions correspond to regions with a lower rate of average annual net migration and green to regions with a high annual rate (between 2014 and 2019). The gradient of the regions correspond to the population density (in 2019), with regions with a high density coloured in a darker gradient.

Relevant socio-economic, institutional and cultural factors beyond cross-border mobility

The **commuting patterns are heterogenous across the CE area** and in particular, significant inter-regional and cross-border commuting can only be highlighted in a limited number of more urbanised regions as primary receivers of commuters (e.g. most of Northern Italy, Southern Germany and Berlin region due to a certain extent of attractiveness stemming from local salary levels and employment opportunities) and their peri-urban senders. On the other hand, **regions in Slovakia, Hungary and Poland feature high numbers of cross-border (international) commuters.**

The cross-border commuting trends in CE show in fact some patterns related to the history of the eastern European Member States and their entry to the European Union. A study led by Cavallaro and Dianin (2019) showed that the commuting flows between Member States are rapidly increasing in central Europe (e.g. 148% increase in the Czech-German area in 2012-2017) but the **absolute number of cross-border commuters in CE stays relatively low compared to other cross-border regions in the EU (around 150,000 commuters in central Europe compared to 1.7 million in the EU)**. In 2019, cross-border commuting was particularly present from Hungary to Austria, and from Poland to Germany, according to Eurostat (2020c).

This can be partly explained by the fact that the CE area does not include regions with significantly more attractive labour markets, such as in Luxembourg or Switzerland (Cavallaro, Dianin 2019), and that the **metropolitan areas in CE do not attract as many cross-border commuters as in the other parts of Europe (only 28% of all commuters in the CE area go to a metropolitan area whereas 52% of commuters in the EU15 travel to a metropolitan area)**. The comparatively lower number of cross-border commuters in CE compared to other EU regions was also confirmed by the Delphi respondents, who all agreed that **in most CE regions commuting occurs within countries rather than across national borders, and generally between urban areas and their surroundings**. However, commuting within functional areas also seems to constitute an important part of commuting habits within CE. For instance, the German-Polish border regions share a joint labour market which in turn is linked to well-established commuting patterns among employed people in those regions. This is also the case for the Czech-Polish border regions of Český Těšín (CZ) and Cieszyn (PL), as well as for Maribor (SI) and Graz (AT).

Another influencing factor (Cavallaro, Dianin 2019) for these commuting patterns is the **low population density in central Europe as a whole, and generally along border regions causing low demand for public transport**.

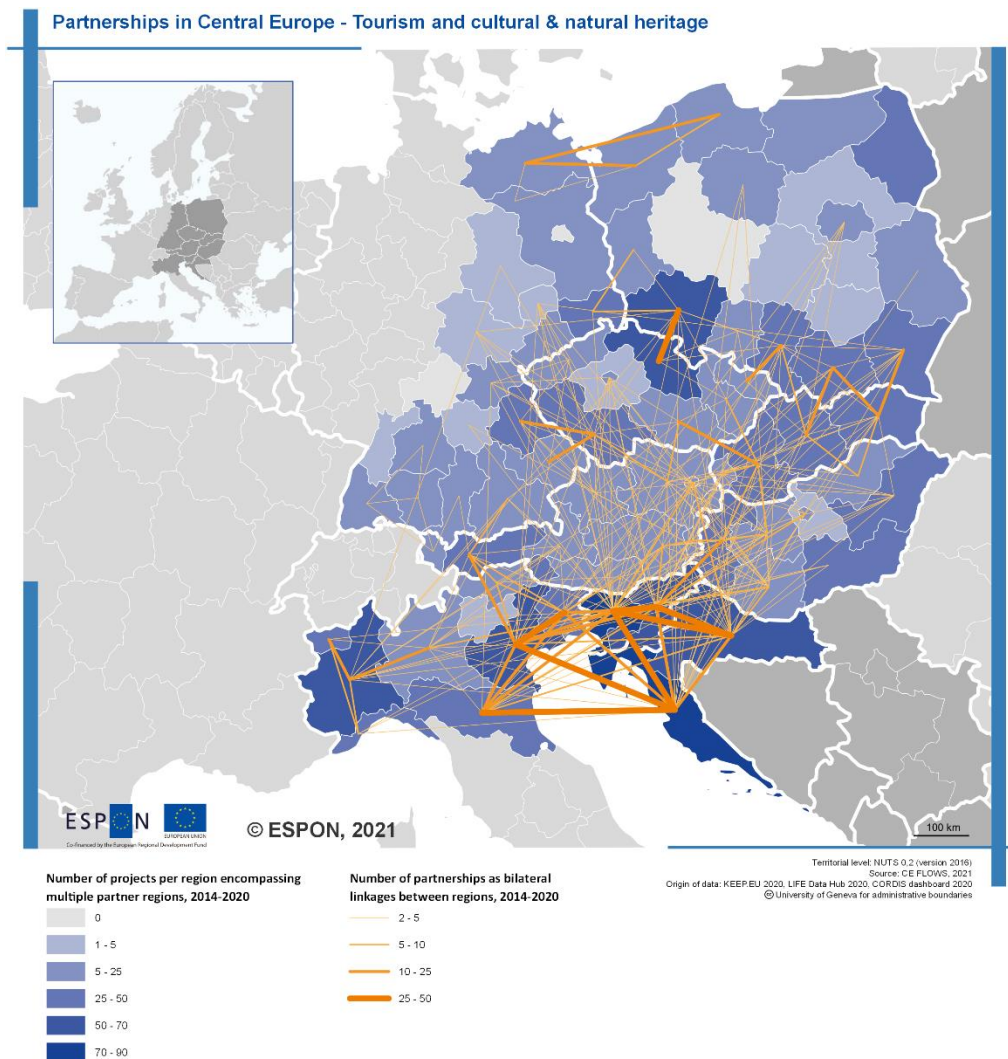
Within a context of less intense cooperation on labour market and employment, compared to other parts of the EU, regions in **Slovenia, Italy, Czech Republic and Hungary are cooperating the most** on this matter. Regions in Poland, Slovakia and eastern Germany are moderately involved in projects covering commuting and flows of people, similarly to Austria, Czech Republic and southern Germany, which have the lowest number of cooperation projects, a finding that can be linked to the already high employment and good labour market conditions there. Notably, the **top two programmes per number of cooperation projects in this field do not target regions within the borders of CE countries, instead they lie on the edge of the CE area**: Romania – Hungary and Italy – France have the highest number of projects in this field. In 2014-2020 Interreg IPA CBC Croatia-Serbia has been the only programme with projects for this thematic cooperation area covering the external borders of the EU.

Tourism and cultural heritage as drivers for mobility across the macro-region

The CE functional area shows a **heterogenous spatial pattern in terms of attractivity for tourists**: regional hotspots (e.g. venues in the Austrian and Italian Alps and city destinations such as Berlin, Prague, Venice and Vienna) draw in significant volumes of tourists from the same or other countries, whereas large parts of CE see relatively lower streams of incoming and local tourists. However, even in terms of

inter-CE tourism, some countries are substantially more attractive to tourists than others¹², a **unifying characteristic of most regions in the CE area is the relatively high degree of domestic and cross-border tourism**. This is especially apparent between Austria and Slovenia (most overnight stays from the CE area countries in Slovenia are from Austria), Germany and Austria (in comparison with the rest of the CE area, most overnight stays in Austria are from Germany), between Slovakia and Czech Republic (where in Slovakia most CE area overnight stays are from Czech Republic) and between Polish and German regions (where, respectively, most CE area overnight stays are from the other country).

Map 4. Number of partnerships¹³ on tourism and cultural & natural heritage between CE countries during 2014-2020 programming period



When considering the total number of cooperation projects (funded through H2020, Interreg, LIFE), this thematic area represents only 6% of projects in which CE area regions are involved. However, these projects are funded exclusively through Interreg programmes, being **the best represented thematic area of cooperation (28.6%) among Interreg programmes in terms of number of projects**. As most

¹² Italy and Austria are the most popular tourist destinations for travellers within the CE area, attracting mostly tourists from Germany.

¹³ 'Partnerships' represent bilateral linkages between regions, while 'projects' encompass multiple partner regions.

cooperation takes place at the cross-border level both in Interreg A programmes and through programmes that address cooperation at the external borders of the EU, Interreg programmes¹⁴ play an important role in supporting cooperation on cultural and natural heritage and tourism.

Map 4 above, displaying the intensity of cooperation on tourism and cultural & natural heritage between CE countries, highlights that there is no clear correspondence between the intensity of touristic activities at regional level and the intensity of cooperation projects: in fact, **both the regions characterised by little tourist inflows** (e.g. Hungary, Poland and Slovakia) and **those featuring high inflows and significant economic dependence on tourism** (e.g. Austria, Trentino-Alto Adige and Bavaria) **participate strongly in cooperation programmes**, as is also the case for Croatian and Slovenian regions, as well as Veneto and Piemonte in Italy. This finding is consistent with some statements gathered through the Delphi exercise: for those regions with lower touristic potential, **tourism is often seen as a flywheel to boost the countries' international profile and diversify their economies**.

Tourism is in fact a **key driver in the development of many European regions, especially in the less structurally developed regions, as it has significant spill-over and job creation potential** (European Commission, 2020). For CE's countries, the number of arrivals overall increased by 7% in 2016 (compared to the previous year), reaching a total of 167 million in 2016 and resulted in a 6.6% increase in earnings (EUR 115 billion in total¹⁵). Income from tourism is growing faster (UNWTO, 2018) thanks to improved accessibility and, depending on the regions, thanks to successful rebuilding of the tourism sector (e.g. Croatia) and helpful international events (e.g. World Youth Day in Krakow, European Capital of Culture in Wroclaw in 2016 and in Rijeka in 2020).

The dependency of the central European economies on tourism differs between the individual regions (e.g. it is particularly high in Austrian and Italian regions, and less so in Polish regions). The **economic significance of tourist activities increases regions' vulnerability towards economic shocks and travel restrictions, as has been apparent during the COVID-19 crisis**. Moreover, the high economic significance of tourist activities may detrimentally impact regions and their inhabitants (Hotrec, 2018, p.2). This is because the rising number of tourists at destinations creates infrastructure and economic pressures (e.g. economic specialisation in city centres and the effect of tourist accommodation on the cost of private residences). This is illustrated in tourist hotspots such as Venice (Milano, 2017, p.9) and Dubrovnik (McKinsey&Company & the WTTC, 2017, p.54). However, cruise tourism can also provide economic benefits to the region (ESPON, 2019), such as in the Croatian port cities. The ESPON MSP-LSI study estimated an additional EUR 60 million in spending and approximately 4,000 generated jobs in these cities due to cruise tourism.

2.3 Environmental hazards

Environmental hazards encompass a wide range of project cooperation themes in the Interreg, LIFE and Horizon 2020 programmes, including elements related to different natural resources, protection of endangered or vulnerable areas, climate change, responding to man-made threats and interventions, water research and tackling environmental issues.

Polarisation between urban and rural areas

The territorial distribution of projects covering this thematic area varies greatly, depending on the distribution of natural endowment, on the regions' performance on selected environmental indicators¹⁶ and on

¹⁴ Outside the scope of our analysis, other instruments exist at EU level for cooperation in this field, such as the Creative Europe programme.

¹⁵ Based on UNWTO (2018 pp. 24-25)

¹⁶ The indicators used in the cluster analysis are: circular economy business models (employment) per capita; air transport of passengers by NUTS2 regions per capita; stock of vehicles by category and NUTS2 regions per capita;

the available territorial cooperation programmes and their instruments. As such, the **distribution of natural capital** (e.g. a high-quality environment and low levels of pollution) is **heterogeneously distributed across the CE area**. The environmental dynamics of the CE area are characterised by pollution and environmental degradation being concentrated in more urbanised and industrialised regions, located to a significant degree in the structurally more developed western regions of CE. These regions coincide with the **industrialised manufacturing hubs in the western part of CE** (i.e. Lombardy, Upper Bavaria and Stuttgart) but a **legacy of pollution** (inherited from the years before 1989) **occur also in the eastern part of CE**, e.g. in the **less specialised manufacturing centres and industrialised areas of Silesia and Moravia**. While these regions are responsible for a significant amount of the economic activity of CE, they may also impose negative environmental impacts on central Europe's rich environment and ecosystem diversity. For instance, given the high degree of interconnectedness of river basins, forests and ecosystems, **pollution produced in one area may be driving environmental degradation in another**. More frequent extreme weather events combined with heavy land-use in a region of major river basins could exacerbate other natural hazards, such as floods (Dotterweich, 2008, p.205).

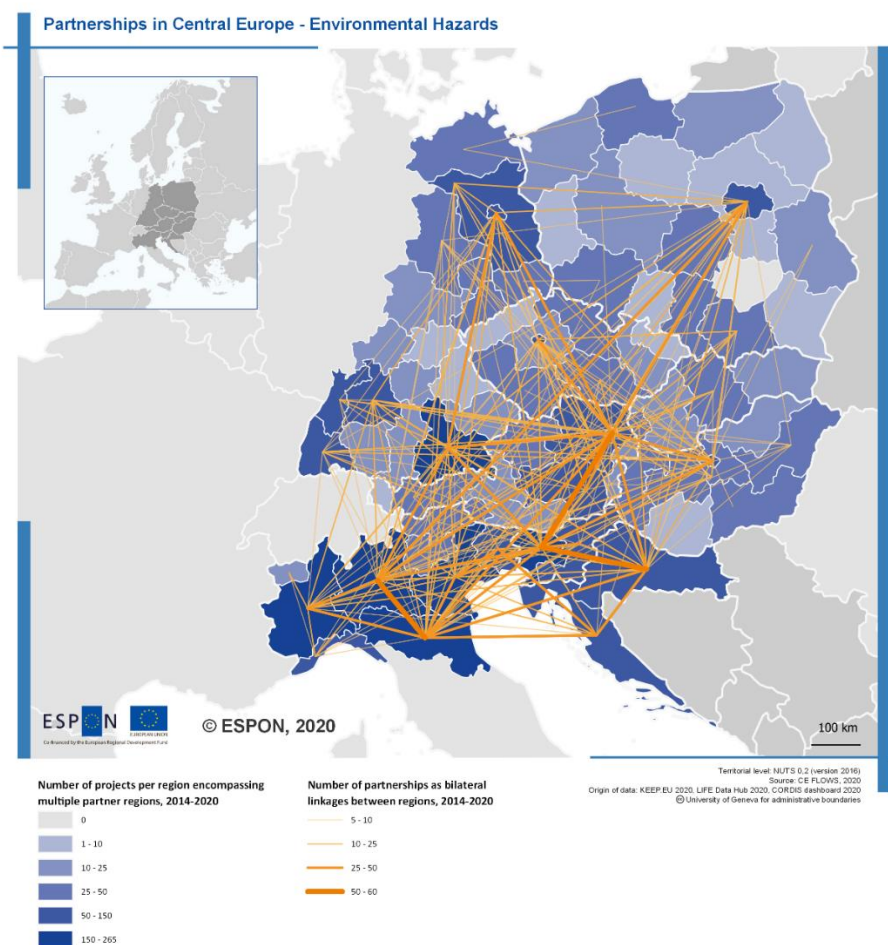
Regions with better environmental quality may be therefore negatively impacted by emissions from industrial activities, absorbing the pollution flows: **particularly air pollution** (as indicated by Schröder et al (2010) in Germany) **may be absorbed by NATURA 2000 sites, worsening the quality of the local environment**.

Role of interregional and transnational cooperation in addressing environmental challenges

Interreg programmes play a key role in mitigating these issues, as they are important **drivers to foster the exchange of ideas and good practices, aiming at the joint development of environmental initiatives**. Notably, the interest in transnational cooperation for this thematic area is crucial in light of the new policy objectives of the EU Cohesion Policy (CO2 reduction, Greener, low-carbon Europe), and in light of initiatives related to limiting pollution and waste and alleviating the effects of climate change and global warming.

atmospheric emissions of PM10; capacity of ecosystems to avoid soil erosion; municipal solid waste per capita; and share of forest and artificial area; and Water Productivity by NUTS2.

Map 5. Number of partnerships¹⁷ on environmental hazards and flows between CE countries during 2014-2020 programming period



Based on partnerships data¹⁸ visualised in Map 5, most regions that present a higher soil erosion risk (e.g. northern Hungary and eastern Poland) or have a high car reliance and waste generation (e.g. eastern Germany) are only moderately involved¹⁹ in Interreg and LIFE programmes, and even less involved in Horizon 2020 cooperation in the thematic area of environment.

Intense cooperation patterns are instead visible in those regions which are actively pursuing a development path related to the circular economy. These regions either host large urban centres or are highly active in research and innovation cooperation, like for example capital regions with a high concentration of research institutions and ministries (e.g. Vienna), or they perform well on environmental indicators, such as high recycling rates, e.g. Lombardy, Emilia Romagna, Upper Bavaria, Berlin, western Slovenia and Warsaw²⁰. These cooperation patterns are consistent with the **high discrepancy observed in waste management** in central Europe, especially visible in municipal waste management: **Italy, Germany and Austria** have **well-developed waste management systems** and are on the right path to

¹⁷ 'Partnerships' represent bilateral linkages between regions, while 'projects' encompass multiple partner regions.

¹⁸ <http://keep.eu/statistics>

¹⁹ I.e. average number of projects in which they are involved in

²⁰ Detailed list of regions and number of projects are found in Annex 1 - Statistics of partnerships: Horizon 2020, LIFE and Interreg programmes

meeting the objectives of the Waste Framework Directive²¹. But in the eastern regions of CE, collection and recovery systems are still not fully operational (e.g. **unsealed system of municipal solid waste collection in Poland** and **lagging energy recovery in Slovenia**) and data on waste management collection is not completely satisfactory (Malinauskaite et al, 2017, pp.2014-2038).

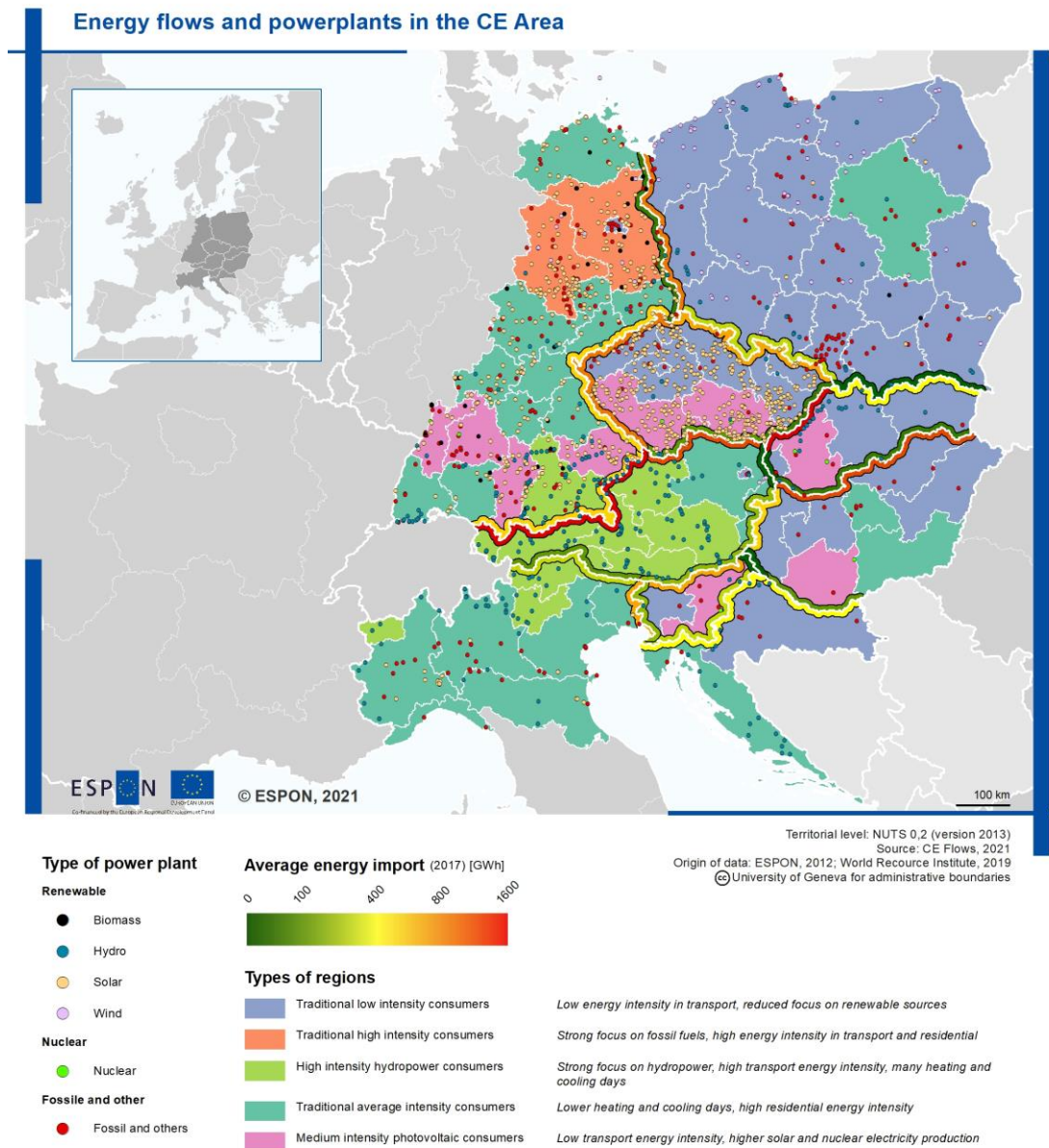
Interregional and transnational cooperation programmes play a fundamental role also in projects under the thematic area of electricity and renewable energy. The **environmental patterns of cooperation** presented in the paragraphs above show **similarities with the patterns of cooperation on electricity and renewable energy**, highlighting the close relationship between these thematic areas. In fact, those **regions highly active in circular economy cooperation projects** are also the ones featuring a **high participation in projects targeting energy efficiency, renewable energy and green technologies** (e.g. Upper Bavaria, Karlsruhe, Vienna and Lombardy). The **most active regions in terms of cooperation projects on electricity and renewable energy are found in Croatia, Slovenia and Italy**, partially matching the data on environmental cooperation suggesting that Italian regions (particularly Lombardy, Emilia-Romagna and Piemonte) are the most active regions in this field. Adding up to the picture the frequency of environmental cooperation in Slovenian and Croatian regions, this triangle (**Italy-Slovenia-Croatia**) is a **focal point of cooperation in the CE area for environment and energy**.

All in all, as the natural capital is heterogeneously distributed, CE regions face different challenges with respect to the environment: Lombardy, western Slovenia and Berlin have a high share of artificial surfaces, Emilia-Romagna, Piemonte, Prague and Continental Croatia have a good overall environmental performance but face low water productivity, Veneto and eastern Slovenia have low recycling rates and high PM10 concentration, and Valle d'Aosta and Vienna²² face high urban pollution (high car ownership and PM10 concentration).

²¹ e.g. Austria already exceeded the EU objectives in recycling in 2001 (EEA, 2013, p.7)

²² Ibid.

Map 6. Energy flows and powerplants in the CE area



Heterogeneity in patterns of energy consumption and overall sustainability

The environmental heterogeneity of the CE area is also visible in the discrepancies in energy generation and consumption across the CE area: some regions are highly specialised on renewables, while others rely largely on fossil fuels (Map 6). In fact, despite the fact that CE features many regions with a high density of renewable powerplants (such as hydropower in Austrian regions), in other cases the **total electricity generation from renewable sources remains low due to the relatively lower capacities of the individual powerplants** (e.g. in Czech Republic). Low capacity of renewable powerplants is linked to the fact that **fossil fuels remain very relevant and cheap in many regions, particularly in the eastern regions of CE**. This stifles large-scale renewable development and results in a yet high installed capacity of non-renewable sources. This reluctance to change the traditional energy production can be counteracted with the expansion of coordination between regional actors and local governance processes.

2.4 Accessibility and connectivity

Accessibility and connectivity are deeply intertwined with the flow of goods and people between the main manufacturing clusters. These were analysed in the cluster analysis which produced a set of typologies describing the economic specialisation of the regions:

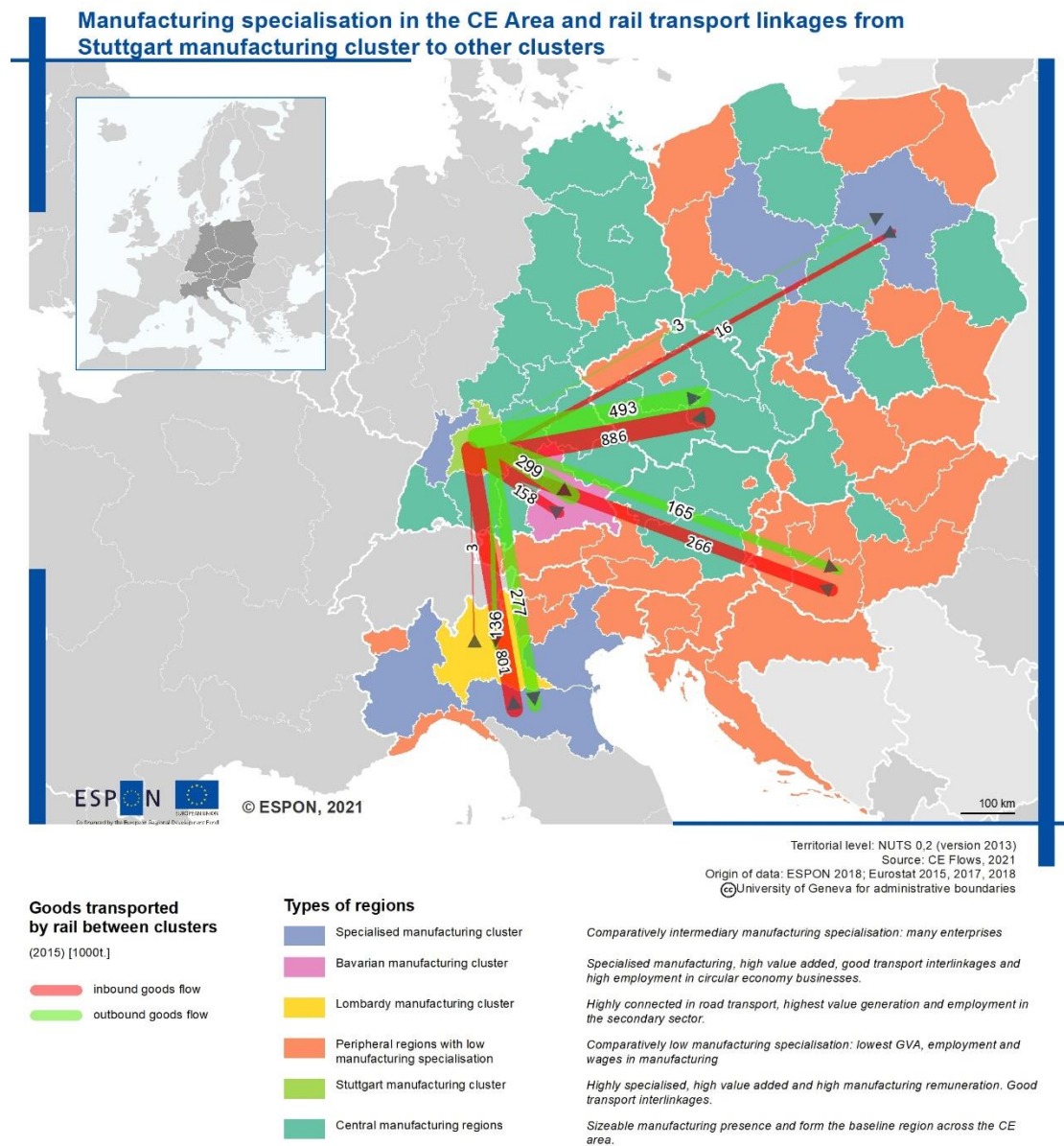
- The **central manufacturing regions/central regions with lower manufacturing specialisation**.
- The **Bavarian, Stuttgart and Lombardy manufacturing hubs** are the **most specialised in terms of manufacturing outputs across the CE area**. They are all very productive with large value-added generation, high volumes of freight transfers and significant employment in manufacturing enterprises.
- The **specialised manufacturing regions** with sizeable manufacturing specialisation and employment.
- The **peripheral regions with low manufacturing specialisation** are characterised by relatively low specialisation on manufacturing and lower employment in related enterprises.

Interlinkages of manufacturing hubs and role of infrastructures

The manufacturing hubs are primarily interlinked with their surrounding and supplying regions along the value chains as well as other hubs. As shown in an exemplary manner for the central manufacturing regions in Map 7 below, accessibility and connectivity patterns are shaped by those regions. The map illustrates the types of manufacturing specialisation across the CE area and the rail transport volumes of one of these identified sets of regions (around Stuttgart) with other identified sets of regions. The transport interlinkages between all identified sets of regions, as per their manufacturing specialisation, are highlighted in Annex 3: Cluster analysis – manufacturing flows. Some clear evidence emerged:

- The Bavarian manufacturing hub is predominantly interlinked with the *central manufacturing regions* and the *peripheral manufacturing regions* in terms of rail cargo flows. The latter regions supply the manufacturing hub with components (particularly the central manufacturing regions, with around twice the amount of outgoing goods volume).
- The same goes for the *Stuttgart manufacturing hub*, where interlinkages and supply chains are strongest with the *central manufacturing regions* and the western *specialised manufacturing regions*. Both types of regions are supplying the Stuttgart hub with returning rail cargo flows.
- While the *central manufacturing regions* certainly play an important role in tying together the individual types of manufacturing regions, the **broader interlinkages and goods flows within the CE area are mostly tied to hubs and manufacturing regions in closer proximity**. The eastern *intermediate manufacturing regions* and the *peripheral manufacturing regions* are especially better interlinked with the *central regions*, than with the specialised manufacturing hubs. In addition, flows between the individual manufacturing hubs are also relatively low compared with the interlinkages with their surrounding regions. This is likely due to the structure of the supply chains set up by the companies driving this manufacturing specialisation, but it nonetheless points to potential areas of further cooperation.

Map 7. Manufacturing specialisation in the CE Area and rail transport linkages from Stuttgart manufacturing cluster to other clusters



Rail accessibility features strong contrasts in the CE area: the **more populous regions in the West have significantly better and more exhaustive rail coverage**. This acts as a **significant bottleneck to commuting patterns and labour mobility** (Section 2.2), as these regions generally also feature **lower rates of commuting**.

Notably, issues of transport interoperability are particularly apparent in railway cross-border sections, such as:

- The Scandinavian Mediterranean Corridor will not have achieved the rail network as expected for 2030 as bottlenecks persist as well as technical issues in the German and Italian sections.
- Main missing railway links remain between Austria and the Czech Republic and bottlenecks in Slovakia, Hungary as well as some road sections are still missing in the Czech Republic and Slovakia for the Rhine-Danube Corridor.

- For the Orient/East Med Corridor, some missing links remain in the Czech Republic in particular concerning inland waterways at the German/Czech border.
- Bottlenecks on railways and roads can also be found at the Austrian/Slovenian border as well as in the Czech/Polish/Slovakian regions for the Baltic Adriatic Corridor. The port connections could also globally be improved in the north of Poland, Vienna, and Bratislava as well as in some Italian and one Slovenian ports.

These findings were confirmed by the largest majority of the respondents involved in the Delphi survey. Indeed, 30 out of 31 stakeholders participating in the survey considered central Europe as a heterogeneous area in terms of commuting patterns, and that **disparities in car but also rail accessibility can still be observed across CE**. According to some respondents, the greatest disparities can be found in more isolated and remote regions, such as border and rural regions. Indeed, while connections between major urban hubs (and, to a lower extent, between minor urban centres) are usually guaranteed, the same cannot be said when it comes to peripheral areas where accessibility is often a key issue. In conclusion, **the peripherality of most CE border regions has not yet been overcome**.

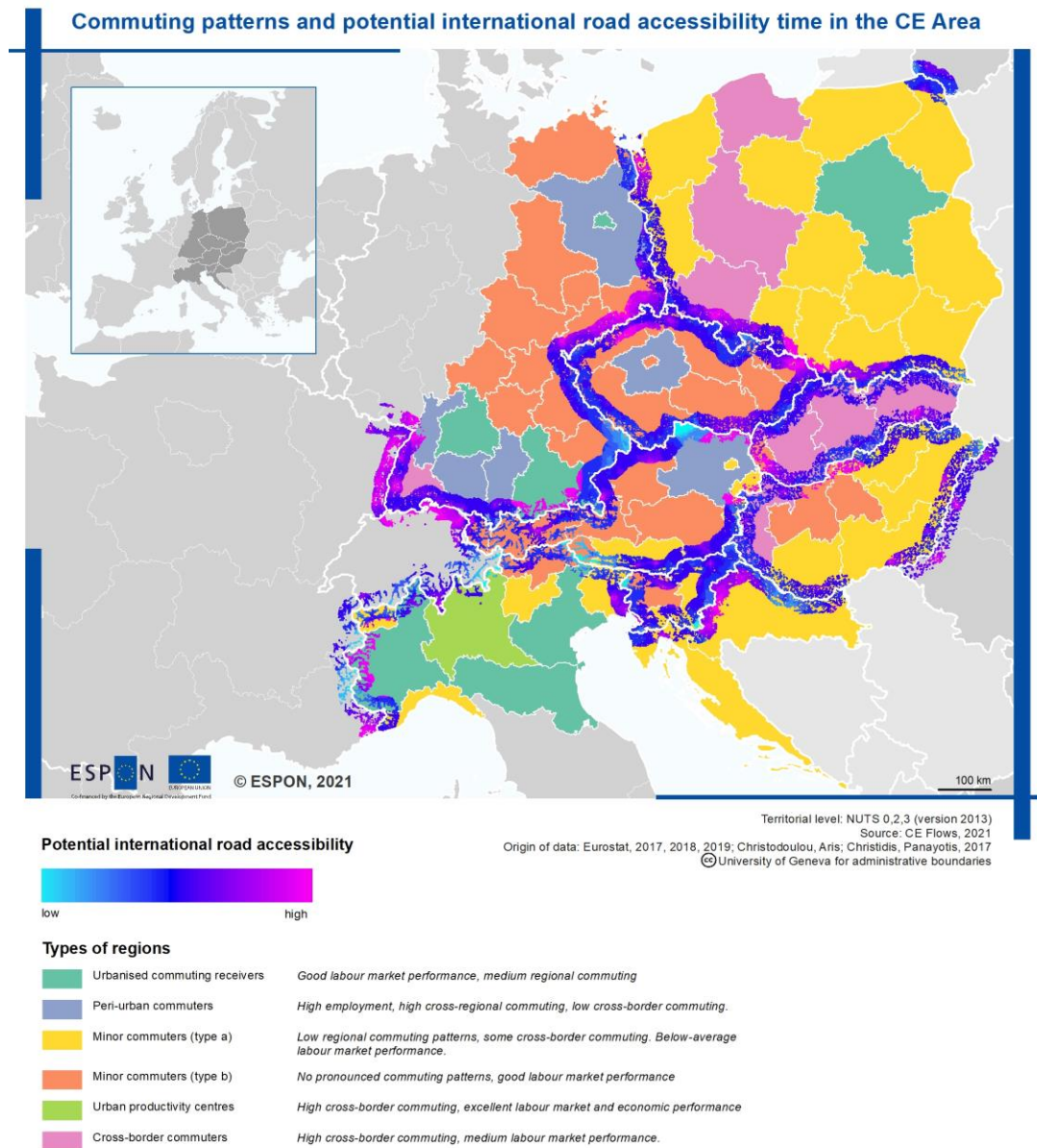
Quality of infrastructure and cross-border commuting

As commuting data across the CE area generally only provides one point of the commute (the beginning or the end), cross-border accessibility²³ of the individual NUTS2 areas can contextualise regional commuting characteristics. Further, cross-border accessibility allows to distinguish regions with a large share of cross-border and cross-regional commuters and regions which are absorbing these commuter flows.

- The **urbanised commuting receivers** are concentrated in more urbanised regions of the programme area with high productivity levels. Inhabitants of these regions engage in cross-regional commuting. This cluster covers more urbanised areas and their surrounding agglomerations, such as Warsaw and large parts of northern Italy and southern Germany (Upper Bavaria, Stuttgart).
- The **peri-urban commuters** consist of regions with a relatively high employment rate, and slightly above-average economic performance. These regions are marked by the **highest numbers of regional commuters in the programme area**, generally those going to the urban centres and surrounding regions.
- The **minor commuters (type a)** cover large parts of the programme area, including Croatia, Hungary, Poland, and parts of northern Italy. These regions retain an **economically less attractive character**. Commuting patterns are limited: below-average numbers of inhabitants in these regions engage in cross-border and cross-regional commuting.
- The **minor commuters (type b)** are characterised by **moderate economic and excellent labour market performance**. However, inhabitants of these regions do not **tend to commute across the borders of their region**. Commuting rates to other regions and other countries are below average.
- The **urban productivity centres** are in Lombardy and is a sub-set of the fourth cluster. In addition to the characteristics of the fourth cluster, this cluster has a **large number of cross-regional and cross-border commuters and better economic performance**.
- The **cross-border commuters** consist of regions with a high number of people commuting to another country and **average economic and labour market performance**. These regions are often relatively close to regions with better labour market outcomes, such as between Hungary and Austria or Slovakia and the Czech Republic.

²³ Via Christodoulou, Aris; Christidis, Panayotis (2017). This indicator is based on grid population data and travel time data: Weighted average of population of the five largest settlements divided by travel time from each grid cell.

Map 8. Commuting patterns in CE (international road accessibility)



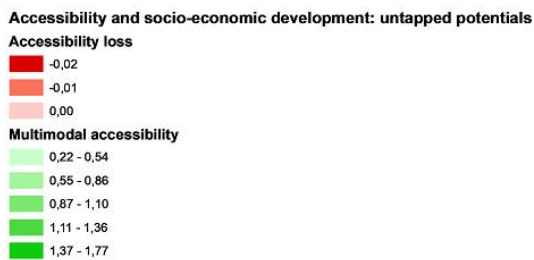
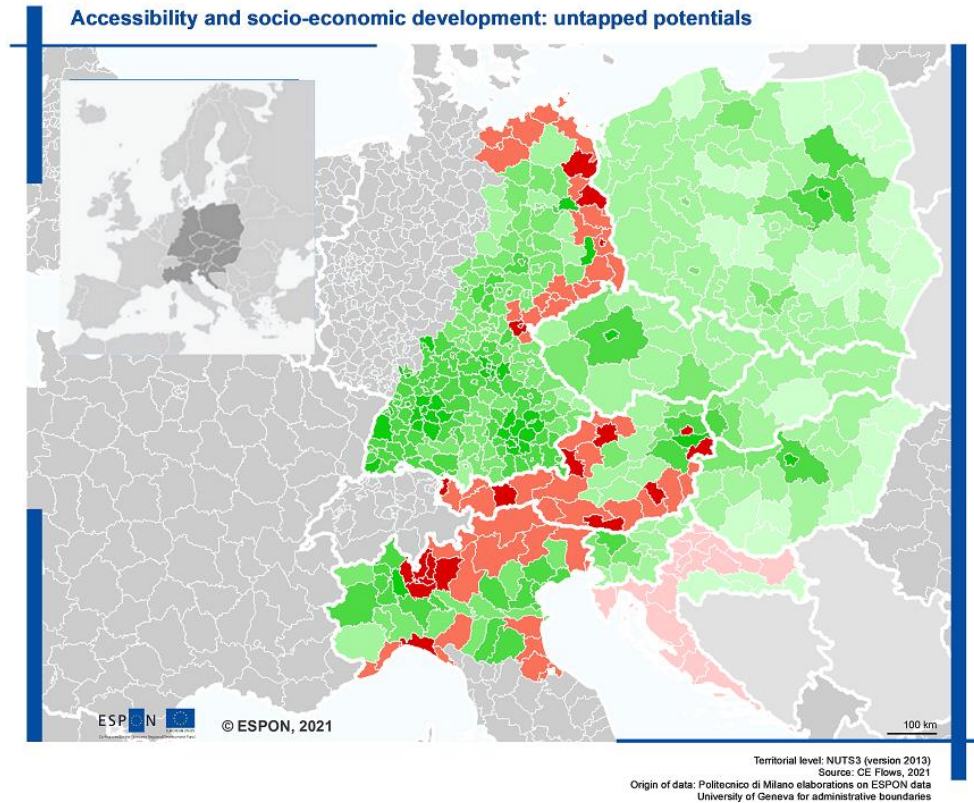
In general, **significant disparities in terms of cross-border commuting potential** can still be observed across the CE area, as the shading in

Map 8 indicates.

Geographical features as a cause for limited integration

Specific geographical features are also a key factor hindering accessibility and connectivity, as CE comprises a substantial share of all mountainous regions in Europe. This means that untapped potentials in accessibility are particularly common in these types of regions.

Map 9. Accessibility and socio-economic development: untapped potentials (missed GDP)



As

Map 9 shows, mountainous and border regions located in Austria, Germany, and Italy have the highest untapped potentials in accessibility, i.e. while (on average) the CE area registers an economic loss in roughly 0.5% of the GDP of the entire functional area, regions located in Austria, Germany, and Italy

mostly exceed this figure. In most border regions of these three countries, the economic loss amounts to 1.5-2.5% of the CE area GDP.

2.5 Conclusions

The CE area is characterised by historical, economic, social and environmental ties and linkages which present similarities as well as sizable disparities, leading to unexploited development potentials.

In the field of environmental cooperation, regions in the CE area are moderately well interlinked in Horizon 2020 and Interreg partnerships: thematically, cooperation occurs on climate change, environmental sustainability, resource use and related fields. However, our analyses highlighted **high discrepancies in waste management** across central Europe, imposing a negative impact on the environment.

Electricity generation shows also heterogenous patterns across the CE area. The electricity and energy networks of the CE area are largely country-specific, with **fossil fuels remaining very important in many regions, particularly in the eastern regions of the CE area.** The high installed capacity of non-renewables and transmission grid issues stifle large-scale renewable development. With expansion of coordination between regional actors, local governance processes, and infrastructure, this reluctance to change the traditional energy production can be counteracted. Finally, the CE area features an **unexploited potential which is not faced by the rest of the EU: the lack of exploitation of the advantages (in terms of efficient use of environmental and energy resources) coming from a compact urban form**²⁴. This issue is causing non-negligible losses in Austria and Italy (most notably in the areas around Vienna and Milan²⁵) and overall accounts for a loss for the entire CE area of roughly 0.62% of the CE GDP.

Among the sizable disparities across the CE area, **research and development patterns display significant discrepancies between regions.** In fact, the highly urbanised hubs of the western regions are strongly endowed with researchers and well connected in Horizon 2020 networks and Interreg partnerships. On the contrary, the **disparities in terms of human capital endowment between more urbanised and less urbanised regions are even sharper in the eastern part of the CE area.** The **lack of integration of these regions into R&D networks remains the greatest bottleneck to innovation.** The degree of innovation is closely linked to the level of economic specialisation and specifically to manufacturing activities, which constitute a fundamental economic sector as the CE area produces around 68% of total value added in manufacturing in the whole EU. However, these manufacturing networks are partly hampered by a persistent bottleneck represented by the insufficient interlinkages between far eastern and western regions due to issues of transport interoperability and deficient infrastructures. This confirms that one of the **key bottlenecks remains the split along an East/West axis** insofar as the divide in productivity is often matched with accessibility gaps.

Reduced accessibility limits not only manufacturing flows, but also commuting patterns, especially in the eastern regions of the CE area where both car and rail infrastructure remain relatively weaker. In fact, **the absolute number of cross-border commuters is relatively low compared to other cross-border regions in the EU.** On one hand, deficient infrastructures play a role, on the other hand the **lower population density in the CE area** (generally and along border regions) generates low demand for public transport.

Finally, despite a rich cultural and natural heritage across the area, the CE functional area shows a **heterogenous spatial pattern in terms of attractivity for tourists** where regional hotspots (e.g. venues in the Austrian and Italian Alps, the Adriatic coast in Croatia and Italy, and city destinations such as Berlin, Prague, Venice and Vienna) draw in significant volumes of tourists from the same or other countries,

²⁴ Examples of the advantages provided by an efficient exploitation of a compact urban form include the integration of intermittent energy sources and the shift from individual to centralised heating systems that are renewable energy-based, by using waste heat recovery concepts or by applying circular economy approaches

²⁵ Urban developments in the past few decades let the city substantially extend to the East (where other relevant cities in the Lombardy region, viz. Bergamo and Brescia, are located) and the North, towards Como and Switzerland.

whereas large parts of the programme area see relatively lower streams of incoming and local tourists. Nevertheless, **activities related to the tourism and manufacturing sectors are key contributors to interregional flows and constitute strategic sectors for the whole CE.**

3 Spatial development scenarios for central Europe

3.1 Modelling of the scenarios

The future integration process within the CE area clearly depends on policies introduced to overcome cooperation barriers between countries. However, the current COVID-19 pandemic and the lockdown measures taken across Europe to prevent the spread of the disease in spring and autumn 2020, as well as in winter 2020/2021, have increased the uncertainty of this integration process. Institutional agreements and procedural actions have significantly slowed down, as documented in several policy agreements both in the grey literature as well as in international organisations' policy briefs (McKinsey, 2020).

Since the long-term impact of COVID-19 on regional economies is not known, a set of forecasts on the short-term regional costs of the COVID-19 lockdown measures has been produced. These forecasts make up the foundations of the possible future scenarios for the economic, environmental and social development of the CE area:

- A “**New Normality**” scenario, whereby the recent effects of the COVID-19 related lockdown and their long-term effects and policy responses (e.g. *Recovery Fund*) are modeled in the medium term (Section 3.1.2);
- A first “**Integration**” scenario, assuming further economic integration among CE countries (Section 3.1.3);
- A second scenario of “**Partial Integration**”, i.e. where we assume that the integration process will slow down because of COVID-19, limiting institutional and economic interactions (e.g. by postponing agreements and hampering the levels of trust among individuals) (Section 3.1.3).

By the same token, the impacts of COVID-19 on regional societies, on the environment and on connectivity are not entirely known to date. Section 3.1.4 provides a first answer to this crucial need, translating the economic forecasts produced within these simulation exercises into non-economic impacts within the scope of the thematic fields identified in this targeted analysis.

3.1.1 Regional forecasts of the COVID-19 pandemic

Estimates and short-term forecasts of the regional effects of the COVID-19 pandemic are at present not available with the exception of the RHOMOLO-based assessment exercise presented at the 16 June 2020 joint COR-OECD webinar. Our assumptions of such forecasts, valid from March to December 2020, are summarised in Table 1²⁶.

Table 1. Assumptions for forecasting the regional costs of the COVID-19 pandemic

Class of factors	Assumptions
<i>Coefficients</i>	<i>Crisis</i>
<i>Macro factors</i>	
Debt/GDP	General relaxing of Maastricht rules, proportional to starting levels
Interest rate	Interest rates remain low in the short run
Inflation rate	Nil across all Europe
Deficit/GDP	Relaxed Maastricht rules (8% deficit everywhere)

²⁶ Bourdin et al. (2020) provide a similarly innovative estimate of the regional distribution of health losses associated with the first waves of the COVID pandemic, while also collecting relevant information on local policy responses. While scenarios described in this report cannot be compared with the approach in Bourdin et al. (2020), we do find overlaps in the policy responses described in their work and in the assumptions formalised for calculating our early stage losses.

Class of factors	Assumptions
GDP growth US-JP-BRIC	Major GDP contraction in US and Japan; milder contraction in BRIC Countries
FDIs	Major contraction of FDIs w.r.t. before the lockdown
Consumption levels	Contraction of consumption levels everywhere
Investment	Contraction of investment levels everywhere
Export and import levels	Contraction of import and export levels everywhere
<i>Regional factors</i>	
Industrial specialisation	Major contraction in all activities, other than agriculture and public administration
Input/Output relations	20% decrease in the intensity of I/O relations everywhere
Innovation	No major change
Trust and social capital	Contraction (-10%) of trust levels everywhere
Death rate	+40% in the areas hit the hardest by the COVID pandemic; +10% elsewhere
Energy efficiency	No change

Source: Authors' elaboration

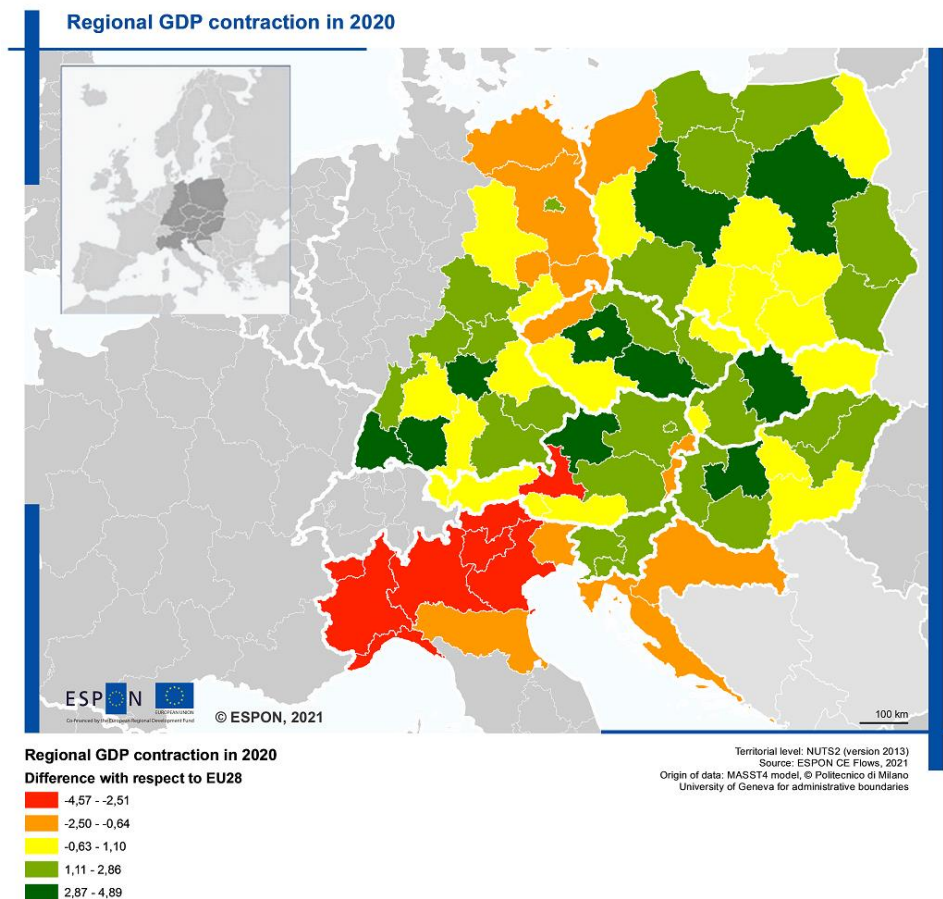
As these scenarios were drafted, it was hardly definable how the pandemic would develop. Thus, the underlying assumption was that no strict national lockdowns would be imposed in autumn 2020 and winter 2020/2021. At the time this report is being written, evidence that a second (and in some cases, third) wave of lockdowns²⁷ is being enacted, incorporating their effects into our statistical simulations is not compatible with the timeframe of the project, given the lag required to gather and consolidate the data on the way lockdowns are put in practice. Still, **results of our simulations would still hold from a qualitative point of view**, especially because the **second wave of the pandemic in Europe is proving to be, unfortunately, more pervasive and spatially homogeneous** than in spring 2020 (Cacciopaglia et al., 2020), thus likely causing less spatial imbalances than those already illustrated by the foresights presented here.

Map 10 presents the results of the regional forecasts (at NUTS2 level) of the potential GDP loss in CE area regions between spring and December 2020 due to the impacts of the pandemic²⁸:

²⁷ In general with milder measures with respect to the ones applied in spring 2020

²⁸ Across this whole section, maps represent % GDP growth simulated in that specific scenario as a difference with respect to the average EU28 GDP growth rate. For this section, the New Normality scenario represents a benchmark, so that the two integration scenarios are represented as a difference with respect to such benchmark.

Map 10. Difference of regional GDP contraction in CE compared to EU 28 (2020), in GDP percentage change



The map shows a substantial spatial variance in the economic consequences of the COVID-19 related lockdowns. In particular, the following main messages emerge:

- Countries hit the hardest by the health crisis in the first wave also seem to be paying the highest price (among those Italy); in return, **GDP contraction appears milder in the eastern countries of the functional area;**
- Along with economically strong areas, several peripheral regions in the hardest-hit countries also face substantial losses.

Results are rather close to those identified in the analysis presented in CoR (2020), where the regions most exposed to potential COVID-19 economic impacts include several Spanish regions, Île-de-France in France, most of the Italian regions, coastal regions in Croatia, eastern Bulgaria and the regions of central Macedonia and Crete. Interestingly, results in CoR (2020) are obtained with a very different methodology and were developed independently from the work discussed in this report.

3.1.2 The “*New normality*” scenario

The *New Normality* scenario was created for the time period 2021-2030, assuming that structural changes resulting from the global financial crisis in 2008 continue to affect the EU. The *New Normality* scenario is therefore a scenario where everything in the economy that was modified during the 2008 financial crisis (e.g. higher volatility of investments, higher dependence of investments on GDP, volatility of export and imports, higher tolerance for southern countries’ stability pact) still persists.

The *New Normality* scenario takes into account all the measures undertaken at EU, national, and local levels to counterbalance the effects of the pandemic. Particular attention has been paid to model the funds available by the recovery plan drawn up by the European Commission, totalling an investment of EUR 1.82 trillion, and comprising the multiannual financial framework (MFF) as well as an extraordinary recovery effort, *Next Generation EU*. These funds are modeled by **increasing investment levels, which in turn support increased private consumption and therefore allow imports and exports to return to pre-COVID levels**. The regional factors of the model also incorporate the increased availability of R&D funds and the enhanced energy efficiency due to the stimulating policies issued in the *Recovery Plan*.

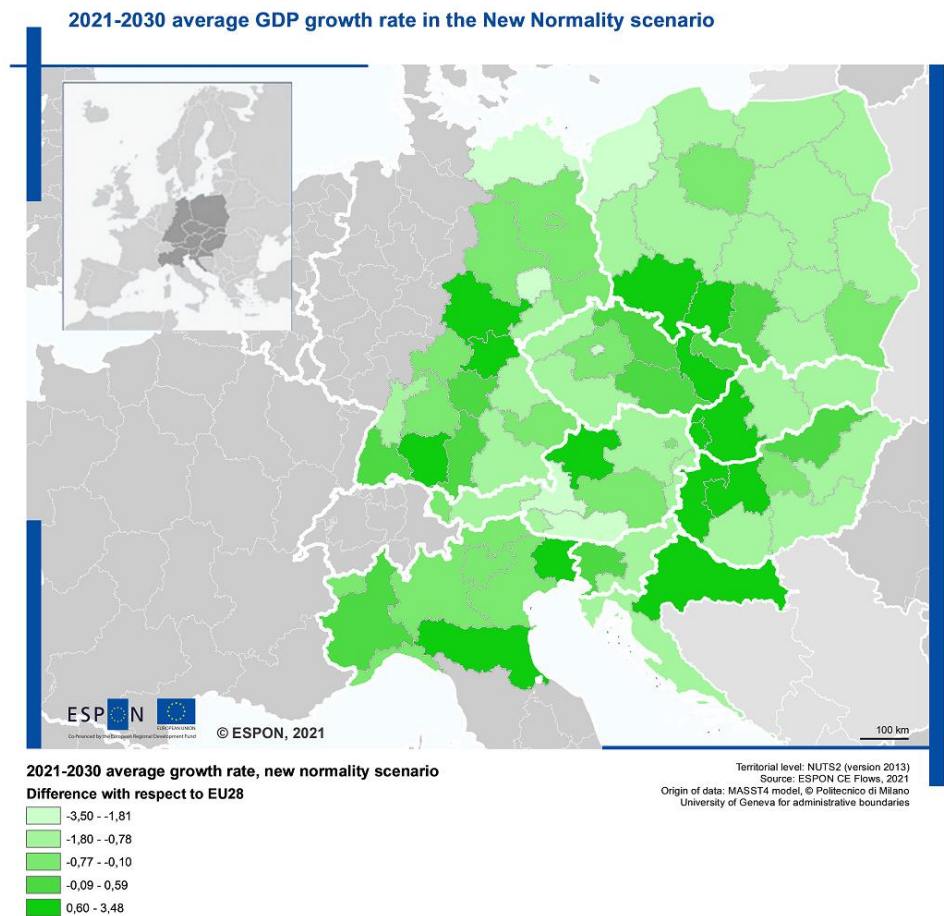
On international markets, permanently higher debt levels (although slowly converging to Maastricht targets, with some exceptions for selected southern European countries) are associated with slightly higher interest rates, due to the turmoil on financial markets.

Lastly, the COVID-19 pandemic experience is modeled as leaving traces in a partial recovery of trust levels in the regional model, as well as weak economic growth among both advanced and developing countries²⁹.

Map 11 provides a regional breakdown of the 2021-2030 average GDP growth rates in the *New Normality* scenario:

²⁹ As also suggested in Table 20 showing scenario assumptions, the MASST model can estimate the external demand effect as due to the growth of external (to the EU) economies. In particular, we model the impact of economic growth in the US and Japan on the one hand (‘developed economies’) and BRICs (‘developing economies’) on the other hand.

Map 11. Average regional GDP growth rates in CE in the New Normality scenario, 2021-2030



This map highlights that a **major rebound from the 2020 downturn can be expected everywhere:**

- In general, areas hit the hardest by the health crisis tend to significantly rebound;
- **Central and eastern regions of CE tend to register slightly lower growth rates** in the rebound period 2021-2030, but **their overall economic performance remains stronger in the long run, due to the lower losses registered during the 2020 lockdown.**
- Some capital cities, but not all, tend to recover more quickly than second and third-tier cities.
- Within the CE area, while most regions suffer minor economic losses in the initial stage of the pandemic, they tend to fare less well in its aftermath. As generally stated for the country level, we observe **that in regions in northern Italy, the rebound is more significant than in peripheral areas and offsets the losses accumulated in the first period³⁰.** On the other hand, **many regions in the south-eastern tip of Germany, Oberbayern included, are foreseen to grow faster than the average EU27 rates in the rebound period,** while also suffering from minor losses in spring 2020.

Moreover, in the New Normality scenario, economic disparities between CE countries experience an overall decrease (see Annex 5: Regional disparity trends in the three scenarios for a detailed discussion on the topic). When looking at

³⁰ I.e. in 2020, when the initial costs of the COVID-19 pandemic have been assessed. Notably, these regions include Piedmont and Emilia-Romagna.

national GDP growth simulation results, this trend is explained by the fact that the rebound after the pandemic will be particularly marked also in some of the poorest countries of the CE area (such as Croatia, Hungary and Slovakia)³¹. The “*between country*” disparities decrease because the rebound is high in poorer countries, while the “*within country*”³² disparities increase because the pre-COVID tendency towards concentrated development (i.e. a process of economic growth whereby economic resources and productivity tend to disproportionately increase in a few areas of the countries, not homogeneously) remains. These increased *within country* disparities becomes in the long run so high that they can no longer be counterbalanced by the decrease in the *between country* disparities, so that the total disparities increase (see

Figure 13, Annex 5: Regional disparity trends in the three scenarios).

3.1.3 The integration scenarios and the role of COVID-19

The *Integration* scenario is based on the assumption that the process of integration in the CE area will rapidly take place, while the *Partial Integration* scenario assumes that the pandemic generates a slowdown of the integration process within the CE area by limiting institutional and economic interactions, and postponing agreements. The difference between the results of the two integration scenarios represents the GDP loss generated by the missed integration caused by COVID-19.

The underlying assumptions of the two integration scenarios are summarised in what follows:

- Most regions in the CE area gain from further integration, with very few exceptions;
- Among regions in the CE area, some **areas with strong manufacturing specialisation (north-west of Italy and south-east and east of Germany) tend to achieve the highest gains**; and
- A competition effect between areas benefitting from integration seems to occur, whereby regions located in CE tend to almost universally gain with respect to the *New Normality* scenario, while many regions outside CE tend to register minor losses. This is in line with the theory of trade diversion (Balassa, 1967). Competition is in this case due to the mechanism of attraction of economic resources into CE, due to the lower economic costs faced by firms and consumers located there due to the assumed integration process.

In addition, the two integration scenarios show similar disparity trends since the slowdown of the integration process does not influence the distribution of GDP at national and regional level, rather the aggregate growth. Because integration advantages are assumed to be evenly distributed in space (this includes, for instance, the increasing intensity of cooperation relations, stronger networks, and higher trust), both *between* and *within* disparities in the two integration scenarios remain rather stable (see

Figure 13, Annex 5: Regional disparity trends in the three scenarios).

Nevertheless, the pandemic may affect integration, extending time and costs of agreements,³³ postponing face-to-face meetings, decreasing trust among people and mobility for different purposes (e.g. leisure and business). In the *Partial Integration* scenario, these effects may lead to:

³¹

Figure 13, Annex 5: Regional disparity trends in the three scenarios

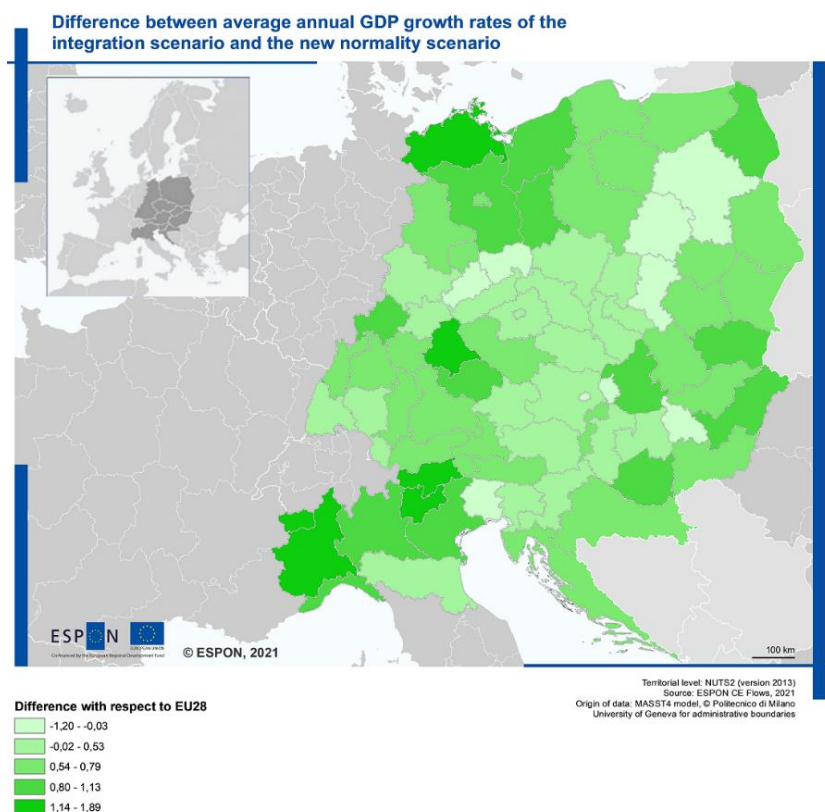
³² I.e. disparities between regions of the same country

³³ Pauwelyn (2020) provides quite some examples of such perverse effects. One visible example is the decision made by countless governments to restrict the export of medical supplies so as not to run short for local purposes. More

- weaker growth in FDIs;
- increased impact of barriers and borders;
- lower trust and social capital; and
- lower tourist flows.

Finally, both, the quality of regional institutions and urban networks are assumed to keep growing everywhere, irrespective of the long-term consequences of lockdowns. Map 12 and Map 13 document the regional breakdown of our simulation exercise for the two integration scenarios. In particular, Map 12 shows the average GDP growth rates for the 2021-2030 period in CE in the *Integration* scenario in comparison with the *New Normality* scenario. Results reveal that **most regions benefitting from integration are located along the borders between CE countries** (e.g. Mecklenburg-Vorpommern)³⁴, and are those that are hotspots of manufacturing activities (e.g. north-eastern part of Italy), or well connected through international trade networks, (e.g. Southern Germany and Slovakia) thanks to stronger relationships among suppliers and buyers within the production chain. **Metropolitan and large cities do not seem to gain particularly from integration.**

Map 12. Difference between average annual GDP growth rates in CE compared to EU 28 on the basis of the integration scenario and the New Normality scenario

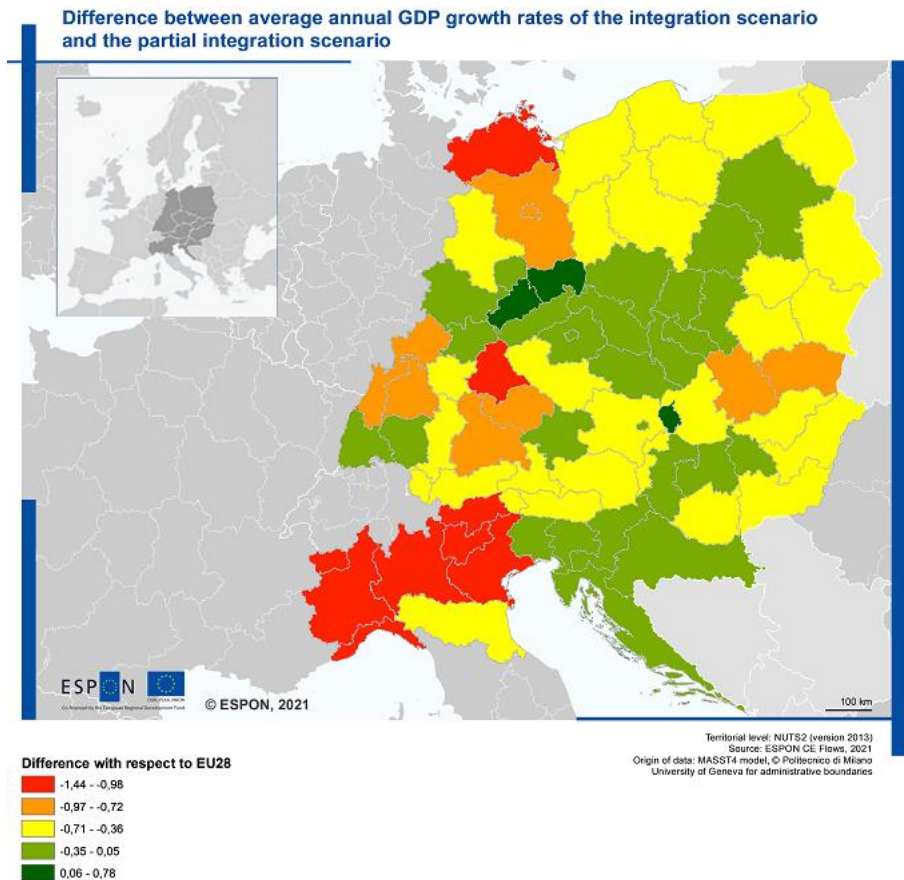


Lastly, Map 13 shows the cost of COVID-19 on the integration process. In fact, the figure is obtained as the **difference between the results of the *Partial Integration* scenario and the *Integration* scenario.**

specifically when coming to the EU, in 2021 not a single bilateral or multilateral agreement has been signed between the EU and other potential partners. According to the official registry of trade agreements made available by the WTO (WTO, 2021), in fact the only trade agreement concluded by the EU is the agreement between the EU itself and the UK, who withdrew the EU with the 2016 *Brexit* referendum.

³⁴ In this respect, an exception is represented by a few regions (also highly benefitting from integration) which are located at the borders with non-CE countries (such as Belarus and Ukraine).

Map 13. Difference between average annual GDP growth rates of the Partial Integration scenario and the Integration scenario



This map reinforces the perception that high-productivity areas, most of them strong in manufacturing (with the exception of Mecklenburg-Vorpommern), and well connected through international trade networks, tend to lose the most when integration processes slow down due to the persistence of COVID-19 effects. This is particularly the case in most German CE regions, most of northern Italy and the eastern tip of Slovakia.

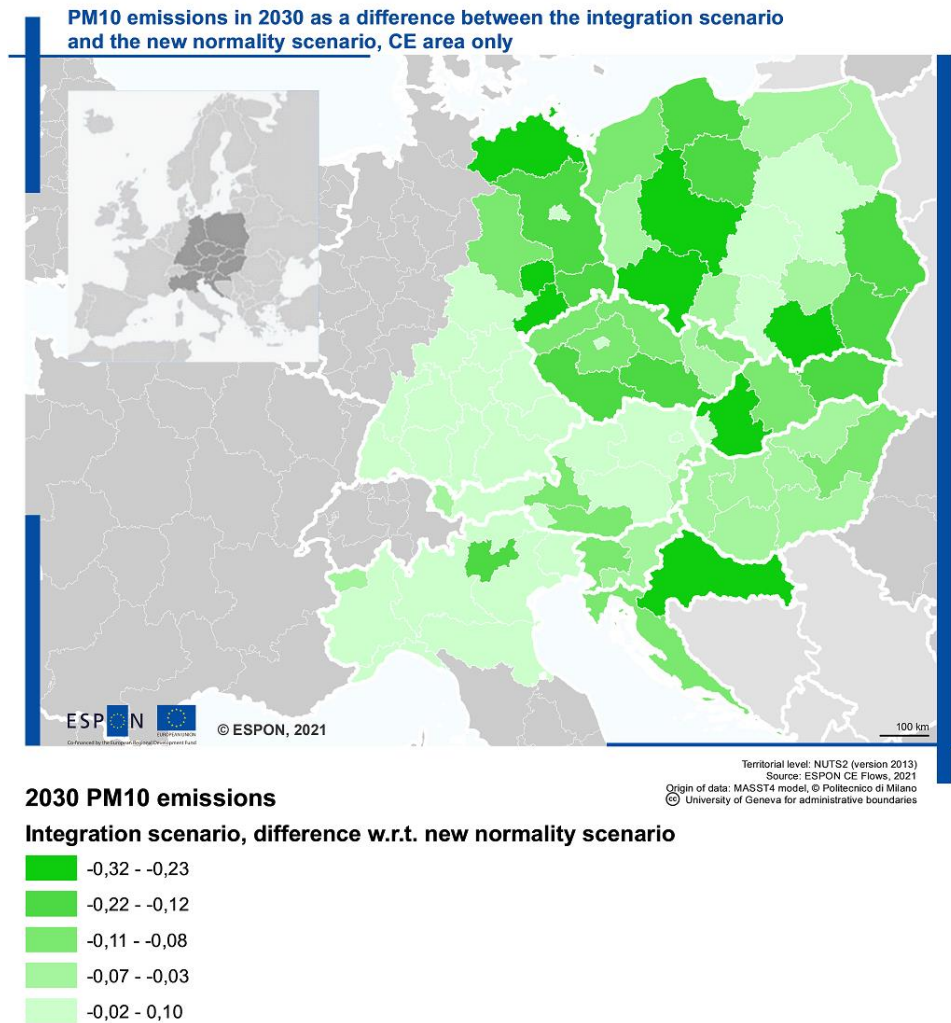
3.1.4 Future developments for society, environment and infrastructure

In this subsection, the results of the forecasting exercises described so far are exploited to simulate future developments for three main non-economic outcomes in CE regions, namely:

- Pollution;
- Accessibility; and
- Transnational cooperation.

In Annex 6: *Additional results of the MASST4 model on the costs of the COVID-related lockdowns* two additional dimensions are covered, namely *Trust/Social capital* and *Waste recycling*.

Map 14. PM10 emissions in CE in 2030 as a difference between the Integration scenario and the New Normality scenario

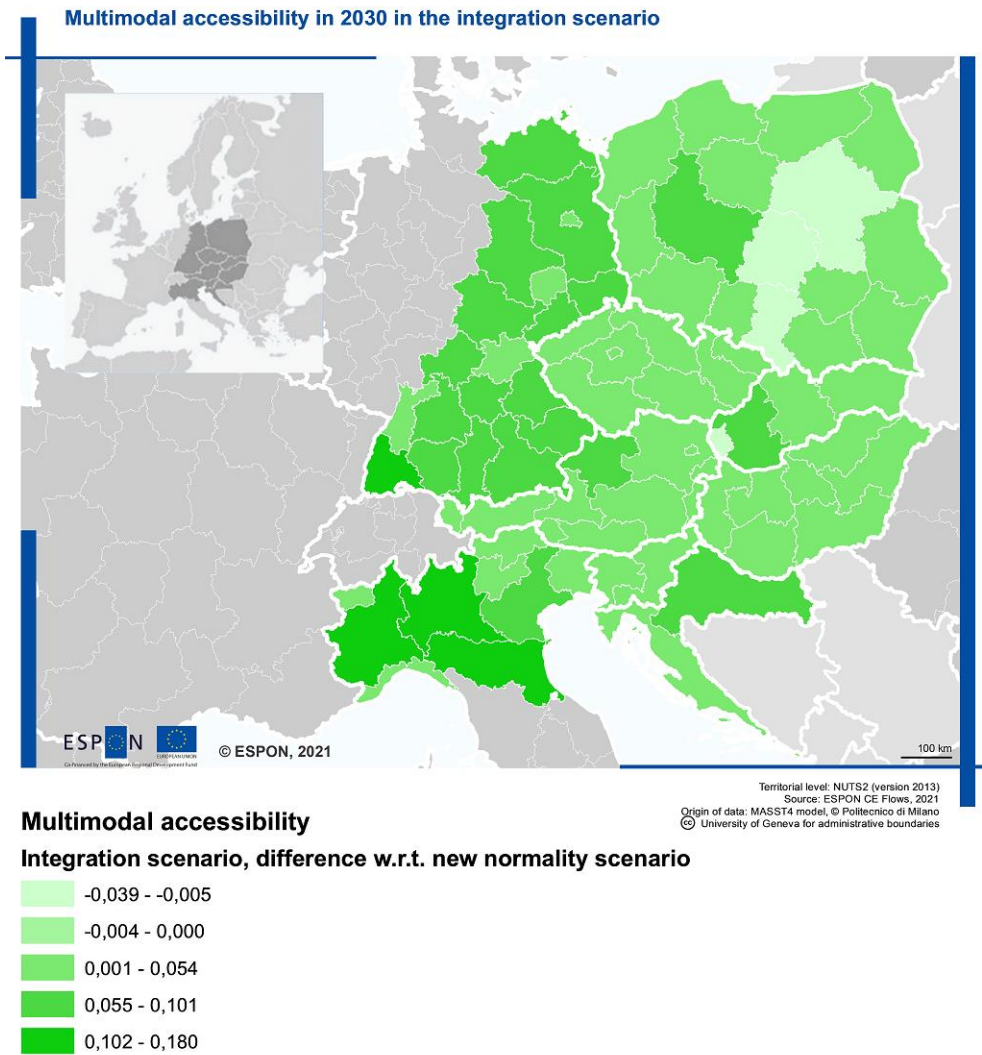


Map 14 above shows pollution levels as captured by PM10 emissions in the *Integration* scenario as a difference with respect to the levels registered in the New Normality scenario. Across the CE area, **pollution levels are expected to decrease, due to the integration of production facilities, and the resulting decrease in freight transportation**. Interestingly, this effect is **particularly strong for regions in CE, where manufacturing plants still occupy a relevant share of the labour force, and, thus, where a more integrated approach to production would have the greatest benefit**.

In

Map 15, the levels of multimodal accessibility in 2030 are displayed according to the estimates of the *Integration* scenario. The regions of Mazowieckie, Świętokrzyskie, and Bratislava experience a **process of strong concentration of population in the respective capital cities, with a consequent reduction of potential population in the peri-urban regions and a consequent decrease in population that can be potentially reached from core cities**.

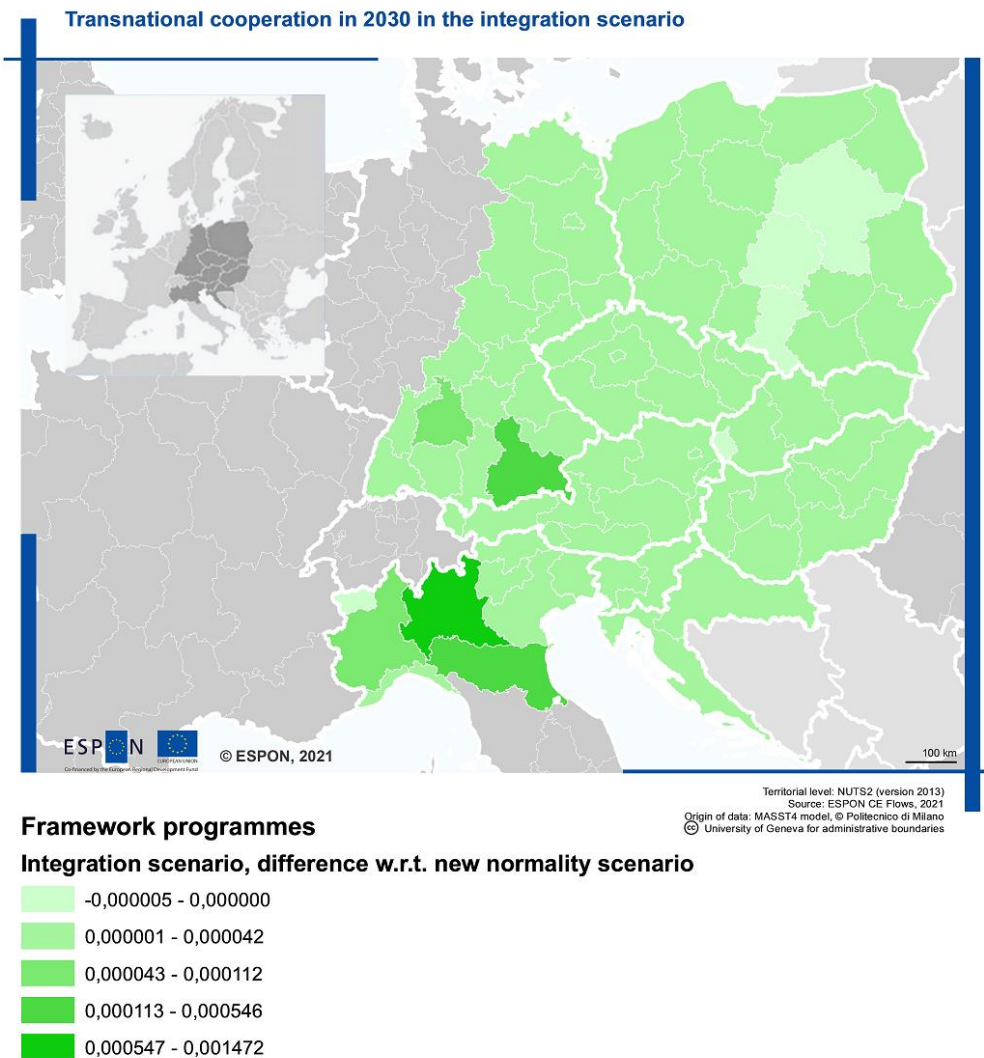
Map 15. Multimodal accessibility³⁵ in CE in 2030 in the Integration scenario



Map 16 displays the intensity of transnational cooperation in 2030 in the case of the *Integration* scenario, as a difference with respect to the *New Normality* scenario. The map suggests that an integration scenario would be characterised by higher intensity of transnational cooperation³⁶ across the whole CE functional area.

³⁵ A general definition of multimodal potential accessibility is $A = \sum_{j=1}^N D_j F(C_{ij})$, where A is accessibility, $j=1 \dots N$ represents all destinations from region i at travel cost C.

³⁶ Substantial scientific evidence (e.g. Capello and Caragliu (2018)) is available on the role of several forms of a-spatial proximities (i.e. similarities between territories not related to geographical distance but to other factors such as social or organisational) in fostering scientific cooperation, so that these results are perfectly in line with these findings.

Map 16. Transnational cooperation in CE in 2030 in the Integration scenario

3.2 Conclusions

This section highlighted likely development patterns for CE regions in a series of simulation scenarios depicting different combinations of context conditions in three different cases (*New Normality*, *Integration* and *Partial Integration* scenarios).

From an economic point of view, our findings suggest that the CE area is ripe for benefitting from further integration. In fact, enduring costs of the COVID pandemic, mainly in the prolonged reduction of trust levels and in a lower increase in trade flows, will reduce the positive impact of a possible increase in integration within the area. Our results suggest that despite the major efforts made in the past two decades for lowering barriers between EU countries, costs for exchanging goods and ideas remain rather substantial: the consequence is that lowering such barriers would benefit regions belonging to the CE area.

In particular, the forecasts displayed show that **further integration would have a positive impact on a number of axes defining development, beyond pure economic growth. This is for instance the case for transnational cooperation in innovative activities and accessibility**, which would both

increase with more integration within the area; and **pollution**, which **would decrease as the result of an increase in integration within the area**.

These scenarios are expected to stem several implications for the thematic areas highlighted in the study. **Economic interactions and networks** are likely to be **influenced by the impacts of the Next Generation EU**. Indeed, its focus on innovation should be beneficial to CE and it can be a major contributor to a possible improvement on innovation output in the whole CE. However, whether the growth will be homogeneous across regions or limited to those territories which are already high performers, will heavily depend on the ability to answer the policy needs of specific regions and stakeholders. Similarly, the new trends concerning flow of people are equally influenced by the outlook defined in the scenarios. Indeed, divergencies in productivity outputs are one of the key causes behind migrations and commuting. For instance, the *Integration Scenario* forecasts that borders and manufacturing regions are likely to gain the most from the recovery and integration whilst metropolitan areas will remain stable. Thus, it may be possible that daily city commuting will decrease also considering the long-lasting use of teleworking. Tourism is also likely to experience structural changes with a gradual decline of mass-tourism in favour of more sustainable and “slow tourism” focused on local honeypots.

As a consequence of the above-mentioned phenomena, also environmental and accessibility issues will be addressed by a share of dedicated funds within the Next Generation EU. For instance, the share of dedicated budget to environmental policies of the Recovery Plan for Europe might bring a significant reduction in PM10 emissions across the whole functional area. Some parts of Croatia, eastern Germany, Poland and Slovakia might reduce their pollution levels of up to 30% according to the results of our scenario simulations. Similarly, the review of the EU Transport Policy laid down by the Next Generation EU will indeed impact accessibility and connectivity in the CE area, especially if economic interactions and flows of people experience the trends described in the three possible scenarios.

Bearing in mind the features of the scenarios, the following section presents a set of proposals aiming to lead the CE area towards further integration and economic development. The recommendations and tools for integration in Section 4 build on the analysed spatial dynamics (Section 2) and interplay with the three scenarios described in this Section 3.

4 Proposals for transnational policy implementation

Central Europe lays at the core of Europe and is a dynamic area in terms of territorial cooperation, both within and outside its geographical borders, capitalising on opportunities arising from a wide variety of funding sources and cooperation instruments. Many structures and measures have been developed and implemented over the years, providing tools for the establishment of partnerships for an integrated development of the region, through transnational, interregional and cross-border cooperation. **These vary from governance structures to planning frameworks and funding instruments that facilitate the implementation of EU policies, and are complementary as regards tools and objectives**, providing an integrated framework for transnational and cross-border development. The existing partnerships identified cover nine typologies, including: European Groupings of Territorial Cooperation (EGTC), Macro-regional strategies, Cross-border cooperation (Interreg A), Transnational cooperation (Interreg B and other programmes, such as Horizon 2020), Interregional cooperation (Interreg C), Cooperation at the external borders of the EU, Euroregions, European Employment Services (EURES).

Despite a significant improvement in cooperation achieved in the past two decades, the barriers between EU countries and the costs for exchanging goods and ideas remain rather substantial. Our forecasts show that further integration would have a positive impact beyond pure economic growth, supporting the development in all the thematic fields that were analysed.

In this context, several recommendations have been identified, addressing common issues highlighted in the previous sections and during the stakeholder focus groups conducted in the framework of this project. The recommendations can be clustered as follow:

- **Complementarities and synergies with other EU instruments** and policies aimed at promoting effective interinstitutional dialogue amongst policymakers and promoting projects and programmes focused on cooperation;
- **Territorial coverage of cooperation initiatives** which focuses on ensuring a balanced participation of the different types of regions included in the CE;
- **Territorial evidence on CE as a functional area** aimed at increasing and promoting the CE perspective in the different levels of policy-making.

The following paragraphs illustrate our proposed recommendations, linking high-level to theme-specific interventions across the four thematic fields³⁷ covered in this study.

4.1 Complementarities and synergies with other EU instruments and policies

Considering the size and diversity of the CE area, its integration and functionality can be greatly improved by promoting synergies, including a strategic approach to the thematic areas identified as most competitive, or as untapped potentials. This goes beyond synergies in terms of funding, and also addresses **alignment in terms of strategies and policies** and an overall functional approach to the CE territory.

³⁷ Economic interactions and networks, Flow of people, Environmental hazards, Accessibility and connectivity

4.1.1 Recommendation 1: Managing Authorities should provide incentives for synergies and joint strategic approaches, especially by involving national and regional policymakers in a systematic assessment of cross-funding opportunities.

The concept of synergies has been increasingly analysed at EU level since the 2014-2020 programming period³⁸ (particularly with respect to R&I³⁹, but also in relation to agriculture⁴⁰, environment). While the potential is widely acknowledged, the evidence of the use of synergies is still limited and **the evidence suggests that actors still tend to follow a ‘synergies by opportunity’ approach⁴¹**. Moreover, synergies are difficult to be achieved, due to the different funding objectives, frameworks and rules (differences between directly managed instruments such as H2020, LIFE and those under shared management, e.g. ESIF), as well as the programmes’ objectives, rationale and focus (e.g. INTERREG focusing on place-based approaches and development vs. H2020 focusing on pure research).

CE countries and regions should capitalize on Interact IV to foster cooperation and coordination between Interreg and/or other programmes, and to achieve synergies. The 2021-2027 programming period offers the opportunity for Interact to **continue engaging the Interreg actors in expert networks and to further expand and deepen the relationship with different target groups, such as macroregional strategies, sea-basin strategies and operational programmes’ stakeholders**. Full efforts should be put in linking **Interreg projects/partners and other project partners under relevant EU programmes (Horizon Europe, COSME, etc.)**. This way synergies could be assured in scaling up relevant local projects at international level, as well as further developing local initiatives as spin-offs from international ones. More specifically, National Contact Points of the different programmes should map and promote the overall funding chain, synergies and the potential of different funds to support the main scopes of cooperation within CE.

Theme-specific recommendation - Economic interactions and networks: I3 support to scale-up innovation across the region

The success of existing research and innovation cooperation activities is strictly linked to the possibility of **scaling up innovation to accelerate market uptake of local innovation** (new products, services, Interreg), leveraging on regional Smart Specialisation Strategies. This policy intervention shall benefit from the new cohesion policy funding instrument called **I3 (Interregional Innovation Investment)**. National and regional policymakers should make full use of the new cooperation instruments – and particularly the **Interregional Innovation Investment (I3)** – to enable greater cooperation between researchers, universities, SMEs and large companies across regions by activating synergies between EU, national and regional funding for industry-led innovation projects. The newly introduced I3 instrument allows to scale up innovation across the region, with the aim to accelerate market uptake and to maximise the European innovation potential. In carefully exploiting such opportunity, national and regional policymakers can support interregional partnerships to deliver investments relating to the priorities of local Smart Specialisation Strategies, and to strengthen the competitiveness of value chains across the CE and beyond.

³⁸ REGULATION (EU) No 1303/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006 Common Provisions Regulation, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303&from=EN>

³⁹ European Commission (2014). Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes. Guidance for policy-makers and implementing bodies. https://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf

⁴⁰ EPRC (2019). Synergies among EU funds in the field of Research and Innovation in Agriculture

⁴¹ Ibid.

4.1.2 Recommendation 2: Managing Authorities should support the coordination of strategies and plans by designing tailored calls aimed at combining different funding opportunities

The analysis showed different bottlenecks (especially in cross-border areas), which could also result from the lack of alignment between the national strategies or plans (e.g. infrastructure, accessibility etc.). On the other hand, in fields such as smart specialization, the opportunities for cooperation and synergies transcend administrative borders, requiring the alignment of the national and regional documents. Notably, Central Europe overlaps the territory of all four macro-regional strategies; hence **Interreg CENTRAL EUROPE is the only transnational programme bridging all four current MRS** (covering the Danube Region (EUSDR), the Baltic Sea Region (EUSBSR), the Alpine Region (EUSALP) and the Adriatic and Ionian Region (EUSAIR)).

For instance, **Interreg CE could enable the coordination of the four MRS, pursuing territorial integration within and outside the CE area by approaching pan-European issues** (e.g. transport routes).

This could be done both in the:

- planning phase, ensuring coordination when building the programme strategy;
- implementation phase, by including a 'coordination' criterion in the project evaluation grid.

Theme specific recommendations: Economic interactions and network: Interreg CE should continue to support synergies in project development

Looking at the funding chain, synergies can be achieved at different stages of project development, through⁴²: (1) bringing together H2020, ESIF and/ or other funds in the same project, provided there is no double funding, to achieve greater impact and efficiency, (2) successive projects that build on each other (e.g. research projects provide results to be further developed/ capitalized on by projects funded by Interreg or national/ regional programmes) – Interreg CE already supported this approach through an Experimental Call (see Box 1 below); (3) parallel projects that complement each other, capitalizing on the opportunities provided by different programmes. Furthermore, future Interreg CE calls aiming at supporting synergies can build upon past project's results (from Interreg, as well as other relevant EU programmes in each thematic area), so to increase synergies and project uptakes across the CE regions, including extending their scope, or scaling-up their policy aims and objectives.

Box 1. Interreg CE Experimental Call supporting coordination and cooperation with projects from directly managed EU programmes

Interreg CE Experimental Call

The call aimed at rolling out promising project outputs and results of already funded Interreg CE projects, through the development of new project ideas, building on complementing results and outputs from at least 3 different projects co-financed by Interreg CE and directly managed EU programmes (Horizon 2020, LIFE, Connecting Europe Facility, etc.). 9 projects were selected for funding and are currently being implemented, accounting for 8.7 EUR ERDF and 87 project partners. Innovation and Nature & Culture are the priorities concentrating most funded projects.

Source: <https://www.interreg-central.eu/Content.Node/apply/apply.html>

4.2 Territorial coverage of cooperation initiatives

The territorial concentration of cooperation is particularly visible in the economic specialisation on manufacturing, but also applies to other fields such as R&D or energy. As shown by the analysis of partnerships, the participation of different types of regions in cooperation initiatives is uneven, due both to the reduced

⁴² Based on European Commission, Directorate-General for Regional and Urban Policy. 2014, Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes. Guidance for policy-makers and implementing bodies

administrative/institutional capacity of less developed regions and the limited concentration of assets and resources enabling them to seize and develop the benefits of cooperation. It is nevertheless essential to further **support stakeholder engagement and capacity building, so to avoid a concentration of cooperation in developed/specialised regions, and support stakeholders in areas with lower abilities and capacity to develop and implement projects.**

4.2.1 **Recommendation 3: Managing Authorities should support less-developed regions to test innovative solutions**

Less-developed regions could benefit from the experience of Interreg projects and use this experience to solve concrete local issues by replicating and testing good/best practices identified within different Interreg projects. **Greater support by Managing Authorities on pilot projects, living labs etc. in areas with limited administrative/institutional capacity, would allow to test innovative solutions that could provide hands-on experience and build trust at the local/regional level.** Aside from the direct benefits in the local communities, successful pilot projects would also contribute to achieving visibility and political buy-in of local/regional policy makers, allowing to further scale the project's results and to further invest in cooperation initiatives.

Theme-specific recommendation – Economic interactions and networks: Boost knowledge sharing and technology transfer on innovation

It is key to **boost knowledge sharing and technology transfer**, strengthening the cooperation between universities, companies, business support institutions and research centres. Notably, knowledge sharing and technology transfer can be pursued through the involvement of existing and new clusters of companies and research institutions. One of the possible solutions could be the support to projects which generate virtual platforms and cross-sectoral capacities in specific technological domains. A relevant example is the project **BIOCOMPACK-CE**:

Box 2. Economic interactions and networks: BIOCOMPACK-CE (Interreg Central Europe)

BIOCOMPACK-CE

BIOCOMPACK-CE is an Interreg CE project on the development of sustainable packaging in central Europe. The project aims to promote knowledge sharing and technological transfer between R&D institutions and producers of paper-plastics packaging solutions. The final output consists in the creation of a "Transnational Biocomposite Packaging Centre" as a virtual platform to share cross-sectoral expertise and develop paper-bioplastics packaging value chain.

Policymakers at macro-regional level should fund and support similar projects in order to provide the participating stakeholders the access to the technical expertise of research institutions, facilitating the development of innovative products or processes. The impact of this kind of project is not limited to the participating companies, it rather spills over on other players of those industries interested by the R&D innovative output: this knowledge transfer facilitates also regional economic specialisation.

Theme-specific recommendations - Environmental hazards: Enhance value chains through sustainable waste management and facilitate the transition to green energy

It is key to have replicability of innovative cross-national projects (even on a smaller financial/geographical scale) that generate knowledge sharing practices in eastern regions. A targeted intervention in knowledge sharing would support SMEs' and local and regional governments' technical knowledge on sustainable, renewable energy and environment. The box below presents some examples of best practices:

Box 3. Environmental hazards: STREFOWA, SURFACE, ENTeR (Interreg Central Europe)

STREFOWA, SURFACE, ENTeR

Among best practices in this area, relevant examples are the Interreg CE projects:

- **STREFOWA** The project set up a knowledge platform and an online tool on food waste with partners from Austria, Czech Republic, Italy, Hungary and Poland. It raised awareness on the current knowledge on food waste amounts in the five countries, as well as the quantities of food waste that are prevented by the currently existing best practices in food waste prevention activities/initiatives;
- **SURFACE**, which set up "Smart Re-Use parks" (i.e. network of structures, services and relationships between social enterprises, public sector, private profit companies, associations, citizenship that cooperate for the reduction of waste and optimization of resources) as a possible solution for increasing sustainability in selected functional urban areas (eastern Italy, Tyrol, southern Germany, central Poland and eastern Hungary); and
- **ENTeR**, a project involving research centres and associations of companies and clusters of the textile sector, belonging to five central European countries: Italy (Lombardy), Germany (Saxony), Czech Republic, Hungary and Poland. The project developed a system enhancing the value of industrial textile waste based on the characterisation and classification of their properties, using an online platform (M3P) for the matching of "materials and waste".

The success factor of these types of transnational cooperation projects consists in the definition of a common waste management strategy, with concrete lines of action to achieve improvements in the consumption of non-renewable resources, promoting a circular economy approach in companies. These elements well fit with the guiding principles of "sustainable industry" outlined by the European Green Deal⁴³.

Another key policy intervention consists in **filling the technological gap of the eastern regions of the CE area**, facilitating the regions' transition to "green energy". In particular, consulted stakeholders confirmed the outputs of our analyses insofar as eastern regions are still heavily relying on fossil fuels. Despite the presence of several renewable powerplants in some of these countries (e.g. Austria), investments by plants' owners to **increase the installed capacity** shall be favoured by policymakers at regional or national level to make renewable sources in those countries as reliable in terms of availability for consumers as non-renewable sources are. In this sense, positive examples of trans-border cooperation⁴⁴ are the "multilateral gas projects" developed within the Three Seas Initiative⁴⁵: the construction of planned gas pipelines will allow the countries of the region to achieve a satisfactory level of diversification of supplies. In our focus groups dedicated to environment and energy, stakeholders highlighted that the **attraction and the formation of qualified human capital in eastern regions** is a key policy intervention to further develop not only in research, innovation and manufacturing specialisation, but also in the energy sector. A relevant example of an Interreg Central Europe energy project aiming to fill this technological gap is presented in the box below:

⁴³ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en#policy-areas

⁴⁴ Not funded through the Interreg CE programme

⁴⁵ Among others, the *BRUA* gas connection (Bulgaria-Romania-Hungary-Austria) and the *Eastring* gas pipeline (Slovakia-Hungary-Romania-Bulgaria).

Box 4. Environmental hazards: ENTRAIN (Interreg Central Europe)

ENTRAIN

ENTRAIN fosters the adoption of a systematic and efficient energy planning able to reduce the local carbon footprint, intensifying the use of renewables. The two main goals of the project are:

- the reduction of CO₂ emissions; and
- the resulting improvement of the local air quality, alongside socio-economic benefits for local communities in five regions of Croatia, Germany, Italy, Poland and Slovenia.

To achieve these goals, ENTRAIN builds upon the technical expertise widely available in Germany and Austria, adapting their guidelines on heat planning and quality criteria in regions which are lagging behind in energy planning.

The success factor of these types of transnational cooperation projects is the reduction of carbon footprint in CE, particularly in eastern regions heavily relying on fossil fuels, empowering local actors with know-how and innovative technologies.

Theme-specific recommendation - Accessibility and connectivity: Design common strategies aimed at an integrated approach in maintenance and investments on accessibility

Given the unequal distribution of infrastructure and different levels of maintenance, investing in infrastructural transport projects is a key policy recommendation. National authorities – which are often responsible for the design and implementation of major infrastructures – should adopt an integrated approach focused on the needs of the functional area. This would leverage the strategic value of each national infrastructure as its integration in a wider network would enhance the contribution of national infrastructures to the overall accessibility and connectivity of CE. To do so, cooperation forums and platforms should be established and expanded. Policymakers should discuss national priorities together and develop common strategies. Interinstitutional dialogues should be preferred. Several stakeholders can be involved – especially from cross-border regions.

Box 5. Accessibility and Connectivity: CORCAP (Interreg Central Europe)

CORCAP

CORCAP aimed to support transnational cooperation between public authorities and their transport entities. To capitalise the opportunities of the infrastructure investment for multi-modal environmentally friendly freight, the Free State of Saxony teamed up with public and private partners from Germany, the Czech Republic, Slovakia and Hungary. Realizing activities aimed at better coordination among stakeholders in the field of transport and spatial planning, the partners will contribute to the creation of an environment for more efficient rail freight in Central Europe. To achieve the objectives of the project the partners will develop “Corridor Capitalisation Plans” to facilitate the interaction of regional development and transport infrastructure development

Theme-specific recommendation – Flow of people: Critical mass of human capital and technical support to SMEs

A key policy intervention is the support of **activities that favour the generation of an adequate “critical mass” of human capital**, as this is one of the key mechanisms for improving innovation output and eventually economic growth⁴⁶: spill-overs of human capital play a crucial role in fostering competitiveness and in improving labour market performances, especially in the underperforming regions of the CE area. The achievement of a critical mass of human capital goes along with the need of **developing productive**

⁴⁶ See for instance Robertson (2002), Zhang (2013) and Fischer et al (2009).

capacity, training skills and innovative processes for **SMEs** together with policies aiming to limit depopulation of eastern regions towards the western more attractive labour markets.

Among the examples of intervention in this area, **femcoop PLUS and WOMEN** are examples of best practice of active and effective cooperation targeting technical skills and migration of human capital.

Box 6. Flows of people: femcoop PLUS, WOMEN

femcoop PLUS. WOMEN

- The Interreg V-A Austria-Hungary project **femcoop PLUS** aimed to use innovative measures and campaigns to get young women interested in technical professions via the development of an innovative, cross-border business service for the electrical and metal engineering, energy technology and IT robotics sectors. In addition to experimental technology modules for training workshops (active, experimental, practical insight into technology), specific target group-specific “tour guides” are created for company tours. The focus is placed on the program room-specific strengths (metal and electrical engineering, energy technology, IT and robotics). Pilot projects are carried out to promote the introduction and implementation of the service package elements.
- The Interreg Central Europe project **WOMEN** had the goal of raising awareness for the challenges posed to the partner regions (Austria, eastern Germany, Hungary, Poland, Slovenia) by a continued brain-drain, especially of highly skilled young women. Through a mutual learning process, the participants in the project undertook study trips to Estonia, Spain and Sweden to analyse good practices and to define a roadmap to:
 - improve the image of the partner regions, aiming to show perspectives in the regions in order to provide incentives to stay instead of migrating elsewhere;
 - create in the partner regions the professional figure of the “Demography Coach”: these coaches have the role of networking at transnational level to elaborate a joint curricula and methodologies to train and coach personnel managers from companies as demography managers.

The success factor of these cross-border cooperation projects is the creation of the opportunity to counteract the shortages of skilled workers, strengthening the competitiveness of SMEs in the programme regions and promoting diversity by increasing the proportion of women in technology. In addition, these types of projects play an important role in fighting the outbound migration of well-educated young professionals and the significant sex-ratio imbalances which affect a number of central European regions located on the periphery of the functional area. These projects not only promote social cohesion on territorial level, but also foster economic competitiveness, growth and consequently employment.

4.2.2 Recommendation 4: Managing Authorities should consider territorial typologies in project calls’ design

Design funding calls considering the territorial typologies identified by this project and their specificities and aiming to support diverse partnerships (both in terms of regional development levels and typologies of stakeholders). For example, in less developed regions, the absence of proper infrastructure and capabilities (incl. human resources) in different fields, limit their ability to capitalise on the knowledge accumulated in different knowledge exchanges and projects, so funding has to consider and, to the extent possible, target all development needs and dimensions, from basic needs in terms of infrastructure and human resources, to more sophisticated projects (particularly in R&I, but also applicable to other fields).

Theme-specific recommendation - Accessibility and connectivity: New criteria for low-density and remote areas

Low-density and depopulating areas within CE are the most likely to suffer from transport shortage. Thus, including equity considerations as selection criteria for relevant projects (especially those financed by ERDF) may be a possible option to overcome this shortfall. Indeed, large infrastructures (especially railways) are often considered “too expensive” to provide services to a small number of users. A recent study

by the European Parliament⁴⁷ provides interesting insights in that matter. For instance, introducing “equity” as a horizontal principle in transport policies should somehow offset other criteria based on project efficiency (such as Cost Benefits Analysis).

Theme-specific recommendation - Flow of people: Grassroots initiative to support touristic appeal of small destinations

Since tourism is a strategic driver for economic development (Section 2.5), a **key policy objective** is the **promotion of less mainstream destination**. As specified in Section 2.2, some CE regions (e.g., urban hotspots such as Vienna and Budapest or natural sites such as the Alps and the Mediterranean coastline) draw in a significant volume of tourists from the same or other countries, whereas large parts of the programme area see relatively lower streams of incoming and local tourists. **Communication strategies** are therefore key to “**uncover**” **hidden tourism honeypots** (i.e. destinations that are likely to be unique due to the specific niche of activities they can offer), and to boost tourism in minor touristic spots.

Information campaigns have proved to encourage tourists to discover less-known places of a specific region and – at the same time – might help in diverting pressure away from mainstream touristic destinations. In its helping building the so-called “**destination image**” (a concept leveraging on the sum of all the beliefs, ideas, and impressions that a tourist has about a destination), previous studies argued that communication and information campaigns play a crucial role in the configuration of tourist preferences and opinions regarding visiting tourist destinations⁴⁸.

Destinations that include iconic elements in their promotion campaigns are also likely to have a comparative advantage on “less iconic” destinations: culture, heritage, gastronomy, architecture and attractions in general might provide tourists with a tangible image of a given place and allow them to make straightforward associations between the geographic area and the touristic offer. Destination promotion and place branding require a **unique selling point** (USP), which helps positioning the destination among the already existing ones in Central Europe. Because of their size, cities usually have a variety of niche activities that can be employed in contributing to a promotional brand image. However, since small towns and rural areas are likely to offer more focused activities and attractions, the promotion of their “uniqueness” can become easier. Central Europe has several potentially attractive destinations which – mostly due to lack of visibility – are not fully exploited.

Some good practices of cooperation between organisations involved in the destination marketing to coordinate and develop the “destination brand” include, for instance, targeted campaigns in Slovakia (*Letohrad Quiz*, in the context of the CRinMA project) and in Poland (*Tourist Passport*, in the context of the ThreeT project). The mentioned initiatives were developed in two central European areas that are not mainstream tourist destinations.

⁴⁷ [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/652227/IPOL_STU\(2021\)652227_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/652227/IPOL_STU(2021)652227_EN.pdf)

⁴⁸ Chung-Hsien, Lin et. al. (2007). Examining the Role of Cognitive and Affective Image in Predicting Choice Across Natural, Developed, and Theme-Park Destinations. *Journal of Travel Research*, 46, 183-194.

Box 7: Communication strategies and promotional brand image: [LETOHRAD, Tourist Passport](#) (Interreg Europe)

[LETOHRAD, Tourist Passport](#)

- The **LETOHRAD** initiative was developed within the CRinMA project, whose main objective was the provision of better support for mountain areas with intangible and tangible cultural resources in the Polish-Slovak border region. The initiative consisted in a joint promotion of restored castles in the Prešov region (Slovakia) with the possibility to win attractive awards. Two contests were indeed part of the campaign: 1) visitors could collect contest stamps at castle events to conquer a main prize; 2) visitors could also compete with the mobile app (Let's Discover LETOHRAD) and participate in an online quiz. Top players were then rewarded with a weekend stay in the area concerned.
- The **Tourist Passport** initiative was developed within the ThreeT project, whose objective was to improve the performance of policy instruments to protect and enhance natural and cultural heritage by setting up thematic trails or improving existing ones, making them accessible to all through green modes of transport and readily available information. The initiative consisted in an information and marketing campaign launched by the Kujawsko-Pomorskie region in Poland reinforcing the whole constellation of small attractions and tourist values in the area. Holders of the Tourist Passport were incentivised to visit specific destinations (promoted by a booklet containing suggested sites for sightseeing and a calendar with events). This in turn allowed tourists to collect stamps and eventually win prizes.

As a result of this type of cooperation projects, minor tourist attractions have seen the flow of visitors increased. Furthermore, these initiative – by creating a new approach to build an offer and a way to talk about the region in an attractive and innovative way – increase the visibility of poorly promoted places and the interest of companies in cooperation with public and tourist organizations.

4.3 Territorial evidence on CE as a functional area

As proven by the current targeted analysis, while descriptive data on the CE development is relatively accessible, data depicting functional relations, flows and interactions, is not easily accessible at a detailed level. Hence, based on the database and mapping developed within CE FLOWS, further efforts should be conducted to better describe, monitor, and develop the CE area from a functional perspective. This would contribute to improving the knowledge base and territorial evidence on functional relations in CE, supporting evidence-based policies at local, regional and national levels.

4.3.1 **Recommendation 5: Managing Authorities in cooperation with National Contact Points should consider building a territorial observatory of the CE**

The collection of data and information on interactions and flows for a better and more informed decision-making process should be done in cooperation with the Member States, regions, and municipalities, to develop a joint harmonised information system that will allow the monitoring and evidence-based development of the CE functional area. The initiative should be coordinated at transnational (Interreg CE) or EU level, could be linked to other territorial data initiatives of the European Commission and could capitalize on Interact IV to create an innovative tool for transnational policy implementation.

Moreover, considering the increasingly important role of CE cities and their functional urban areas as drivers of the region's development, as well as at EU level, building dedicated urban and regional/FUA datasets relying on advanced analytics or cutting-edge technologies such as artificial intelligence and machine learning, would help understanding the urban and regional development dynamics and would allow building dedicated policies.

4.3.2 Recommendation 6: Managing Authorities and National Contact Points should organise and promote further research on CE features and raise awareness of its potentialities.

The analysis showed differences both in the CE regions' participation in different partnerships (e.g. the predominant participation of more developed/capital cities in more innovative, research-oriented H2020 projects), and in the scope of the projects (e.g. Interreg supporting knowledge-exchanges and cross-border cooperation vs. H2020 focusing on R&I). As highlighted by the stakeholders in the focus groups, **depending on the thematic focus, the stakeholder category, the local/regional context** (e.g. local resources, development of the region Interreg), **as well as the administrative procedures and requirements, different projects best answer to specific needs.** However, projects are often developed in "isolation", paying little attention to the potential synergies with other funds, and thus to a potentially increased impact (incl. at territorial level). This is also due to the lack of or incomplete information and practical guidance for the potential beneficiaries⁴⁹ at local, regional, or national levels, translating the European priorities in practice. **Managing Authorities and National Contact Points of the different programmes have an important role in this regard.**

As a first step, Managing Authorities should design and fund research projects aimed at identifying opportunities and dimensions for further cooperation, especially as COVID19 impacts will be more defined. If possible, these studies should be led by local universities and research centres as this would further enhance knowledge sharing.

Subsequently, National Contact Points should make the findings available to the wider public, especially to potential project beneficiaries. This could be achieved by organising seminars and conferences on key cooperation topics and regional development. Moreover, National Contact Points – who have an overview of the on-going projects – can share their information to find matching and complementing projects. By doing so, not only cooperation would be enhanced and streamlined, but also the risk of isolated projects would decrease.

⁴⁹ (1) Achieving synergies and (2) Visibility and cooperation can be considered the two main directions for a coordinated approach to shared priorities according to INTERACT, 2020. Cooperation and synergies in Central and South-Eastern Europe area - A coordinated approach to shared priorities

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List of Annexes

Annex 1: Analysis of different typologies of partnerships

Annex 2: Spatial dynamics of ageing in the CE area

Annex 3: Cluster analysis – manufacturing flows

Annex 4: Assumptions for scenario modelling

Annex 5: Regional disparity trends in the three scenarios

Annex 6: Additional results of the MASST4 model on the costs of the COVID-related lockdowns

Annex 1: Analysis of different typologies of partnerships

Main results of the analysis of partnerships

The analysis of existing partnerships reveals that many structures and measures have been developed and implemented over the years, providing tools for the establishment of partnerships for an integrated development of the region, both within the territory and in relation to neighbouring areas. These vary from governance structures to planning frameworks and funding instruments that facilitate the implementation of EU policies. Although they can overlap over common territories, they are complementary as regards tools and objectives, providing an integrated framework for cross-border and transnational development. The existing partnerships cover nine typologies, detailed in the following Table 2.

Table 2. Overview of the main typologies of existing partnerships⁵⁰

Typology	Main Delivery Models	Territorial Scale	Spatial Emphasis	Territorial Coverage	Typologies of Stakeholders Involved	Areas of Cooperation	Available Instruments	Examples
Cooperation forums/ initiatives and working communities	Consultative councils and/or working groups, voluntary associations, lobbying, strategic planning, joint project development and implementation	Regional, Supraregional, National	Cohesion, Network	CE countries, CE countries and neighbouring territories	Presidential and government representatives, diplomats, experts, non-governmental organisations	Energy, culture, environment, transport, tourism, research, education, security, defence Interreg.	Financial aid, strategies and action plans, knowledge exchange	The Three Seas Initiative, Central Europe Initiative, the European Green Belt Initiative, the Cooperation under the Commission Initiative on Central and South-Eastern European Energy Connectivity (CESEC), the Visegrád Group, the Oder Partnership, the Carpathian Convention Interreg.

⁵⁰ The territorial scale and the spatial emphasis are established based on the classification provided for Interreg Programmes in European Commission, 2015. *Territorial Cooperation in Europe. A Historical Perspective*

Typology	Main Delivery Models	Territorial Scale	Spatial Emphasis	Territorial Coverage	Typologies of Stakeholders Involved	Areas of Cooperation	Available Instruments	Examples
European Groupings of Territorial Cooperation (EGTC)	Multi-level governance, strategic planning, joint project development and implementation, interregional networks	Local, Regional, Supraregional, National	Proximity, Network	CE countries, CE countries and neighbouring territories	Member States, regional or local authorities, associations, any other public body	Health, education and training, environment, energy, nature protection, transport, research, spatial planning Interreg.	Joint decision-making, service provision, knowledge exchange, strategies and action plans, integrated territorial development (ITI, CLLD, JAP)	European Urban Knowledge Network (EUKN), Euregio Senza Confini EGTC, Euregio Tyrol-South Tyrol-Trentino EGTC, Central European Transport Corridor EGTC Ltd., EGTC NOVUM, Via Carpatia EGTC, EGTC TATRY, Dresden Prag EVTZ Interreg.
Macro-regional strategies	Strategic planning, joint project development and implementation	Local, Regional, National	Cohesion	CE countries and neighbouring territories	The European Commission, national coordinators, local and regional public authorities, experts, non-governmental organisations, private bodies	Pollution, environment, accessibility, navigability, economic development, marine and maritime blue growth, tourism Interreg.	Strategies and action plans, knowledge exchange, financial aid	The Baltic Sea Region, the Danube Region, the Adriatic and Ionian Region, the Alpine Region

Typology	Main Delivery Models	Territorial Scale	Spatial Emphasis	Territorial Coverage	Typologies of Stakeholders Involved	Areas of Cooperation	Available Instruments	Examples
Cross-border cooperation (Interreg A)	Strategic planning, joint project development and implementation	Local, Regional	Proximity	CE countries, CE countries and neighbouring territories	The European Commission, local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies	Innovation, health care, education, employment, labour mobility, environment and risk prevention, social inclusion, culture, tourism, capacity building, transport, information and communication networks and services Interreg.	Financial aid, legal instruments (EGTCs), tools for integrated territorial development (ITI, CLLD, JAP), strategies and action plans, knowledge exchange	Interreg Austria-Czech Republic, Austria-Hungary, Czech Republic-Poland, Italy-Austria Interreg.
Transnational cooperation (Interreg B and other programmes)	Strategic planning, joint project and pilot projects development and implementation, Interregional networks	Regional, Supraregional, National	Cohesion	CE countries, CE countries and neighbouring territories	The European Commission, local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies	Innovation, environment, accessibility, telecommunications, urban development, natural and cultural heritage, energy, capacity building Interreg.	Knowledge exchange, financial aid, strategies and action plans, legal instruments (EGTCs)	Interreg Central Europe, Baltic Sea, Danube Area, Alpine Space, Adriatic-Ionian or the Mediterranean Area, Horizon 2020, LIFE Interreg.
Interregional cooperation (Interreg C)	Strategic planning, pilot projects development and implementation, Interregional networks	Local, Regional, Supraregional	Network	CE countries, CE countries and neighbouring territories	The European Commission, local, regional and national authorities and institutions, experts, non-	Research, technology development, competitiveness and SMEs, the information society, tourism, culture, environment, low-carbon economy,	Knowledge exchange, financial aid, strategies and action plans, legal	ESPON, Interact, URBACT, Interreg Europe

Typology	Main Delivery Models	Territorial Scale	Spatial Emphasis	Territorial Coverage	Typologies of Stakeholders Involved	Areas of Cooperation	Available Instruments	Examples
					governmental organisations, private bodies	transport, capacity building Interreg.	instruments (EGTCs)	
Cooperation at the external borders of the EU	Strategic planning, joint project development and implementation	Local, Regional	Proximity	CE countries and neighbouring territories	Local, regional and national authorities and institutions, non-governmental organisations	Technical assistance and institution building, regional development, development of human resources, rural development, education, culture, employment, transport, environment Interreg.	Financial aid, strategies and action plans, knowledge exchange	IPA CBC 2014-2020 (Croatia-Bosnia, Hungary-Serbia, Croatia-Serbia), ENI CBC 2014-2020 (Poland-Russia, Poland-Belarus-Ukraine, Hungary-Slovakia-Romania-Ukraine)
Euroregions	Voluntary associations, lobbying, strategic planning, joint project development and implementation	Local, Regional	Proximity, Network	CE countries, CE countries and neighbouring territories	Local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies	Economic development, accessibility and transportation, environment, education and culture, social cohesion, health, spatial planning, research and innovation, governance, security Interreg.	Financial aid, strategies and action plans, knowledge exchange	MontBlanc Space, EuropaRegion Tyrol-South Tyrol-Trentino, Via Salina, Inntal, Salzburg-Berchtesgadener Land-Traunstein, Inn-Salzach, Egrensis, Neisse-Nisa-Nysa, Glacensis, Praded,

Typology	Main Delivery Models	Territorial Scale	Spatial Emphasis	Territorial Coverage	Typologies of Stakeholders Involved	Areas of Cooperation	Available Instruments	Examples
								Senza Confini Interreg.
European Employment Services (EURES)	Interregional networks	Local, Regional	Proximity, Network	CE countries	Public employment services, trade unions, employers' organisations	Workers' mobility	Job Mobility Portal, counselling and guidance, events (career days, workshops, recruitment events Interreg.)	EURES-TriRegio, EURADRIA

During the current programming period (2014-2020)⁵¹, 14,690 organisations⁵² located in CE regions have been involved in 14,351 projects, indicating a high interest for territorial cooperation. Despite not being a targeted programme for the CE area, cooperation on Horizon 2020 accounted for 76.9% of the total number of projects, followed by Interreg programmes (21.1%) and LIFE (2%). Out of the 14,690 project beneficiaries, there are 7,627 distinct organisations involved in Horizon 2020 projects, 6,367 distinct entities involved in Interreg projects and 696 distinct entities involved in LIFE projects.

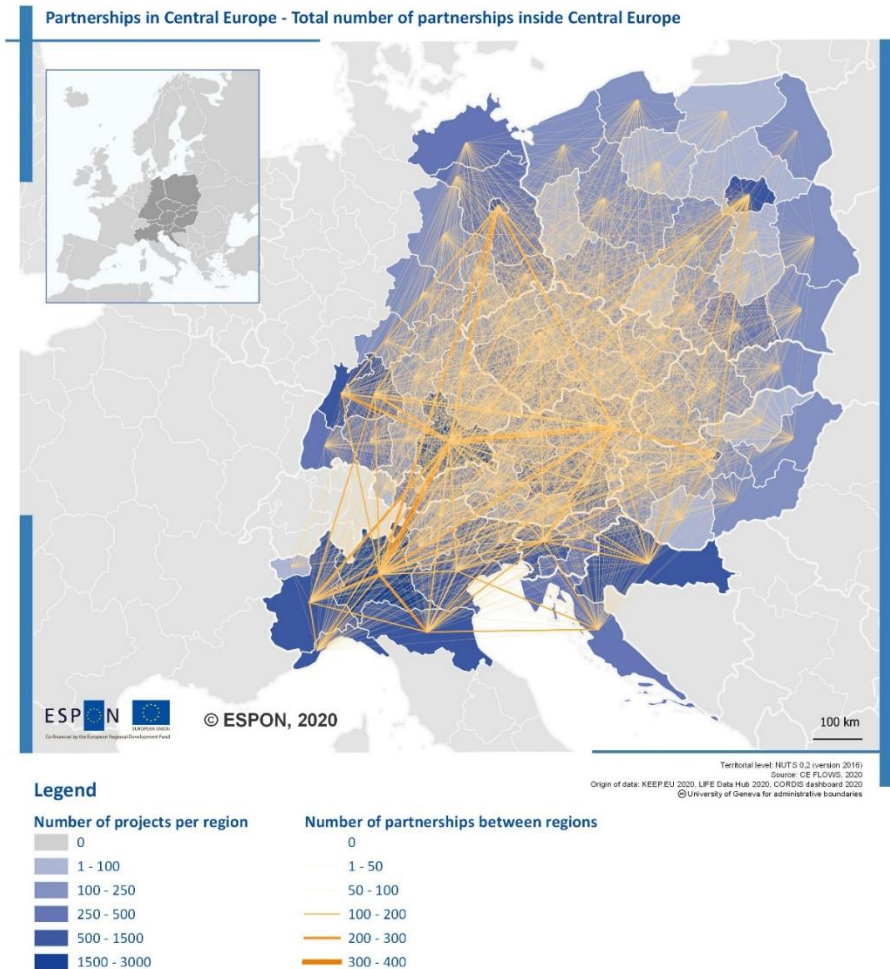
The intensity of cooperation between regions in the CE area⁵³ is driven by common interests and priorities, among which research and innovation enhanced by the Horizon 2020 programme is highly important. In this context, the most intense cooperation between pairs of regions is found in the triangle Upper Bavaria – Wien – Lombardy, with over 370 partnerships for each pair. Other economic centres in the neighbouring area follow closely, with Berlin and Piemonte adding more than 250 bilateral partnerships. At the opposite end, regions that do not share a common border with regions from neighbouring countries are not particularly active in any thematic cooperation area and are less likely to cooperate with other regions, as it is the case of several Polish regions.

⁵¹ Based on the Interreg projects available in the Keep.eu database as of end of November 2020, on the projects available on the LIFE cooperation programme 2014-2020 data hub as of end of November 2020 and on the projects available on the CORDIS dashboard as of end of November 2020

⁵² Total number of organisations participating in the cooperation programmes (may contain overlaps, not distinct organisations)

⁵³ Includes only partnerships between regions within the CE area

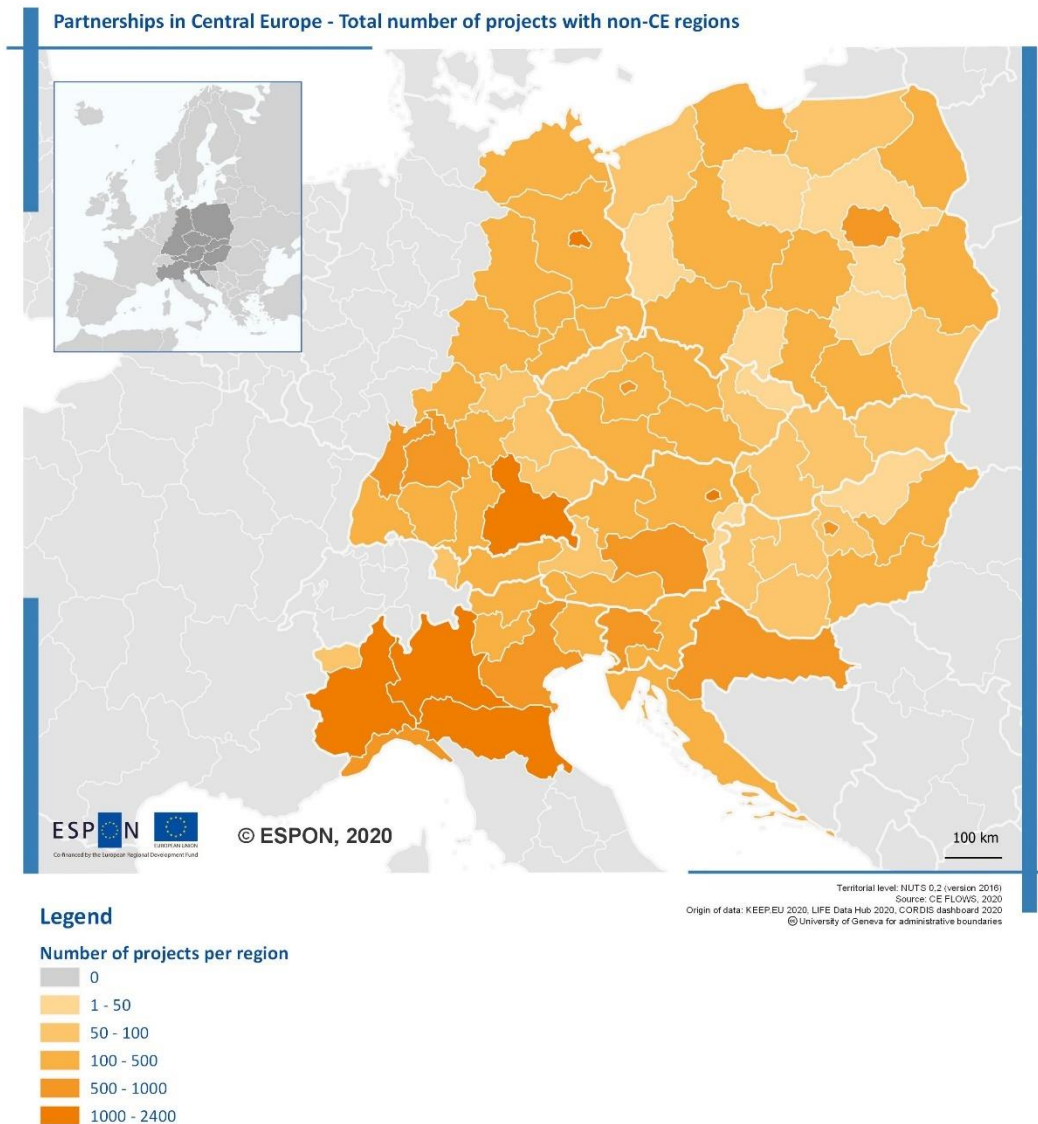
Map 17. Number of projects and partnerships between CE area regions during 2014-2020 programming period



The CE area is a highly dynamic area in terms of territorial cooperation, with regions being active in multiple cooperation programmes and using a large variety of tools for collaboration. At the same time, this involvement is not limited only to programmes dedicated to interregional cooperation within the CE area, an aspect which is proved by the high number of partners located outside the CE area, and the significant involvement of regions from CE in projects that cover a wider area at the European level.

Regions that are in general more active in cooperation initiatives are also involved in more projects with regions outside the CE area. Horizon 2020 participation as well as interregional and transnational cooperation programmes support this idea, some examples being present in northern Italy and Upper Bavaria. Capital regions – Berlin, Wien, Budapest, Warsaw, Prague – also seem to be more involved in non-CE cooperation, given the more developed infrastructure and capacity to sustain larger, more complex projects, with a high number of partners.

Map 18. Number of projects between CE area regions and non-CE area regions during 2014-2020 programming period⁵⁴



As regards the main areas of interest, **territorial cooperation in the CE area has a vast thematic diversity, influenced by the large number of thematic priorities at the European, national and sub-national level that are covered by the analysed programmes.** The analysis reveals the existence of 43 cooperation themes (of which 41 were considered⁵⁵) under the Interreg, 38 thematic priorities (of which 35 were considered⁵⁶) under Horizon 2020 and one broad topic supported by the LIFE programme – Environment. Given the differences in the data used (i.e using three main data sources), the cooperation themes and thematic priorities funded by the three programmes

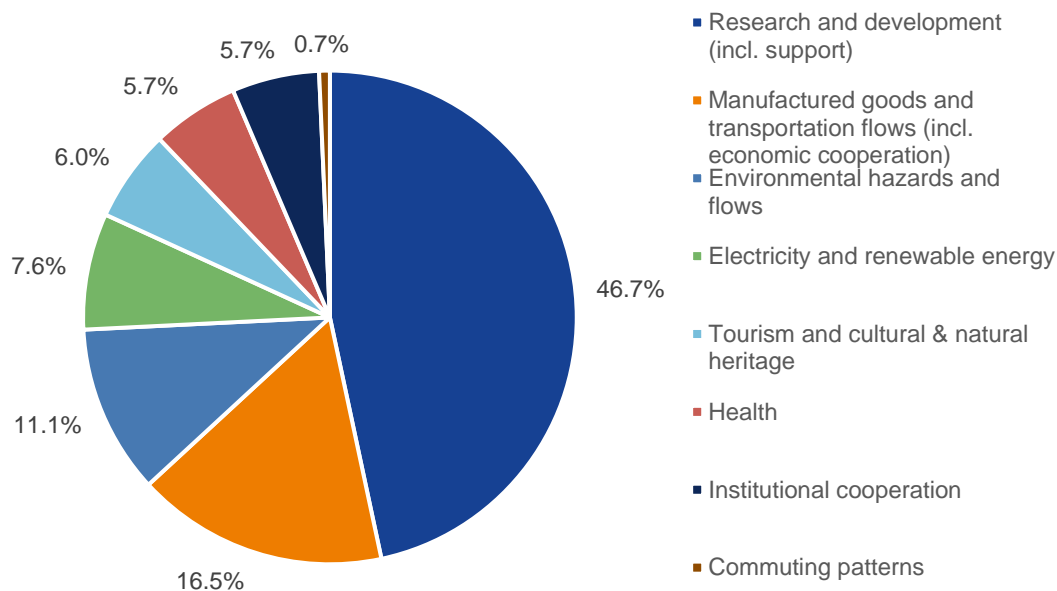
⁵⁴ Does not include data on LIFE programme

⁵⁵ The Education and Infrastructure project themes were not included in the thematic cooperation areas, since it is difficult to link them to the thematic flows (i.e. infrastructure is a broad field that covers several sectors such as energy, transport Interreg., which are included in other thematic areas and flows) and would overemphasize the share of institutional cooperation artificially should they be included in this category

⁵⁶ The thematic priorities which have not been included refer to cross-cutting issues that make it difficult to allocate them to any thematic cooperation area

were aggregated to six common thematic cooperation areas corresponding to each flow in the cluster and GIS analysis, two supporting themes (economic cooperation considered together with manufactured goods and transportation, and R&D support together with research and development), one cross-cutting thematic area (institutional cooperation) and one dedicated to the COVID-19 pandemic (Health). The allocation of themes and priorities by thematic cooperation areas can be found in the Scientific Report.

Figure 1. Distribution of projects by thematic cooperation areas in which CE area regions are involved, 2014-2020



The programme overall budget can provide opportunities for further cooperation. Transnational cooperation programmes have larger budgets available; however the number of partners is usually higher, too, thus providing lower budgets per partner. For example, the participation of German and Polish regions in the Baltic Sea programme can be further enhanced, given the significant budget of the programme in contrast to the low number of projects developed so far. On the other hand, cross-border cooperation programmes have lower budgets, but accommodate relative high numbers of projects, as they help regions address specific issues. For example, successful cooperation can be seen in Lithuania – Poland cross-border programme, which ranks low on the available budget (58.7 mil. Euro) but among the highest in terms of projects developed (110). Other cross-border areas have access to lower budgets, such as Slovenia - Hungary (15.6 mil. Euro), transposed into 24 projects (among the lowest), which allows for small-scale interventions.

Figure 2 Top 10 programmes by the number of projects in which CE area regions are involved during the 2014-2020 programming period

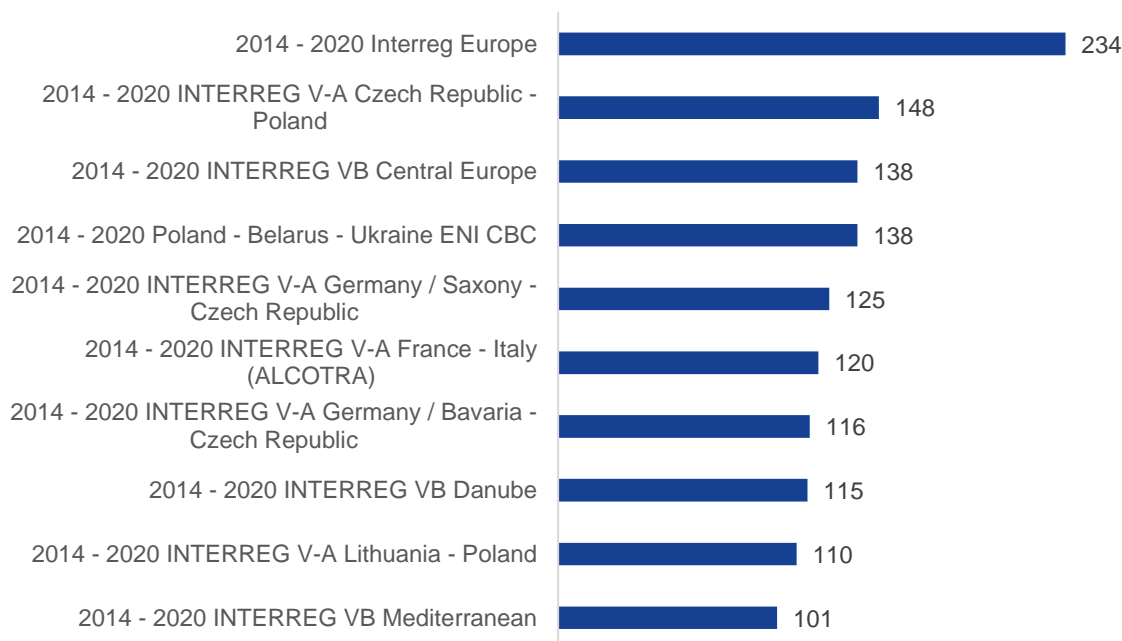
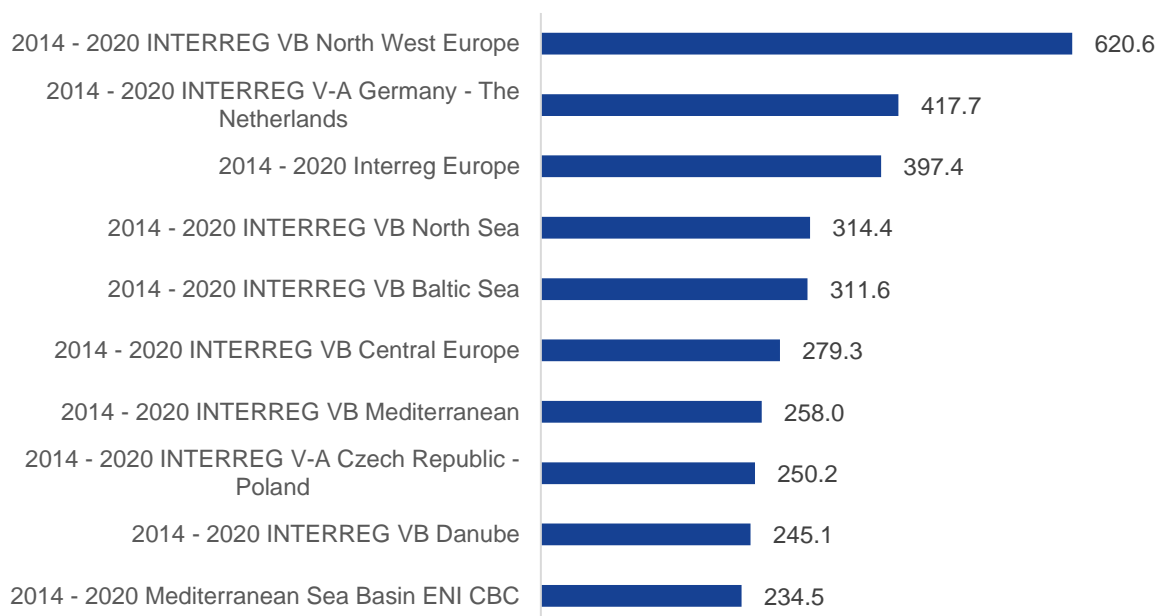


Figure 3 Top 10 programmes in which CE area regions are involved by total available budget (in mil. Euro) during the 2014-2020 programming period



Horizon 2020 programme, with an overall budget of over 77 billion Euro in 2014-2020, provides significant opportunities for development and cooperation across the EU territory, but not all CE regions are ready to capitalize on the opportunities of such partnerships. While Upper Bavaria, Lombardy, Wien and Berlin have been involved in more than 1,000 projects on Horizon 2020 with partners from the CE area and beyond, there are regions in Poland, for example, with 10 or less participations in Horizon 2020 projects. This reinforces the idea of existing disparities

on the capacity to sustain a fruitful engagements in R&D cooperation. Moreover, these Polish regions (e.g. Lubuskie, Mazowiec) are categorized as “modest innovators” by the Regional Innovation Scoreboard in 2019⁵⁷.

Regions in Italy, Germany⁵⁸ and Austria are displaying a high total number of partnerships both among one another and within each of the three countries (considering Horizon 2020, Interreg and LIFE). Their size and geographic position may have an influence on this intensity of cooperation, given that they have more neighbours within the CE functional area (i.e. more regions to cooperate with), but in the same time they have a common interest in the research and development cooperation area. Other interesting cases of cross-border, interregional and transnational cooperation with a high intensity of exchanges include: Wien – Western Slovenia, with 239 partnerships, mostly focusing on environmental topics, energy and health; Wien – Budapest, with 203 partnerships, covering the manufactured goods and transportation thematic area, including economic cooperation in general; Continental Croatia – Western Slovenia, having 200 partnerships in thematic areas that predominantly cover tourism, environmental issues and energy; Upper Bavaria – Warsaw, having 191 partnerships in total, of which a large share on manufactured goods and transportation thematic area and R&D.

European Territorial Cooperation (Interreg) programmes are one of the most commonly used tools for cooperation and funding, as they contribute to the implementation of strategic/relevant actions for all the typologies of partnerships, contributing to the successful achievement of their targets and objectives. Interreg programmes represent an important funding source for cooperation projects and their broad thematic coverage makes it possible for them to contribute to the implementation of territorial priorities. Hence, they support broader partnerships, which sometimes do not have a dedicated funding mechanism (for example, in the case of macro-regional strategies).

Institutional cooperation, encompassing projects related to institutional cooperation and developing cooperation networks, territorial development at multiple levels (regional, urban, rural) as well as various themes related to governance and partnerships, accounts for 5.7% in the total number of projects in which CE regions are involved, for a total of 821 projects. There are over 2,000 organisations that coordinate and implement these projects, making it one of the most engaging thematic cooperation areas.

Based on the available data, this thematic cooperation area is funded mostly through Interreg programmes, coming second as importance based on the number of projects after tourism as a cooperation area if we refer strictly to Interreg. Cross-border cooperation plays the most important role in fostering institutional cooperation (50.1% of projects), with regions in Poland and the Czech Republic being the most active (more than 40 projects by cross-border programme). Polish regions are also very active in the ENI CBC programme with Belarus and Ukraine on this thematic area, having developed 26 projects, the largest number among all programmes targeting cooperation at the external borders of the EU. Interregional cooperation programmes are concentrating the highest number of projects by programme, which is understandable given the higher monetary allocations and scope of cooperation, with most projects being funded through Interreg Europe, the main cooperation programme *helping regional and local governments across Europe to develop and deliver better policy*⁵⁹ (125 projects) and URBACT III Operational Programme, the European Territorial Cooperation programme designed to promote sustainable integrated urban development (53 projects). Transnational cooperation is also largely contributing to this thematic cooperation area, with Interreg VB Central Europe and Danube delivering over 40 projects each.

Despite being highly involved in all types of territorial cooperation programmes, CE regions have the role of Project Leader/Coordinator in 52.4% of the projects, with significant differences across typologies: 68.8% for Interreg, 49.5% for Horizon 2020 and 21.9% for LIFE⁶⁰. Project coordination can indicate multiple aspects regarding a region's capacity to manage complex issues, especially in the case of large H2020 projects, but it usually implies a larger budget, too. Additionally, project coordination can have an implication over the region's ability to establish networks and gather partners, as well as to create an agenda of preferred interventions. These results suggest that

⁵⁷ https://ec.europa.eu/growth/industry/policy/innovation/regional_en

⁵⁸ Any reference to Italy and Germany takes into account only those regions that are part of the CE functional area

⁵⁹ <https://www.interregeurope.eu/about-us/what-is-interreg-europe/>

⁶⁰ Based on the Interreg projects available in the Keep.eu database as of end of November 2020; Based on the projects available on the LIFE cooperation programme 2014-2020 data hub as of end of November 2020; Based on the projects available on the CORDIS dashboard as of end of November 2020

organisations in the CE area have a high degree of maturity in terms of project coordination and have achieved progress in terms of administrative and institutional capacity.

There are, however, significant differences across the territory. Based on Interreg data⁶¹, organisations in Lower Franconia (DE) and the Holy Cross Province in Poland have only had the role of project partner, together with organisations in other regions in Poland, the Czech Republic, Hungary and Germany that only coordinated a few projects. Some Polish and Hungarian regions were in a similar position in Horizon 2020 projects. At the opposite end, entities from Italian regions (Piemonte, Veneto) and Slovenian, Czechian and Hungarian regions (Budapest) lead in the number of Interreg projects coordinated, while Upper Bavaria, Lombardy and Wien coordinated the largest number of Horizon 2020 projects. It can be assumed that these regions benefit of the experience advantage, since they are among the most active regions in territorial cooperation.

European Territorial Cooperation and cooperation at the external borders of the EU as partnership typologies account for the second largest share of projects in the total number of 3,022 projects of these typologies (21,1%), as revealed by the analysis of the number of projects in which CE regions are involved. However, the largest number of projects is found in programmes in which CE area regions are involved, but not targeting specifically cooperation within the CE area, aiming to improve cooperation among regions across the EU based on common priorities and interest fields. The number of organisations that take part in these projects (

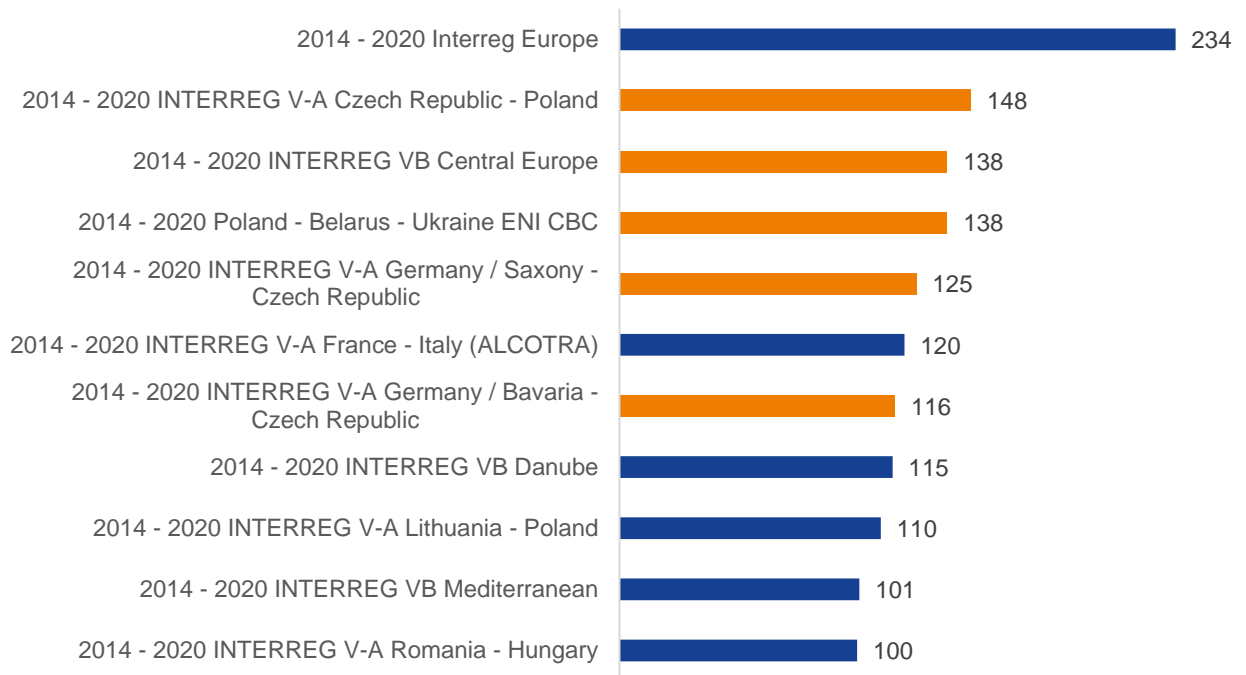
Figure 5) displays a different split by cooperation programme compared to the distribution by the number of projects (

Figure 4), from which Interreg VB Central Europe attracts over 1010 entities. The charts below depict the programmes where there are more than 100 projects and more than 200 organisations involved by cooperation programme.

By typology of Interreg programmes, projects funded under cross-border cooperation accounts for 61.8%, followed by transnational cooperation (17.4%), interregional cooperation (10.9%) and cooperation at the external borders of the EU (9.9%).

⁶¹ Based on the Interreg projects available in the Keep.eu database as of end of November 2020;

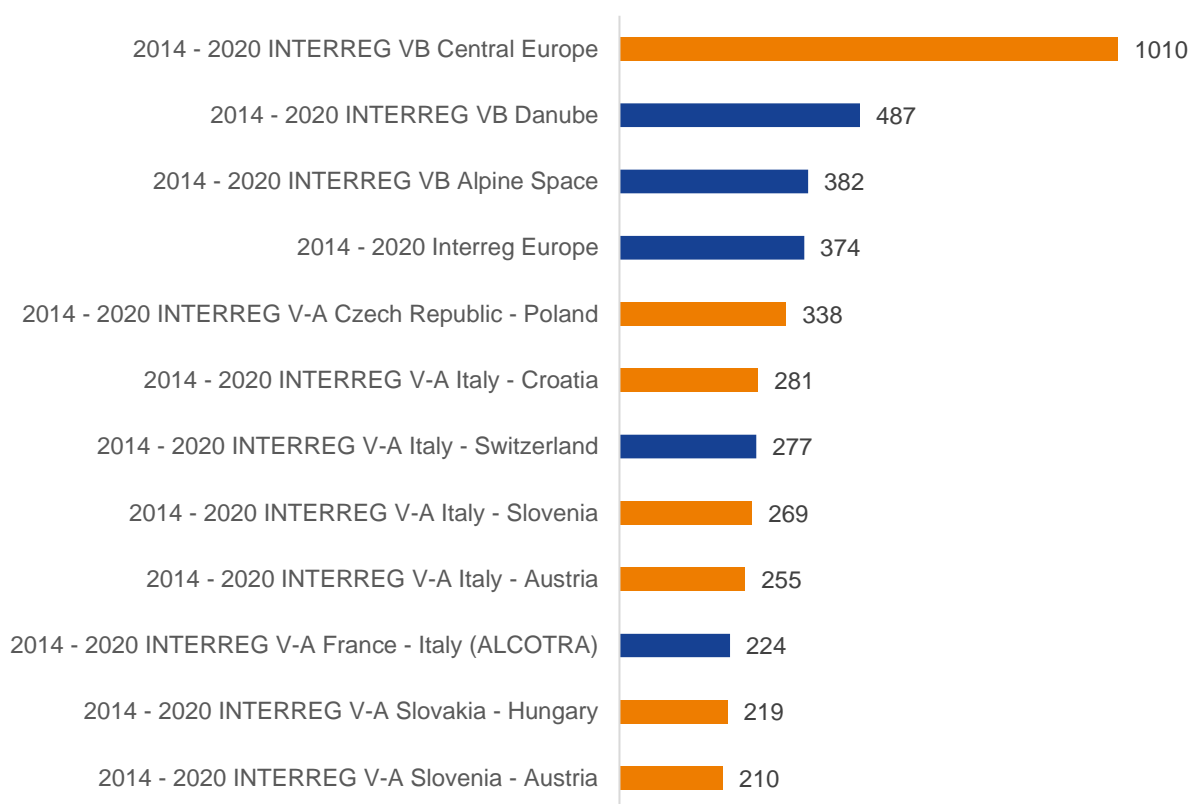
Figure 4. Territorial cooperation programmes in which CE area regions are involved, decreasing order by number of projects* **



*values displayed higher than 100

**in orange – target programmes for CE area regions

Figure 5 Territorial cooperation programmes in which CE area regions are involved, decreasing order by number of organisations* **



*values displayed higher than 200

**in orange – target programmes for CE area regions

The involvement of CE countries in various transnational partnerships is highly beneficial for the region, as it contributes to the inclusion in wider policy contexts that can lead to the harmonisation of thematic priorities of programmes, initiatives, conventions Interreg. that can overlap. Additionally, it facilitates the establishment of multi-level governance structures which offer an extended platform for knowledge and experience sharing and it increases the visibility of actions and the opportunity for further capitalisation. During the 2014-2020 programming period, transnational cooperation was reflected mostly in the high intensity of cooperation in 2014-2020 Interreg VB programmes: Central Europe (138 projects), Danube (115 projects) and Mediterranean (101). Aside from Interreg VB Danube, there are other programmes with significant territorial coverage in terms of projects, that are also contributing to the objectives of macroregional strategies: EUSALP – Interreg VB Alpine Space, with 64 projects and EUSAIR – Interreg VB Adriatic – Ionian, with 56 projects. Projects funded through these transnational cooperation programmes linked to macroregional strategies are mostly contributing to several thematic cooperation areas, such as institutional cooperation, tourism and environmental hazards.

Interreg Europe represents the main interregional programme for all regions in the European Union, helping regional and local governments across Europe to develop and deliver better policy⁶². Each organisation involved in an Interreg Europe project aims at improving a policy instrument in their region. By May 2020, over 300 policy changes have been achieved, including integrated territorial programmes, smart specialization strategies

⁶² <https://www.interregeurope.eu/about-us/what-is-interreg-europe/>

(S3) or support for national or regional operational programmes, and by November 2020 CE area regions were involved in 234 projects under this programme, funding mainly projects tackling institutional cooperation and tourism. For example, the link between Interreg Europe programme and S3 is highlighted in a JRC Technical Report⁶³, providing insights regarding the policy learning processes and the mechanisms to support synergies between different EU policies. As such, a series of difficulties emerged in exploiting synergies: difficulties to access/form international networks, weak collaboration with other EU countries, lack of experience in EU project consortiums management and lack of long-term strategic planning of R&I policies. In addition, despite the requirements that Interreg Europe projects should be aligned with regional objectives (i.e. identified in RIS as well) at least in a formal manner, this does not automatically guarantee synergies. Aside from Interreg Europe, two other programmes contribute to interregional cooperation in Central Europe, 2014-2020 URBACT III Operational Programme, with 67 projects, and 2014-2020 ESPON 2020 programme, with 32 projects. A more detailed description of each typology of programme can be found in the following Section of this Annex (

Detailed analysis of the typologies of partnerships identified).

At sub-national level, **cross-border partnerships** encourage a more place-based approach in the development of specific areas through the involvement of different typologies of stakeholders (public actors, public institutions, private bodies, NGOs Interreg.) that can develop joint actions, which contribute both to the improvement of local living conditions, as well as to the increase of socio-economic flows between countries. Regarding the legal instruments for cross-border cooperation, there is a tendency to adopt more formalised structures, such as European Grouping of Territorial Cooperation (EGTCs) for the possibility for multi-level governance structures, the joint planning and implementation of strategies with a more coherent approach on the territory, the easier access to EU funding, better visibility, a more effective communication channel, the possibility to jointly provide services of general economic interest or a more efficient decision-making processes in cross-border areas. The programmes involving CE area regions and in which cooperation is most intense are *2014 - 2020 Interreg V-A Czech Republic – Poland* (148 projects), *2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic* (125 projects), *2014 - 2020 Interreg V-A France - Italy (ALCOTRA)* (120 projects), *2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic* (116 projects), *2014 - 2020 Interreg V-A Lithuania – Poland* (110 projects) and *2014 - 2020 Interreg V-A Romania – Hungary* (100 projects). At the opposite end, cooperation between regions in Germany and the Netherlands and within the Netherlands Euregio Meuse-Rhin in which CE area regions are involved is less intense, with 5 and 2 projects, respectively. This is not surprising, as these programmes' territorial area meets only to a low extent the CE area regions.

Cooperation at the external borders of the EU aims to promote economic and social development in border areas, address common challenges, and establish better conditions for persons, goods and capital mobility, on the one hand, and to prepare the enlargement of the EU by supporting Candidate Countries, on the other, using two main instruments: **The European Neighbourhood Instrument Cross Border Cooperation Programmes (IPA CBC 2014-2020)** and **The Interreg Instrument for Pre-Accession Cross Border Cooperation Programmes (ENI CBC 2014-2020)**. Out of the total number of projects analysed under the Interreg typology, CE area regions have been involved in 300 projects, representing 9.9% of the total Interreg cooperation. Polish regions have been most active, with 138 projects funded under the 2014 - 2020 Poland - Belarus - Ukraine ENI CBC programme. They were followed by Hungarian, Slovakian and Croatian regions, each developing over 40 projects in their subsequent programmes.

⁶³ Synergies between Interreg Europe and Smart Specialisation: A methodological proposal to enhance policy learning. JRC Technical Report, 2018

Detailed analysis of the typologies of partnerships identified

This section of the annex presents the different typologies of partnerships, according to the dimensions identified (Scientific Report) for their classification.

Cooperation forums/initiatives and working communities

Cooperation forums/ initiatives and working communities	
Main models of delivery	Consultative councils and/or working groups, voluntary associations, lobbying, strategic planning, joint project development and implementation
Territorial scale	Regional, Supraregional, National
Spatial emphasis	Cohesion, Network
Territorial coverage	CE countries, CE countries and neighbouring territories
Typologies of stakeholders involved	Presidential and government representatives, diplomats, experts, non-governmental organisations
Areas of cooperation	Energy, culture, the environment, transport, tourism, research, education, security, defence Interreg.
Available instruments	Financial aid, strategies and action plans, knowledge exchange

Cooperation forums / initiatives and working communities represent a broad concept that includes cooperation structures at European / regional level established with the aim to address common challenges and territorial specificities, varying from regional development to environmental protection or infrastructure development, both at national level, but also in relation to the wider context.

Given the location, history and resources of Central Europe countries, they are included in several long-standing cooperation settings, some of the most representative ones including the Three Seas Initiative, Central Europe Initiative, the European Green Belt Initiative, The Cooperation under the Commission Initiative on Central and South-Eastern European Energy Connectivity, the Visegrád Group, the Carpathian Convention Interreg.

The **Three Seas Initiative** is a political platform at Presidential level whose objective regards the stimulation of a more rapid development of the region strInterregging between the Baltic, Black and Adriatic Seas. The Initiative includes 12 EU Member States, including CE countries: Austria, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The Three Seas Initiative supports the development of the region based on three main pillars - economic development, European cohesion and transatlantic ties, for which of utmost importance is the infrastructure connectivity in three main fields: transport, energy and digital. The Initiative fosters cooperation among the Member States through coordination platforms such as Summits and Business Forums, but also by means of a list of Priority Interconnection Projects which was adopted in 2018. These projects include both multilateral and bilateral & national actions in the fields of energy, digital and transportation, out of which 3 of them have already been completed, 15 show substantial progress and 28 were actively reported⁶⁴. More than half of the 48 registered projects (54%) are expected to receive co-financing from EU instruments, EBRD or EIB.

Central Europe Initiative (CEI) is the first regional intergovernmental forum established in 1989 that combines multilateral diplomacy and fund, programme and project management as both donor and recipient⁶⁵. The CEI currently counts 17 Member States: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Italy, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovak Republic, Slovenia, and Ukraine. It is made up of three structures, namely the Government Dimension (gathering the Heads of Government and the Ministers of Foreign Affairs of the Member States, as well as the Committee of National Coordinators), the Parliamentary Dimension (composed of representatives of national Parliaments) and the Economic Dimension

⁶⁴ Source: The Three Seas Initiative, 2019. Priority Interconnection Projects, 2019 Status Report

⁶⁵ Source: <https://www.cei.int/>

(consisting of meetings with the Chambers of Commerce of the CEI Member States and an annual CEI Economic Forum). The Initiative actively supports the development of projects in the fields of good governance, economic growth, environmental protection, intercultural cooperation, media freedom and scientific cooperation / education and training, through several instruments such as the CEI Cooperation Fund, the CEI Fund at EBRD, the CEI Know-how Exchange Programme or the CEI Participation in EU Projects.

The **European Green Belt Initiative** is an association dedicated to the harmonisation of human activities with the natural environment and increasing opportunities for the socio-economic development of local communities along the former Iron Curtain. It is a transboundary collaborative project which includes nearly 150 governmental and non-governmental organizations, enterprises and scientific institutions from 24 countries: Norway, Russia, Finland, Estonia, Latvia, Lithuania, Poland, Germany, Czech Republic, Slovakia, Austria, Hungary, Slovenia, Italy, Croatia, Serbia, Romania, Bulgaria, Kosovo, Montenegro, Albania, the Republic of North Macedonia, Greece and Turkey. The Initiative's objective is to conserve and capitalize on an ecological network composed of valuable natural and cultural landscapes by promoting various practices in certain fields of action such as capacity building and knowledge exchange, lobbying, awareness raising and education and cooperation.

The Cooperation under the Commission Initiative on Central and South-Eastern European Energy Connectivity – **CESEC** is a high level group which aims to strengthen solidarity and enable a safer energy supply for citizens and businesses across the region covered Austria, Bulgaria, Croatia, Greece, Hungary, Italy, Romania, Slovakia, Slovenia, Albania, Bosnia and Herzegovina, the Republic of North Macedonia, Serbia, Moldova and Ukraine. At first, it was a high level regional energy policy cooperation initiative established to address the needs for diversification of natural gas and the challenges of security of supply in the region based on an action plan regarding mostly "hard" infrastructure investments. Nowadays, the focus shifted more towards "soft" rules to ensure market functioning (reverse flows, setting cross-border tariffs and capacity allocation) and the partnership also extended its areas of interest covering also the electricity market, as well as renewable energy and energy efficiency.

The **Visegrád Group** (V4) comprises the Czech Republic, Hungary, Poland and Slovakia and it is a partnership that has a strong contribution to the promotion of the joint interests of the Member States. At first, one of the main objectives of the initiative was the integration of its Member States in the EEC/EU and the North Atlantic Treaty Organisation (NATO). After fulfilling this aim, the Visegrád Group has been concentrating on strengthening the stability in the Central European region and developing cooperation mechanism within European and transatlantic institutions, mostly by means of consultative meetings and joint actions in fields such as culture, the environment, transport, tourism, science and education, security or defence.

The Framework Convention on the Protection and Sustainable Development of the Carpathians (Carpathian Convention) was adopted and signed by the seven Parties (Czech Republic, Hungary, Poland, Romania, Serbia, Slovak Republic, Ukraine) as a multi-level governance mechanism dedicated to the protection and sustainable development of the Carpathians. *The Convention provides a framework for cooperation and multi-sectoral policy coordination, a platform for joint strategies for sustainable development, and a forum for dialogue between all stakeholders involved – from the local community and various NGO's up to the regional and national Governments, Institutions of the European Union and the United Nations.*⁶⁶ The Carpathian Convention has been implemented by the partner countries through various mechanism such as laws, decrees, Ministerial orders and decisions, national strategies and plans, national programmes, protocols or rulebooks, as well as a series of instruments such as national and trans-national projects or joint actions (networks, meetings Interreg.) These projects have been implemented through various funding sources, from state / local budgets and national environmental funds to European funding (Operational Programmes, Interreg programmes, Environmental Partnership Foundation, Norwegian Financial Mechanism, Erste Bank, LIFE+ Interreg.) and even international sources of funds (World Wide Fund for Nature, Global Environmental Facility Interreg.)⁶⁷.

All in all, the typology of partnerships represented by cooperation forums / initiatives and working communities is a complex category since it includes vast cooperation structures, covering large territories and various thematic areas of interest. Although a series of initiatives such as certain working communities can also include only limited cross-border areas, all of them are usually characterised by an integrated approach, creating the suitable framework for

⁶⁶ Source: <http://www.carpathianconvention.org/the-convention-17.html>

⁶⁷ Source: European Academy of Bolzano/Bozen, Institute for Regional Development and Location Management. 2011. National achievements and challenges related to the implementation of the Carpathian Convention

policy development and horizontal and vertical coordination between relevant actors, mostly by “soft” interventions such as summits, forums, exchange platforms Interreg., but not only. Initiatives such as CESEC or Central Europe Initiative are valuable examples of trans-national cooperation that contribute to the overall fulfilment of the region’s targets and objectives through the provision of an integrated planning framework as well as opportunities in attracting external funding sources and stakeholders.

European Groupings of Territorial Cooperation (EGTC)

European Groupings of Territorial Cooperation (EGTC)	
Main models of delivery	Multi-level governance, strategic planning, joint project development and implementation, interregional networks
Territorial scale	Local, Regional, Supraregional, National
Spatial emphasis	Proximity, Network
Territorial coverage	CE countries, CE countries and neighbouring territories
Typologies of stakeholders involved	Member States, regional or local authorities, associations, any other public body
Areas of cooperation	Health, education and training, environment, energy, nature protection, transport, research Interreg.
Available instruments	Joint decision-making, service provision, knowledge exchange, strategies and action plans, integrated territorial development (ITI, CLLD, JAP)

European Groupings of Territorial Cooperation (EGTCs) are a **legal instrument** whose objective is to facilitate and promote, in particular, territorial cooperation, including one or more of the cross-border, transnational or interregional strands of cooperation, between its members (...), with the aim of strengthening Union economic, social and territorial cohesion.⁶⁸ In order to reduce barriers to territorial cooperation, members of an EGTC can include Member States or authorities at national level, regional authorities, local authorities, public undertakings, undertakings entrusted with operations of services of general economic interest and even national, regional or local authorities, or bodies or public undertakings from third countries (neighbouring one of the Member States, including its outermost regions).

The main role of this typology of partnerships is to implement operations of or even entire cooperation programmes and projects in numerous Interreg programmes, but they are also involved in implementing other ESIF programmes and EU policies (EAFRD, ESF, Erasmus+ Interreg.), as well as initiatives funded from national and regional sources. Currently, there are 75 registered EGTCs, out of which the great majority is represented by 64 cross-border partnerships, which is completed by four transnational EGTCs and six networks⁶⁹.

Regarding the delivery model and the instruments used, EGTCs are involved in:

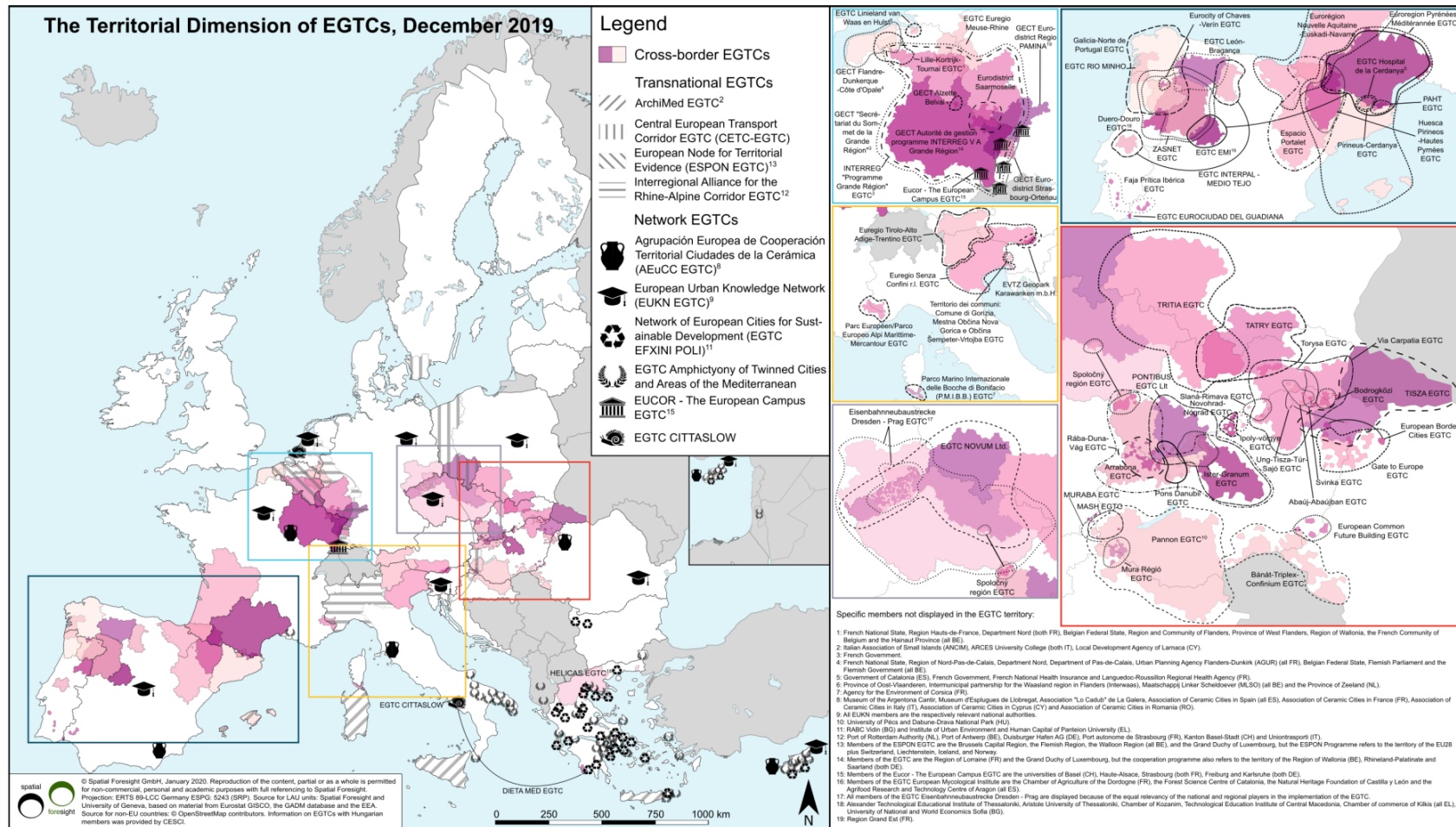
- the implementation of a cooperation programme (the only example refers to the Interreg programmes of the Greater Region for the 2007-2013 and 2014-2020 programming periods);
- the implementation of parts of cooperation programmes through instruments such as Small-project-fund, Integrated Territorial Investments ITI, Community-led local development CLLD, joint action plans JAP, smart specialisation strategies or people-to-people projects;
- the implementation of an operation under different funding sources (Interreg programmes, through the ESP, the Cohesion Fund, the EAFRD or outside Cohesion Policy programmes – CEF, Erasmus+, Horizon 2020 Interreg.).

⁶⁸ Source: Regulation (EU) No 1302/2013 of the European Parliament and of the Council of 17 December 2013 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

⁶⁹ Source: European Committee of the Regions, 2020. EGTC monitoring report 2018-2019

Depending of their role in the project, EGTCs can act as sole beneficiaries of Interreg and other EU projects or they can be involved in partnerships with a role in project implementation, as a financing and operating partner or an associated partner.

Figure 6. The Territorial Dimension of EGTCs



Source: Spatial Foresight, 2020, based on information collected during the monitoring exercise in European Committee of the Regions, 2020, EGTC monitoring report 2018-2019

The analysis of EGTCs as a typology of existing partnerships in Central Europe reveals the popularity of this instrument in the targeted territory, with 35 out of 75 (46.67%) EGTCs being established between or including members from CE countries.

Table 3. EGTCs in CE countries

EGTC	MEMBERS FROM THE FOL- LOWING COUNTRIES	YEAR OF CONSTITUTION
Cross-Border EGTCs		
ABAÚJ - ABAÚJBAN	Hungary, Slovakia	2010
Arrabona	Hungary, Slovakia	2011
Bánát - Triplex Confinium Limited Liability (BTC)	Hungary, Romania, Serbia	2011
BODROGKÖZI	Hungary, Slovakia	2012
Euregio Senza Confini	Austria, Italy	2012
Euregio Tirolo - Alto Adige - Trentino	Austria, Italy	2011
GO Territorio dei comuni: Comune di Gorizia, Mestna Občina Nova Gorica e Občina Šempeter-Vrtojba	Italy, Slovenia	2011
European Common Future Building	Hungary, Romania	2012
European Border Cities	Hungary, Romania	2014
Poarta Europa GECT	Hungary, Romania	2012
Ipoly-völgye	Hungary, Slovakia	2011
Ister-Granum	Hungary, Slovakia	2008
GEOPARK KARAWANKEN	Austria, Slovenia	2019
MASH	Hungary, Slovenia	2015
MURABA	Hungary, Slovenia	2017
Mura Region	Croatia, Hungary	2015
Novohrad-Nógrád	Hungary, Slovakia	2011
Novum	Poland, Czech Republic	2015
Pannon	Hungary, Slovenia, Croatia	2012
Parc européen Alpi Marittime – Mercantour	Italy, France	2012
Pons Danubii	Hungary, Slovakia	2010
PONTIBUS	Hungary, Slovakia	2015
Rába-Duna-Vág	Hungary, Slovakia	2011
Sajó-Rima / Slaná-Rimava	Hungary, Slovakia	2013
Spoločný región	Czech Republic, Slovakia	2012
Svinka	Hungary, Slovakia	2013
TATRY	Poland, Slovakia	2013
Torysa	Hungary, Slovakia	2013
TRITIA	Czech Republic, Slovakia, Poland	2013
Tisza	Hungary, Ukraine	2015
Ung-Tisza-Túr-Sajó (UTTS)	Hungary, Slovakia, Romania	2009
Via Carpatia	Hungary, Slovakia	2013
Karst-Bodva	Hungary, Slovakia	2009

PROUD	Germany, Czech Republic	2016
Transnational EGTCs		
Central European Transport Corridor	Croatia, Hungary, Poland, Sweden	2014
Interregional Alliance for the Rhine-Alpine Corridor	Germany, Italy, Netherlands, Belgium, France, Switzerland	2015
<i>European Node for Territorial Evidence (ESPON)</i>	<i>Luxembourg; Belgium - Transnational</i>	2015
Network EGTCs		
European Urban Knowledge Network Limited (EUKN)	Cyprus, Belgium, Czech Republic, France, Germany, Luxembourg, Netherlands, Romania, Spain	2012

Source: European Committee of the Regions, 2020. EGTC monitoring report 2018-2019

In addition, the territorial distribution of European Groupings of Territorial Cooperation reveals that this instrument is by far most used in the eastern part of Central Europe, more specifically in the cross-border areas involving Hungary and Slovakia (with a total of 25 partnerships), while countries such as Germany, Poland, Czech Republic, Croatia or Austria are involved in only 2-4 partnerships, including networks and transnational ones.

Table 4. Territorial coverage of EGTCs

GEOGRAPHY OF EGTC	NUMBER OF PARTNERSHIPS
Cross-border Iberia and southern France	18
Cross-border North-west Europe	12
Cross-border Alpine area	5
Cross-border area involving Germany, Poland, and Czech Republic	3
Cross-border areas involving Hungary and Slovakia	25
Cross-border areas central and eastern Mediterranean Sea	1
Transnational	4
Network	6

Source: European Committee of the Regions, 2020. EGTC monitoring report 2018-2019

These partnerships are usually established with the aim to facilitate cooperation beyond administrative borders, in various areas of interest such as energy, economy, health, tourism, education, youth, research and innovation, the environment, social affairs, transport and mobility, communication infrastructure, culture and heritage, training, capacity building, employment, public services, trade, sports Interreg. At the same time, there are a series of EGTCs in Central Europe which have more specific objectives such as the preservation and capitalization of natural and cultural heritage (for example, in Parc européen Alpi Marittime – Mercantour or in GEOPARK KARAWANKEN) or the promotion and development of transport corridors (as in the case of the Central European Transport Corridor or the Interregional Alliance for the Rhine-Alpine Corridor).

This kind of partnerships have mostly been established in Central Europe during the 2011-2015 period, but there are also approximately 10 more EGTCs awaiting approval or in preparation that include members from CE countries⁷⁰. This perspective confirms the added value of this instrument, whose benefits are acknowledged by numerous partners in Central Europe. Some of these advantage include the possibility for multi-level governance structures, the joint planning and implementation of strategies with a more coherent approach on the territory, the easier access to EU funding, better visibility, a more effective communication channel, the possibility to jointly provide services of general economic interest or a more efficient decision-making processes in cross-border areas. In addition, the activities developed by EGTCs including CE

⁷⁰ Source: European Committee of the Regions, 2020. EGTC monitoring report 2018-2019

countries can also constitute best practices in cross-border / transnational / interregional cooperation, facilitating flows in various areas of interest, such as:

- Healthcare and emergency services – for example, the project “How do your emergency services work” from NOVUM EGTC supports the collaboration between rescue organisations in the cross-border area of Czech republic and Poland in order to provide first aid in the neighbouring country through actions such as intergovernmental agreements or study visits.
- Cross-border investment projects – for example, The Cycling route around the Tatra Mountains, from TATRY EGTC, or the project KOMBI - Cross-border integrated bike sharing system, from Pons Danubii EGTC, are initiatives that facilitate the inhabitants’ and tourists’ mobility in cross-border areas by developing cycling routes or even bike sharing systems. Another valuable example is the ferry connection established between Hungary and Slovakia through the Ister-Granum EGTC, which facilitates the access of inhabitants, workers and tourists on both sides of the river Danube.
- Transport infrastructure and soft transport projects – for example, the Cross-Border Public Urban Mobility Plan from GO EGTC aims at developing an integrated transport system in a cross-border area between Italy and Slovenia based on a study of mobility flows and citizenship needs, while also taking into consideration a cost-benefit logic. Other examples are the EGTC PROUD’s initiative to develop a new railway line between Germany and the Czech Republic in order to enhance the connectivity along the Orient/East-Med corridor or the EMOTIONWay project implemented by Euregio Senza Confini, which aims at developing multimodal services between Italy and Austria (bike-bus, bike-train and local public transport services) in order to develop a tourist network.
- Integrated tourism – for example, the “Two rivers, one goal” initiative from Mura Region EGTC resulted in a joint water-tourism development project that transformed a previously obstacle, as in the case of the Mura and Drava rivers between Hungary and Croatia, into a common interface through actions such as the construction of mobile piers or the procurement of boats, ships and motorboats.
- Culture – for example, the “Historical Memorial” project developed by Abaúj-Abaújban EGTC aims at promoting the common historic relations in the Slovakia-Hungary cross-border area through a series of joint cultural events, a platform for the cooperation between associations and business in the region or the development of cultural groups with inhabitants from both countries that can raise the visibility of the initiative in the community.
- Economic cooperation, jobs and growth – for example, the “IG Heritage Re-discovered heritage” project implemented by Ister-Granum EGTC or the Crossmarkets project developed by Pannon EGTC aim at branding cross-border local products and facilitating the selling of products in local markets on both sides of the Hungarian – Slovakian or the Hungarian – Croatian borders.⁷¹

The establishment of EGTCs have enabled partners from CE countries to be the first at European level in using a series of integrated instruments such as Integrated Territorial Investments ITI (the ITI operation for Gorizia, Mestna občina Nova Gorica and Občina Šempeter-Vrtojba in Italy and Slovenia) or Community-led local development CLLD (the example of the cross-border CLLD in the case of Interreg V A Italy-Austria which was built on existing LAGs established under LEADER). The success of these instruments still needs to be evaluated, but in these initiatives as well as in numerous others partnerships, members of the EGTCs encountered a series of obstacles in cooperation regarding differences in administrative and legislative systems, the lack of intergovernmental agreement, the lack of financial support from local governments or the difficulties in coordinating various stakeholders from different countries.

Macro-regional strategies

Macro-regional strategies	
Main models of delivery	Strategic planning, joint project development and implementation
Territorial scale	Local, Regional, National
Spatial emphasis	Cohesion
Territorial coverage	CE countries and neighbouring territories
Typologies of stakeholders involved	The European Commission, national coordinators, local and regional public authorities, experts, non-governmental organisations, private bodies

⁷¹ Based on a selection of good practices from European Committee of the Regions, 2020. EGTC monitoring report 2018-2019

Areas of cooperation	Pollution, the environment, accessibility, navigability, economic development, marine and maritime blue growth, tourism Interreg.
Available instruments	Strategies and action plans, knowledge exchange, financial aid

A macro-regional strategy (MRS) is **an integrated framework** endorsed by the European Council to address common challenges faced by a defined geographical area relating to Member States and third countries located in the same geographical area which thereby benefit from strengthened cooperation contributing to achievement of economic, social and territorial cohesion⁷². This typology of partnerships comes as a response to a series of common challenges such as climate change, ecological degradation and migratory inflows, as well as current trends, as in the case of a globalised economy, rapid technological change, increasing interdependence between countries or the growing role of sub-national authorities⁷³, which have an impact on the entire European territory, but at the same time, have a specific manifestation depending on different geographical areas.

Macro-regional strategies are established at the request of the EU Member States concerned and sometimes of third countries as well, being intergovernmental initiatives, which do not require new EU funds, additional EU structures or new EU legislation. In other words, the MRS are political platforms which bring added value to the cooperation aspect of cohesion policy and provide an opportunity for multi-sectoral, multi-country and multi-level governance⁷⁴. MRS can be funded by EU funds, including ESI Funds, as well as other national and international sources.

Currently, there are four macro-regional strategies that have been adopted, which are characterised by different maturity levels:

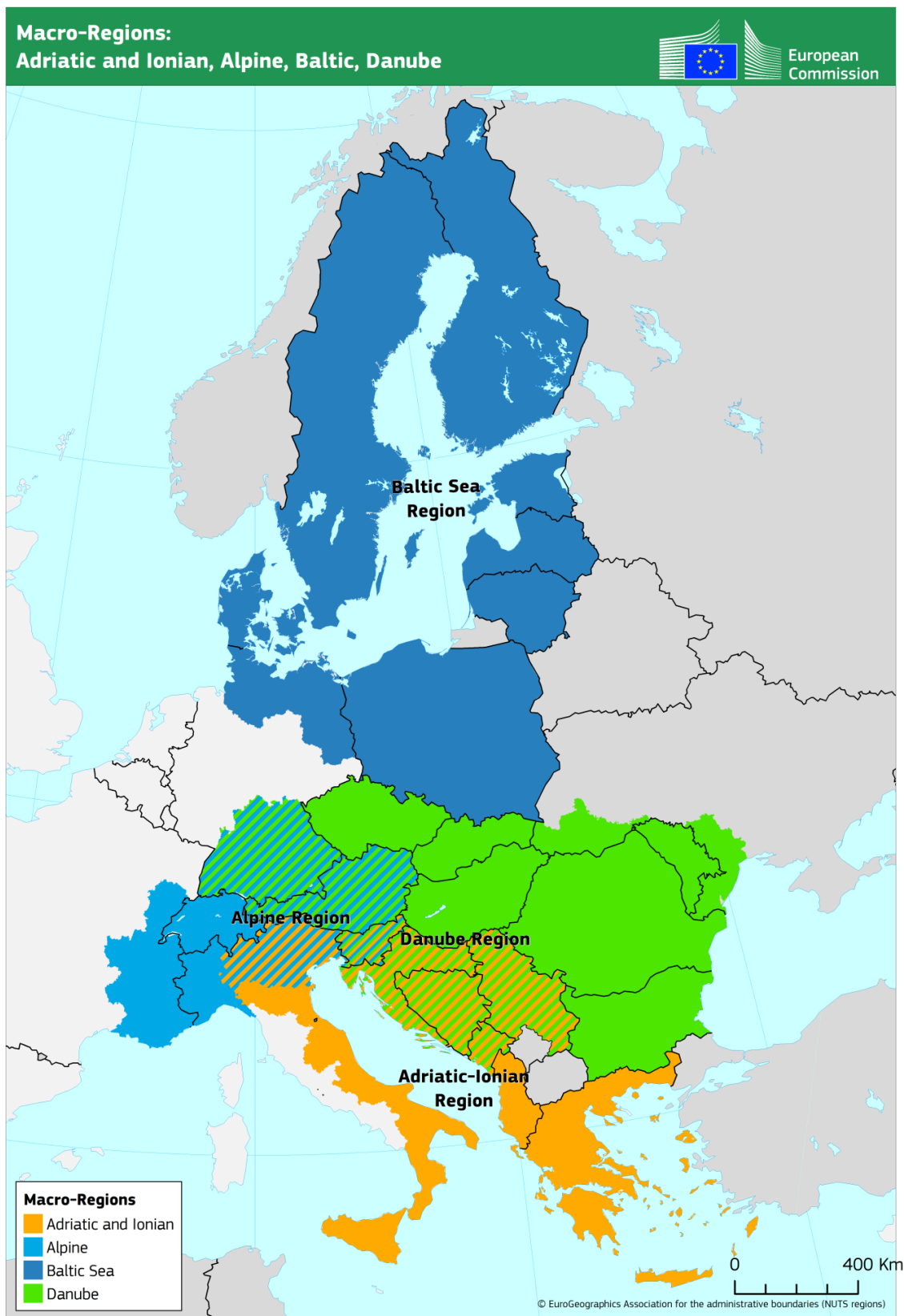
- The EU Strategy for the Baltic Sea Region EUSBSR (2009);
- The EU Strategy for the Danube Region EUSDR (2011);
- The EU Strategy for the Adriatic and Ionian Region EUSAIR (2014);
- The EU Strategy for the Alpine Region EUSALP (2016).

⁷² Source: Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on (the European Structural and Investment Funds) (OJ L 347, 20.12.2013, p. 320); point 31 of Article 2.

⁷³ Based on the European Commission, 2019. Commission Staff Working Document Accompanying the document Report from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions on the implementation of EU macro-regional strategies

⁷⁴ Source: European Commission, 2019. Report from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions on the implementation of EU macro-regional strategies

Figure 7. The territorial coverage of Macro-Regions



Source: European Commission

The EU Strategy for the Baltic Sea Region covers 80 million inhabitants in eight EU Member States – Estonia, Denmark, Finland, Germany (Berlin; Brandenburg; Hamburg; Mecklenburg-Vorpommern; Schleswig-Holstein), Latvia, Lithuania, Poland and Sweden. The EU Strategy for the Danube Region represents 115 million inhabitants from 9 EU Member States

– Germany, Austria, the Slovak Republic, the Czech Republic, Hungary, Slovenia, Croatia, Romania and Bulgaria, as well as 5 non-EU countries – Serbia, Bosnia and Herzegovina, Montenegro, the Republic of Moldova and Ukraine. The EU Strategy for the Adriatic and Ionian Region is home to 70 million people from 4 EU Member States – Croatia, Greece, Italy and Slovenia and 4 non-EU countries – Albania, Bosnia and Herzegovina, Montenegro and Serbia. Lastly, The EU Strategy for the Alpine Region is inhabited by more than 80 million people from 5 EU Member States – Austria, France, Germany, Italy and Slovenia and 2 non-EU countries – Liechtenstein and Switzerland.

Overall, the four MRS include 19 EU Member States and 8 non-EU countries, with countries from Central Europe such as Germany and Slovenia, which are involved in 3 MRS, or other countries such as Croatia, Italy or Austria, which are covered by 2 MRS.

The multi-level cooperation in these partnerships is facilitated by the diversity of the key actors involved, from the European Commission at the EU level to national coordinators and thematic area coordinators. Regarding the thematic areas of interest, all MRS follow a series of common themes that can comprise most of their objectives, such as:

- Connectivity – energy, transport;
- Environment – agriculture, fisheries, forestry, environmental risks, climate, maritime safety and security, quality of air, soils and water, biodiversity;
- Prosperity – culture, education, health, innovation, security, crime, SMEs, tourism;
- Cross-cutting areas – institutional capacity, governance, cross-institution cooperation, social inclusion, spatial planning.⁷⁵

More specifically, The EU Strategy for the Baltic Sea Region has three key objectives: Save the sea, Connect the region and Increase prosperity, The EU Strategy for the Danube Region is organised around four main pillars: Connecting the region, Protecting the environment, Building prosperity and Strengthening the region, The EU Strategy for the Adriatic and Ionian Region is structured around four main pillars: Blue growth, Connecting the region, Environmental quality and Sustainable tourism, while The EU Strategy for the Alpine Region has three thematic areas: Economic growth and innovation, Mobility and connectivity, Environment and energy, as well as cross-cutting policy area on Governance.

During last years, each of the MRS has achieved specific achievements in different thematic areas such as energy, navigation, environment and climate change in the EUSBSR, energy, transport, environment, tourism and culture in the EUSDR, blue growth, transport, energy, the environment and tourism in the EUSAIR or wood, health tourism and water management in the EUSALP⁷⁶.

In terms of operational instruments, MRS are accompanied by specific action plans which are implemented through strategic actions and processes (flagships, projects, example projects) or interlinked activities (networks, platforms, events, groups, clusters, seminars, workshops, partner search forums Interreg.). In addition, the correlation between funding sources and MRS is achieved through targeted calls, bonus / extra points or preference for projects contributing to macro-regional objectives or the participation of MRS representatives in programme monitoring committees. According to data available in 2017, the Baltic Sea region received funds from 29 programmes, the Danube region from 14 programmes, the Adriatic-Ionian region from 4 programmes and the Alpine region from 4 programmes⁷⁷.

This typology of partnerships brings added value to European territorial cooperation through the integrated approach, also including non-EU countries, by providing platforms for a better coordination between various stakeholders, policies and funding sources, as well as through the promotion of multi-level governance. With regards to the advantages of projects and programmes that are linked or contribute to MRS objectives, these can accompany them throughout the entire life cycle. On the one hand, projects can benefit from linking to a MRS through the inclusion in a wider policy context and the possibility for attracting external funding, the opportunity to identify and involve relevant stakeholders at national / trans-national level, as well as increased visibility and opportunity for further capitalisation. On the other hand, programmes can align to a strategic framework that can clarify the thematic priorities, while also providing the opportunity for identifying

⁷⁵ Source: Interact. Macro-Regional Strategies' Common Themes (as of August 2016)

⁷⁶ Source: European Commission, 2019. Report from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions on the implementation of EU macro-regional strategies

⁷⁷ Source: European Commission, 2019. Report from The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of The Regions on the implementation of EU macro-regional strategies – based on the information collected in the 2017 annual implementation reports of ESI Funds programmes

coordination mechanism both with other programmes, but also with different funding sources, that could contribute to the successful achievement of programme targets.

These benefits can be identified in numerous best practices regarding initiatives that linked to macro-regional cooperation and which are indicative for emphasizing various flows between CE countries or between CE countries and other partners in the respective region. Most frequently, these flows referred to experience exchange and the collaboration between various stakeholders by means of trans-national platforms.

For example, BSR Stars (a flagship within EUSBSR) aimed at developing transnational innovation partnerships by linking research institutions with clusters and SME networks in the Baltic Sea region, which was also the objective of the Danube Funding Coordination Network (as part of the Danube Strategy), which promoted the collaboration based on research and innovation between research institutions. Another example is the project CultPlatForm_21 (financed through the Danube Transnational Programme) whose objective was to expand the cultural routes in all countries crossed by the Danube through the common identification of hidden heritage. This initiative was complementary to the Routes4U project, which was dedicated to the integration of cultural routes in the four macro-regions. Regarding the Adriatic and Ionian region, one relevant example is the ADRIPASS project, funded under the Interreg Adrion Programme, whose objective was to reduce the bottlenecks on the TEN-T corridors crossing the region. One initiative was represented by the motorway of the sea Venice-Patras, which was approved for financing under the Connecting Europe Facility. Lastly, one of the best practices that can be identified in the Alpine region regards the “Mount Erasmus” network which was established with the aim to develop joint activities between agricultural schools in the area, one of these activities being the Forum on Dual Education in the Alpine Space.

Despite such successful experiences, MRS are facing numerous challenges and obstacles in implementing the proposed action plans, as well as in coordinating European, regional and sub-regional policies and financing instruments, these barriers varying from socio-economic disparities and differences in administrative capacities and systems to resource limitations and insufficient commitment from member states.

Cross-border cooperation (Interreg A)

Cross-border cooperation (Interreg A)	
Main models of delivery	Strategic planning, joint project development and implementation
Territorial scale	Local, Regional
Spatial emphasis	Proximity
Territorial coverage	CE countries, CE countries and neighbouring territories
Typologies of stakeholders involved	The European Commission, local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies
Areas of cooperation	Innovation, health care, education, employment, labour mobility, environment and risk prevention, social inclusion, culture, tourism, capacity building, transport, information and communication networks and services Interreg.
Available instruments	Financial aid, legal instruments (EGTCs), tools for integrated territorial development (ITI, CLLD, JAP), strategies and action plans, knowledge exchange

At the Central European level, Interreg A programme is implemented through 19 regional programmes, each having its own thematic objectives and yielding different cooperation themes, in line with the corresponding challenges and needs.

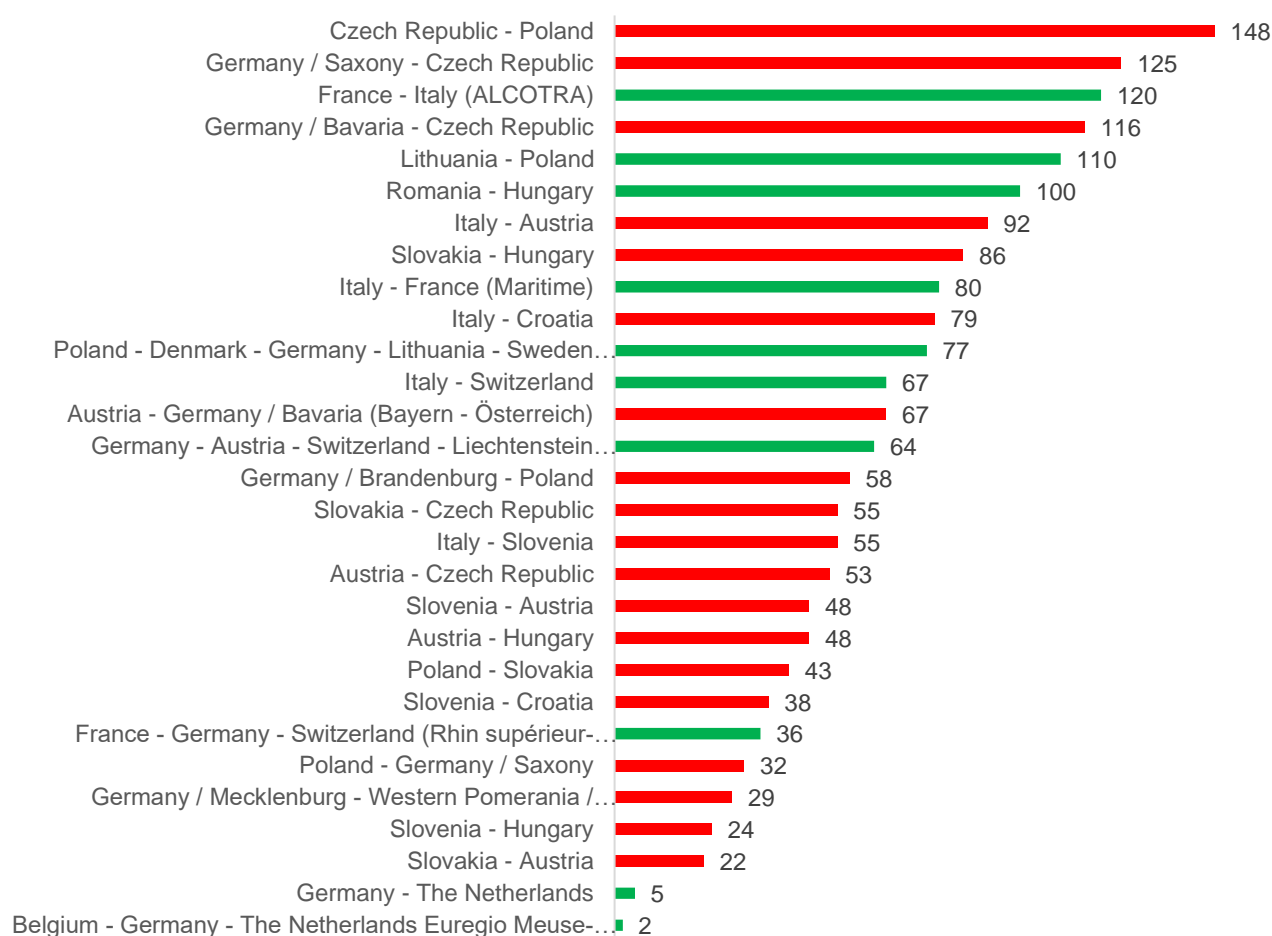
The analysis of projects and partnerships by programme reveals a series of facts⁷⁸ with respect to cross-border cooperation:

- Czech Republic – Poland records the highest number of projects (148) and the highest number of partners involved. The most common thematic cooperation areas are Tourism and cultural & natural heritage and Institutional cooperation.

⁷⁸ <http://keep.eu/statistics>

- Germany (Saxony) – Czech Republic is the second most fruitful cooperation by the number of projects, with three major thematic cooperation areas: Institutional cooperation, Tourism and cultural & natural heritage and Environmental hazards.
- Italian regions neighbouring France are also closely cooperating, proof being the 120 projects developed in the ALCOTRA cross-border programme, on Tourism and cultural & natural heritage and Environmental hazards.
- Germany (Bavaria) – Czech Republic ranks 4th by the number of projects the areas developed in common (116). The most common thematic areas of cooperation are Tourism and cultural & natural heritage and Institutional cooperation.
- More than 100 projects are also found in the Lithuania – Poland cross-border cooperation programme, focusing on the thematic areas of Institutional cooperation, Tourism and cultural & natural heritage and Health; and also in the Romania – Hungary cross-border cooperation programme, dealing with a more balanced and diverse thematic area, comprising Tourism and cultural & natural heritage, Health, Environmental hazards and Commuting patterns.
- The lowest number of projects (less than 30 per programme) was recorded between Germany (Mecklenburg) – Western Pomerania – Poland (dealing with Institutional cooperation, Tourism and Health), Slovenia – Hungary (related to Tourism) and Slovakia – Austria (projects divided almost equally between the thematic areas of Tourism, Institutional cooperation, Environmental hazards and R&D).

Figure 8 Number of projects in the 2014-2020 programming period by cross-border cooperation programme*



*in red – target programmes for CE area regions

Source: Based on the data available on the keep.eu/statistics database

- The highest diversity in terms of areas of cooperation is found in those areas where the largest number of projects was observed: Italy – Austria, Germany (Saxony) – Czech Republic and Germany (Bavaria) – Czech Republic.
- The top three thematic areas of cooperation across the cross-border areas in which Central Europe regions are involved are Tourism and cultural & natural heritage, followed by Institutional cooperation and Environmental hazards.
- Austria is involved in the highest number of cross-border cooperation programmes (7), due to its geographical location at the core of the CE area. The number of projects seems to be correlated with the similarities in terms of socio-economic development, being most fruitful in relation to Bavaria and Italy, and lower towards Hungary, Slovakia and Slovenia.

The table below summarizes the programmes and the thematic cooperation areas (decreasing order of projects) under which projects were funded so far:

Name of the programme	Main thematic areas of cooperation	No of projects
2014 - 2020 Interreg V-A Czech Republic - Poland	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (73) • Institutional cooperation (45) • Health (9) • Commuting patterns (8) • Manufactured goods and transportation flows (incl. economic cooperation) (6) • Environmental hazards and flows (4) • Electricity and renewable energy (3) 	148
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	<ul style="list-style-type: none"> • Institutional cooperation (43) • Tourism and cultural & natural heritage (34) • Environmental hazards and flows (24) • Manufactured goods and transportation flows (incl. economic cooperation) (9) • Health (6) • Electricity and renewable energy (4) • Commuting patterns (3) • Research and development (2) 	125
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (51) • Environmental hazards and flows (30) • Institutional cooperation (11) • Health (8) • Manufactured goods and transportation flows (incl. economic cooperation) (7) • Research and development (7) • Electricity and renewable energy (6) 	120
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (41) • Institutional cooperation (28) • Research and development (15) • Environmental hazards and flows (11) • Health (8) • Commuting patterns (6) • Manufactured goods and transportation flows (incl. economic cooperation) (5) • Electricity and renewable energy (2) 	116
2014 - 2020 Interreg V-A Lithuania - Poland	<ul style="list-style-type: none"> • Institutional cooperation (43) • Tourism and cultural & natural heritage (31) • Health (22) 	110

	<ul style="list-style-type: none"> • Manufactured goods and transportation flows (incl. economic cooperation) (7) • Commuting patterns (4) • Research and development (2) • Environmental hazards and flows (1) 	
2014 - 2020 Interreg V-A Romania - Hungary	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (25) • Health (22) • Institutional cooperation (17) • Environmental hazards and flows (17) • Commuting patterns (13) • Manufactured goods and transportation flows (incl. economic cooperation) (4) • Electricity and renewable energy (2) 	100
2014 - 2020 Interreg V-A Italy - Austria	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (32) • Health (18) • Institutional cooperation (13) • Environmental hazards and flows (8) • Commuting patterns (8) • Manufactured goods and transportation flows (incl. economic cooperation) (7) • Electricity and renewable energy (4) • Research and development (2) 	92
2014 - 2020 Interreg V-A Slovakia - Hungary	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (32) • Health (16) • Commuting patterns (16) • Research and development (8) • Institutional cooperation (5) • Environmental hazards and flows (5) • Manufactured goods and transportation flows (incl. economic cooperation) (2) • Electricity and renewable energy (2) 	86
2014 - 2020 Interreg V-A Italy - France (Maritime)	<ul style="list-style-type: none"> • Environmental hazards and flows (25) • Tourism and cultural & natural heritage (22) • Commuting patterns (11) • Research and development (10) • Health (8) • Institutional cooperation (2) • Electricity and renewable energy (2) 	80
2014 - 2020 Interreg V-A Italy - Croatia	<ul style="list-style-type: none"> • Environmental hazards and flows (28) • Tourism and cultural & natural heritage (22) • Commuting patterns (17) • Health (8) • Institutional cooperation (2) • Electricity and renewable energy (2) 	79
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (21) • Environmental hazards and flows (16) • Health (15) • Commuting patterns (11) • Electricity and renewable energy (7) • Institutional cooperation (5) • Research and development (2) 	77
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	<ul style="list-style-type: none"> • Health (21) • Tourism and cultural & natural heritage (17) • Environmental hazards and flows (10) • Commuting patterns (8) • Institutional cooperation (7) 	67

	<ul style="list-style-type: none"> • Electricity and renewable energy (3) • Manufactured goods and transportation flows (incl. economic cooperation) (1) 	
2014 - 2020 Interreg V-A Italy - Switzerland	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (19) • Commuting patterns (17) • Health (13) • Environmental hazards and flows (9) • Manufactured goods and transportation flows (incl. economic cooperation) (6) • Institutional cooperation (2) • Research and development (1) 	67
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	<ul style="list-style-type: none"> • Commuting patterns (15) • Health (12) • Tourism and cultural & natural heritage (11) • Institutional cooperation (10) • Environmental hazards and flows (7) • Research and development (4) • Electricity and renewable energy (3) • Manufactured goods and transportation flows (incl. economic cooperation) (2) 	64
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	<ul style="list-style-type: none"> • Health (20) • Tourism and cultural & natural heritage (19) • Commuting patterns (5) • Manufactured goods and transportation flows (incl. economic cooperation) (4) • Environmental hazards and flows (3) • Research and development (3) • Institutional cooperation (2) • Electricity and renewable energy (2) 	58
2014 - 2020 Interreg V-A Italy - Slovenia	<ul style="list-style-type: none"> • Health (10) • Manufactured goods and transportation flows (incl. economic cooperation) (10) • Environmental hazards and flows (10) • Tourism and cultural & natural heritage (9) • Institutional cooperation (8) • Commuting patterns (4) • Electricity and renewable energy (4) 	55
2014 - 2020 Interreg V-A Slovakia - Czech Republic	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (25) • Health (17) • Environmental hazards and flows (5) • Institutional cooperation (3) • Research and development (2) • Manufactured goods and transportation flows (incl. economic cooperation) (1) • Commuting patterns (1) • Electricity and renewable energy (1) 	55
2014 - 2020 Interreg V-A Austria - Czech Republic	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (15) • Institutional cooperation (11) • Environmental hazards and flows (10) • Health (6) • Commuting patterns (5) • Research and development (3) • Manufactured goods and transportation flows (incl. economic cooperation) (3) 	53
2014 - 2020 Interreg V-A Austria - Hungary	<ul style="list-style-type: none"> • Health (10) • Commuting patterns (9) • Tourism and cultural & natural heritage (8) 	48

	<ul style="list-style-type: none"> • Environmental hazards and flows (8) • Institutional cooperation (5) • Manufactured goods and transportation flows (incl. economic cooperation) (4) • Research and development (2) • Electricity and renewable energy (2) 	
2014 - 2020 Interreg V-A Slovenia - Austria	<ul style="list-style-type: none"> • Health (12) • Tourism and cultural & natural heritage (10) • Environmental hazards and flows (6) • Institutional cooperation (6) • Commuting patterns (5) • Research and development (4) • Electricity and renewable energy (3) • Manufactured goods and transportation flows (incl. economic cooperation) (2) 	48
2014 - 2020 Interreg V-A Poland - Slovakia	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (35) • Commuting patterns (3) • Health (2) • Research and development (2) • Environmental hazards and flows (1) 	43
2014 - 2020 Interreg V-A Slovenia - Croatia	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (22) • Environmental hazards and flows (8) • Manufactured goods and transportation flows (incl. economic cooperation) (5) • Health (2) • Commuting patterns (1) 	38
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	<ul style="list-style-type: none"> • Institutional cooperation (15) • Health (7) • Manufactured goods and transportation flows (incl. economic cooperation) (4) • Environmental hazards and flows (3) • Research and development (3) • Tourism and cultural & natural heritage (2) • Electricity and renewable energy (2) 	36
2014 - 2020 Interreg V-A Poland - Germany / Saxony	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (12) • Health (9) • Environmental hazards and flows (3) • Research and development (3) • Commuting patterns (2) • Institutional cooperation (1) • Manufactured goods and transportation flows (incl. economic cooperation) (1) • Electricity and renewable energy (1) 	32
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	<ul style="list-style-type: none"> • Health (11) • Tourism and cultural & natural heritage (7) • Manufactured goods and transportation flows (incl. economic cooperation) (5) • Commuting patterns (3) • Environmental hazards and flows (2) • Institutional cooperation (1) 	29
2014 - 2020 Interreg V-A Slovenia - Hungary	<ul style="list-style-type: none"> • Tourism and cultural & natural heritage (15) • Health (5) • Manufactured goods and transportation flows (incl. economic cooperation) (1) • Commuting patterns (1) • Research and development (1) • Electricity and renewable energy (1) 	24

2014 - 2020 Interreg V-A Slovakia - Austria	<ul style="list-style-type: none"> • Environmental hazards and flows (6) • Tourism and cultural & natural heritage (5) • Health (5) • Manufactured goods and transportation flows (incl. economic cooperation) (3) • Institutional cooperation (3) 	22
2014 - 2020 Interreg V-A Germany - The Netherlands	<ul style="list-style-type: none"> • Institutional cooperation (3) • Commuting patterns (1) • Electricity and renewable energy (1) 	5
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	<ul style="list-style-type: none"> • Institutional cooperation (1) • Manufactured goods and transportation flows (incl. economic cooperation) (1) 	2

Source: keep.eu/statistics

One of the most intense cooperation programmes under Interreg A is found in the cross-border area between Italy and Austria. One thematic objective of this programme is *Social inclusion - Promotion of integration and of local ownership in its immediate frontier zone with integrated cross-border strategies in accordance with the CLLD approach*, an objective quite uncommon in Central Europe cooperation area under the interregional cooperation programme⁷⁹.

The Italian – Austrian cross-border cooperation area hosts four CLLD areas: Dolomiti Live, HEurOpen, Terra Raetica and Wipptal, emphasizing a bottom-up approach for local development managed by the local population, which integrates citizens with a participatory approach in order to counteract social, economic and environmental challenges. This priority builds on the previous experience gained over time through the creation of the Interreg Councils. Therefore, a series of expected results have been defined, among which: greater participation of the cross-border level civil society and local administrations, the creation of an interactive platform for cross-border cooperation in the CLLD regions, better governance between CLLD cross-border areas and the regional and state levels and finally, promotion of projects to diversify the local economy in the border region.

The available budget amounts to EUR 11.5 million, dedicated entirely to small and medium-sized projects. One best-practices example refers to the rehabilitation of via ferrata in the Dolomites mountains, aiming to reduce the fall factor and the number of accidents for tourists. The total amount dedicated to this project was close to 200.000 EUR, at the upper limit of eligibility for medium-sized projects. The via ferrata represents a local touristic attraction that is highly important for the region. The partners originated on both sides of the border.

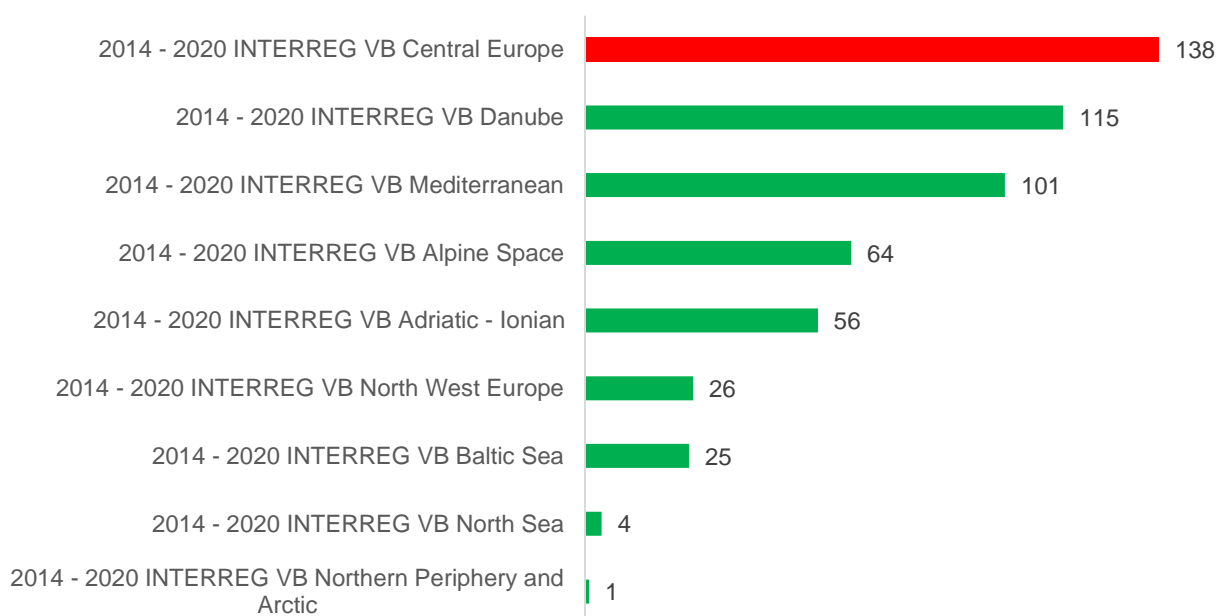
Transnational cooperation

Transnational cooperation (Interreg B, Horizon 2020, LIFE)	
Main models of delivery	Strategic planning, joint project and pilot projects development and implementation, Interregional networks
Territorial scale	Regional, Supraregional, National
Spatial emphasis	Cohesion
Territorial coverage	CE countries, CE countries and neighbouring territories
Typologies of stakeholders involved	The European Commission, local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies
Areas of cooperation	Innovation, environment, research&development accessibility, telecommunications, urban development, natural and cultural heritage, energy, capacity building Interreg.
Available instruments	Knowledge exchange, financial aid, strategies and action plans, legal instruments (EGTCs)

⁷⁹ Interreg Italy – Austria website, CLLD: Regional development at local level <http://www.interreg.net/it/455.asp>

During the 2014-2020 programming period, one relevant source where transnational cooperation has been encountered regarded the Interreg framework, some of the programmes where the highest intensity of cooperation has been registered being in 2014-2020 Interreg VB programmes: Central Europe (138 projects), Danube (115 projects) and Mediterranean (101), and to a moderate extent in other programmes contributing to the objectives of macro-regional strategies (for example, EUSALP – Interreg VB Alpine Space, has funded 64 projects and EUSAIR – Interreg VB Adriatic – Ionian 56 projects). By broad thematic areas, their contribution has been mostly significant for institutional cooperation, tourism and environmental hazards.

Figure 9 Number of projects in the 2014-2020 programming period by transnational cooperation programme*



*in red – target programmes for CE area regions

Source: Based on the data available on the keep.eu/statistics database

Among these, **Interreg Central Europe** covers a programme area of 76 NUTS 2 regions from nine Member States, summing up to 1 million square km and 146 million people, according to the Programme Strategy⁸⁰. Specifically, the programme area includes all regions from Austria, Croatia, the Czech Republic, Hungary, Poland, Slovakia and Slovenia, plus eight Lander from Germany (Baden-Wurttemberg, Bayern, Berlin, Brandenburg, Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt, Thuringen) and nine regions from Italy (Emilia-Romagna, Friuli Venezia Giulia, Liguria, Lombardia, Piemonte, Provincia Autonoma Trento, Valle d'Aosta, and Veneto).

The overall programme goal seeks to support economic, social and territorial cohesion by responding to the main challenges of the area, and is defined as “cooperating beyond border in central Europe to make our cities and regions better places to live and work”. More specifically, transnational cooperation in central Europe is regarded as a catalyst for implementing smart solutions, answering to regional challenges in the fields of innovation, low-carbon economy, environment, culture and transport. In line with the regulatory framework for the EU Cohesion Policy programming period 2014-2020 which corresponds to the priorities of the Europe 2020 Strategy, the Interreg Central Europe programme strategy builds on four main thematic objectives, addressing the main challenges needs identified in the area. These thematic objectives are translated into four Priority Axes:

- TO1 Strengthening research, technological development and innovation has been translated into Priority Axis 1 Cooperating on innovation to make Central Europe more competitive.

⁸⁰ Interreg CENTRAL EUROPE Cooperation Programme Strategy, version January 2019.

The three flagship initiatives - Innovation union, An industrial policy for the globalisation era and An agenda for new skills and jobs, address the main socio-economic challenges and needs within Central Europe, including: the need to strengthen existing potentials of technology-oriented areas that are destinations of foreign investment and capital flows, enhancing the transfer of R&D results and the need to set-up cooperative initiatives and clusters, the challenge of addressing regional disparities in knowledge and education (e.g. brain-drain), or the need to strengthen capacities and competences for entrepreneurship and social innovation.

Justification of priority selection and relevance to the different types of flows: the uneven distribution of R&D activities across Central Europe needs to be addressed in order to increase mobility and transfer of knowledge among the existing centres; the linkages between business and research on the one hand, and investments in product and process innovation of the other, reveal a need to further mobilise synergies and establish new connections; the potential of transnational and regional clusters is still underexploited; there is limited cooperation through common innovation strategies, hindering joint development and the exploitation of synergies.

- TO4 Supporting the shift towards a low carbon economy in all sectors has been translated into Priority Axis 2 Cooperating on low-carbon strategies in Central Europe

Two main flagship initiatives have been emphasized – Resource efficient Europe and An agenda for new skills and jobs. The challenges sought to be addressed refer to strengthening the usage of renewable energies, improving energy efficiency, and boosting the economic growth potential of this sector, as well as enhancing knowledge and skills regarding efficient energy management of public infrastructure. It also aims to support the development and implementation of territorially based low carbon strategies and low carbon mobility.

Justification of priority selection and relevance to the different types of flows: an efficient use of energy can contribute to decreasing central Europe's energy import dependence; the lack of expertise of public infrastructure owners and operators for reducing energy consumption indicates an opportunity to enhance flows of knowledge in this field; there is a need for developing low-carbon strategies on a territorial level, including low-carbon mobility in urban areas and their peripheries.

- TO6 Preserving and protecting the environment and promoting resource efficiency has been translated into Priority Axis 3 Cooperating on natural and cultural resources for sustainable growth in Central Europe.

Similarly to the previous objective, the same flagship initiatives have been designed, aiming to respond to the need for protecting and more sustainably using natural and cultural heritage and resources, which are placed among the greatest assets and important location factors for regional development.

Justification of priority selection and relevance to the different types of flows: natural and cultural heritage sites are not sufficiently linked.

- TO7 Promoting sustainable transport and removing bottlenecks in key network infrastructures has been translated into Priority Axis 4 Cooperating on transport to better connect Central Europe

Under PA4, the purpose is to help reduce gaps between peripheral, badly accessible regions and well-connected centres, falling under the core-periphery development of the programme area. Through this axis, the programme aims to support the connectivity of regions and cities to European transport networks and to improve multi-modal environmentally friendly freight and passenger transport within Central Europe.

Justification of priority selection and relevance to the different types of flows: there are regional disparities in multimodal accessibility for freight transport which constrain the competitiveness of Central European regions; increasing transport volumes reinforce the need for environmentally friendly and low-carbon freight transport systems

The total ERDF funds available for the Interreg CE Programme 2014-2020 are slightly more than EUR 246.5 million, which are allocated to four priority axes: PA1 – Innovation (EUR 69 million, or 28% of total ERDF contributions), PA2 – Low carbon (EUR 44 million or 18% of total ERDF contribution), PA3 – Natural and cultural resources (EUR 89 million or 36%), and PA4 – Transport (EUR 30 million or 12%).

The statistical data available in November 2020⁸¹ indicates that 138 projects have been selected to receive support from the programme. By thematic cooperation area, evidence⁸² shows that, out of the 138 projects, the highest number of projects was submitted under the following thematic areas: Institutional cooperation (44), Tourism and cultural & natural heritage (22), Economic cooperation (14), Electricity and renewable energy (14), Environmental hazards and flows (13), Manufactured goods and transportation flows (12), Research and development (12), Health (5), Commuting patterns (2).

Out of the 1071 partnerships established by the Central European regions, Italian and Polish regions had the highest number of participations in projects, followed by Slovenian and German regions, all of them having over 100 participations counted by country. Slovakia recorded the lowest participation, with only 48 project involvement. Unfortunately, the breakdown by neither thematic objectives nor by investment priorities is available at the territorial level. These numbers reflect the tendency observed after the four calls of projects, which show that the highest number of project partners is recorded in Italy, Poland, Slovenia and Germany, followed by Czech Republic, Austria, Croatia and Hungary, with a slightly lower number, and Slovakia, with the lowest number. At the NUTS2 level, it can also be observed that the most active regions are found in Northern Italy, Slovenia and Austria, as well as in Poland and Germany.

For the entire programme, the performance milestones planned for 2018 have been successfully achieved and surpassed and the programme is well on track with its programme implementation regarding output indicators. The average level of progress is 27% actual achievements compared to CP targets for 2023, which is highly positive, given that usually projects produce most of their outputs towards the end of the project life. Also, the expected outputs indicate a very positive progress (321%), which is mostly due to an overall higher number of projects than expected and to a higher-than-expected outputs per project⁸³.

With regards to monitoring the additional thematic result indicators that have been defined by the programme, first project results can be observed. The expected results of projects are considerable: more than 2,700 institutions are expected to adopt new or improved strategies and action plans, more than EUR 500 million of additional funds are expected to be leveraged, almost 2,800 jobs will be created based on project achievements and approx. 31,000 people will be trained. Within this framework, projects have already managed to lever more than EUR 27 million of additional funds, have already trained more than 8,000 people, created 47 new jobs and engaged 267 institutions to adopt new or improved strategies and action plans.

Concerning examples of best practices, the project FabLabNet⁸⁴ is an interesting case study. Its mission statement, "Making Central Europe more competitive by unlocking the innovation capacity of Fab Labs within an enhanced innovation ecosystem", signals the overarching theme of cooperation in the research and innovation field. The project aims to increase the exchange and transfer of knowledge and good practices at three levels (community, business and education), involving four main target groups: the higher education and research, education and training centres, large enterprises and SMEs as well as the general public. With a budget of nearly EUR 2.7 million, the project involved 9 partners from 9 countries (Italy, Austria, Hungary, Czech Republic, Poland, Slovenia, Slovakia, Croatia and Germany) and was coordinated by the Science Museum of Trento from Italy.

Three pilot actions have been designed and assessed, leading to several interesting results: in the Czech Republic, Slovenia and Poland, the pilot action found four solutions to real-life problems of SME and artisan enterprises by involving students (university and high school) and citizens in the creation of prototypes based on real life needs. 600 persons have been trained in the framework of the pilot. In Italy, another pilot action resulted in selecting and coaching five companies. In relation to the third pilot, 3 sets of training modules have been developed. At the end of the project, in June 2019, over 1500 persons benefited from training across Central Europe, 16 pilot actions have been tested, and the European School of Makers was established, as part of the Central European Network of Creative Labs. The network is still functional and under expansion.

Lastly, considering that the Interreg Central Europe Programme 2021-2027 is being currently discussed, the Draft Version for the Transnational Cooperation Programme Central Europe 2021-2027 provides a strong basis for the identification of territorial challenges and development objectives for the future programming period. For example, the draft programme

⁸¹ Keep.eu/statistics

⁸² Idem 63

⁸³ Idem 14

⁸⁴ Operational Evaluation of the Interreg CENTRAL EUROPE Programme. Final Evaluation – Annex Document, Summary case study reports. August 2019

identifies the main challenges faced by the target area: innovation and skills, environment and CO₂-reduction, sustainable transport and connectivity, equal opportunities, European identity, as well as co-ordinated governance.

In order to address these challenges, a series of draft programme priorities have been identified in relation to the post 2020 Cohesion Policy architecture. In this respect, the future Central Europe Programme will focus on⁸⁵:

- *Priority 1: A smarter central Europe through cooperation;*
- *Priority 2: A greener central Europe through cooperation;*
- *Priority 3: A more connected Europe through cooperation; and*
- *Priority 4: A better governance for cooperation in central Europe*

Apart from the Interreg instrument, **Horizon 2020** is the European Union's Framework Programme for Research and Innovation and the financial instrument for implementing the Innovation Union. The areas for possible European partnerships through the Horizon program are: health innovations; essential generic and digital technologies; metrology; air traffic, aviation and railways in the EU; sustainable bio solutions; hydrogen and sustainable energy storage, clean and connected mobility, innovative SMEs. Regarding the preliminary structure of the Horizon programme, it consists of 3 pillars. Pillar 1, called "scientific excellence", brings together the European Research Council, the Marie Skłodowska Curie Actions and the Research Infrastructure. The second pillar refers to global challenges and European industrial competitiveness and brings together clusters and the Joint Research Center. The latest pillar, called "An Innovative Europe", brings together the European Innovation Council, European Innovation Ecosystems and the European Institute of Innovation and Technology. In terms of the benefits of the Horizon programme in Europe, these include collaboration, transnational exchanges and networks, the creation of new market opportunities, competitive financing that promotes excellence, the critical mass for addressing global challenges Interreg.

Regarding the involvement in this programme, participants must be part of a consortium consisting of at least 3 legal entities representing partners from different countries, industries and academia.

Under Horizon 2020, there is a single funding rate for all beneficiaries and all activities included in research grants. EU funding covers up to 100% of the total eligible costs for all research and innovation actions. For innovation actions, funding generally covers 70% of eligible costs, but can reach 100% for non-profit organizations. Indirect eligible costs are reimbursed by applying a flat rate of 25% of direct eligible costs.

LIFE programme is the EU's funding instrument for the environment and climate action created in 1992 and it is managed by The European Commission through its services Directorate-General for Environment and Directorate-General for Climate Action, together with its Executive Agency for Small and Medium-sized Enterprises. Regarding the objectives of the Life program, they cover: help move towards a resource-efficient, low carbon and climate resilient economy, improve the quality of the environment and halt and reverse biodiversity loss; improve the development, implementation and enforcement of EU environmental and climate policy and legislation, and act as a catalyst for, and promote, the mainstreaming of environmental and climate objectives into other policies and practices; support better environmental and climate governance at all levels, including better involvement of civil society, NGOs and local actors; support the implementation of the 7th environmental action plan.

The LIFE programme is divided into two sub-programmes, one for the environment (representing 75% of the overall financial envelope) and one for climate action (representing 25% of the envelope). Regarding the traditional projects of the sub-program environment, they refer to nature and biodiversity, environment and resource efficiency, environmental governance and information. The traditional projects of the climate action sub-program refer to climate change mitigation, climate change adaptation, climate governance and information.

In contrast to other funding programmes, LIFE projects are very flexible in terms of how they are set up. Participants can register individually or form coalitions with partners from their own country or from other countries. However, in the case of integrated projects, the applicants should include in the partnership the authority in charge of the implementation of the plan or strategy targeted by the project, preferably as project leader.

⁸⁵ Source: Non-technical summary of Interreg CENTRAL EUROPE 2021-27 (IP Version 1 from September 2020)

Interregional cooperation

Interregional cooperation (Interreg C, URBACT III)	
Main models of delivery	Strategic planning, pilot projects development and implementation, Interregional networks
Territorial scale	Local, Regional, Supraregional
Spatial emphasis	Network
Territorial coverage	CE countries, CE countries and neighbouring territories
Typologies of stakeholders involved	The European Commission, local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies
Areas of cooperation	Research, technology development, competitiveness and SMEs, the information society, tourism, culture, the environment, low-carbon economy, transport, capacity building Interreg.
Available instruments	Knowledge exchange, financial aid, strategies and action plans, legal instruments (EGTCs)

Interreg Europe represents the *main interregional programme for all regions in the European Union, helping regional and local governments across Europe to develop and deliver better policy*⁸⁶. The main types of beneficiaries are public authorities at the local, regional or national level, managing authorities/intermediate bodies and agencies, research institutes, thematic and non-profit organisations. Given the wide territorial coverage, all Central European regions are covered by this cooperation programme.

The top thematic areas of cooperation in Interreg Europe by the number of successful projects are Institutional cooperation (125), Tourism and cultural & natural heritage (27), Economic cooperation (24) and Electricity and renewable energy (22). By project involvement of regions in Member States covering the CE area, Poland and Italy are the most cooperative, with around 100 projects, followed by Hungarian and Slovenian participation. Austria and Slovakia, are by contrast, least participating in this programme.

Interreg Europe is based on three main pillars – cooperation, collaboration and community engagement in order to support regions across Europe. The interregional cooperation projects are co-financed up to 85% and activities must be carried out by partners in at least three countries. In order to fall under the Interreg Europe scope, projects must fall into one of the following categories: research and innovation, SME competitiveness, Low-carbon economy and Environment and resource efficiency⁸⁷. Then, project beneficiaries must engage in the Policy Learning Platform, a knowledge exchange tool aiming to facilitate continuous learning among organizations. Specific services offered through the Platform are peer reviews, thematic workshops or capacity building events.

By topic, the total amount of EUR 324 million dedicated to projects are split as follows on the four topics: Research and Innovation (EUR 85.8 million), SME competitiveness (EUR 80.7 million), Low carbon economy (EUR 75.8 million) and Environment and resource efficiency (EUR 81.7 million). At this moment, EUR 1.6 million are still available for financing projects.

Each organisation involved in an Interreg Europe project aims at improving a policy instrument in their region. By May 2020, over 300 policy changes have been achieved, including integrated territorial programmes, smart specialization strategies (S3) or support for national or regional operational programmes. For example, the link between Interreg Europe programme and S3 is highlighted in a JRC Technical Report⁸⁸, providing insights regarding the policy learning processes and the mechanisms to support synergies between different EU policies. As such, a series of difficulties emerged in exploiting synergies: difficulties to access/form international networks, weak collaboration with other EU countries, lack of experience in EU project consortiums management and lack of long-term strategic planning of R&I policies. In addition, despite the requirements that Interreg Europe projects should be aligned with regional objectives (i.e. identified in RIS as well) at least in a formal manner, this does not automatically guarantee synergies. In turn, in order for such a formal

⁸⁶ <https://www.interregeurope.eu/about-us/what-is-interreg-europe/>

⁸⁷ <https://www.interregeurope.eu/>

⁸⁸ Synergies between Interreg Europe and Smart Specialisation: A methodological proposal to enhance policy learning. JRC Technical Report, 2018

requirement to become effective, structured communication and cooperation between the regional government and the potential Interreg Europe beneficiaries is necessary, throughout each project cycle. Also, local partners of Interreg Europe projects must be involved in the participatory governance and monitoring systems of S3 at the regional level.

URBACT III Operational Programme⁸⁹ is the European Territorial Cooperation programme designed as an instrument of the Cohesion Policy, aiming to promote sustainable integrated urban development and to contribute to the delivery of the Europe 2020 strategy. The programme facilitates the sharing of knowledge and good practice between cities and other levels of government. Four main objectives govern this programme:

1. Capacity for Policy Delivery: to improve the capacity of cities to manage sustainable urban policies and practices in an integrated and participative way.
2. Policy Design: to improve the design of sustainable urban policies and practices in cities.
3. Policy Implementation: to improve the implementation of integrated and sustainable urban strategies and actions in cities.
4. Building and Sharing Knowledge: to ensure that practitioners and decision-makers at all levels have access to knowledge and share know-how on all aspects of sustainable urban development in order to improve urban development policies.

It consists of one Priority Axis – Promoting Integrated Sustainable Urban Development and one Investment Priority – Disseminating good practice and expertise and capitalising on the results of the exchange of experience in relation to sustainable urban development, including urban-rural linkages’

Instruments used: Three main instruments and tools are available under this programme, in order to offer new opportunities for urban development:

- Integrated sustainable urban development actions (either through Integrated Territorial Investments, or through specific urban development operational programmes or Priority Axes);
- Participatory approaches through Community Led Local Development following the LEADER model;
- Urban-rural partnerships

Funding sources and mechanisms include the ERDF, the 28 Member States, Norway and Switzerland. The total budget of the programme is EUR 96.2 million.

Regarding the results, 67 projects have been financed through URBACT III OP, engaging 47 regions in all Member States. Given the urban and local development thematic focus, most projects cover the Institutional cooperation thematic area. By number of projects, the following participation can be observed: Poland – 42 projects, Italy – 34 projects (most of which in Emilia-Romagna province), Hungary – 27 projects, Croatia – 23 projects, the Czech Republic – 13 projects, Slovenia – 12 projects, Germany – 7 projects, Slovakia – 4 projects, Austria – 2 project⁹⁰.

URBACT developed a tested and validated approach with respect to good practices, awarding a label to cities that have implemented a practice that is on a topic relevant to cities across Europe, and which could be suitable for transfer to other cities.

Cooperation at the external borders of the EU

Cooperation at the external border of the EU	
Main models of delivery	Strategic planning, joint project development and implementation
Territorial scale	Local, Regional
Spatial emphasis	Proximity
Territorial coverage	CE countries and neighbouring territories

⁸⁹ <https://urbact.eu/urbact-glance>

⁹⁰ Idem11

Typologies of stakeholders involved	Local, regional and national authorities and institutions, non-governmental organisations
Areas of cooperation	Technical assistance and institution building, regional development, development of human resources, rural development, education, culture, employment, transport, the environment Interreg.
Available instruments	Financial aid, strategies and action plans, knowledge exchange

Cooperation at the external borders of the EU aims to promote economic and social development in border areas, address common challenges, and establish better conditions for persons, goods and capital mobility, on the one hand, and to prepare the enlargement of the EU by supporting Candidate Countries, on the other, using two main instruments: **The European Neighbourhood Instrument Cross Border Cooperation Programmes (IPA CBC 2014-2020)** and **The Interreg Instrument for Pre-Accession Cross Border Cooperation Programmes (ENI CBC 2014-2020)**.

Two CE countries are involved in the IPA CBC programme: Croatia and Hungary, under three programmes (Croatia-Bosnia, Hungary-Serbia, Croatia-Serbia) and three CE countries are involved in the ENI CBC programme: Poland, Slovakia and Hungary, again under three different programmes (Poland-Russia, Poland-Belarus-Ukraine, Hungary-Slovakia-Romania-Ukraine).

The areas of cooperation depend greatly on the territorial context and on the challenges identified at each border, the different existing programmes have different objectives, priority axes and expected impacts. For example, IPA CBC aims to prepare beneficiary countries for the future use of the Cohesion Policy instruments through the implementation of a Strategic Coherence Framework and a multi-annual operational programmes' scheme, regarded as precursors of the operational programmes under the structural funds.

IPA CBC Croatia – Serbia aims to strengthen the social, economic and territorial development of the cross-border area through joint projects and initiatives within four thematic priorities: health and social care services; environment, biodiversity, risk prevention, sustainable energy and energy efficiency; tourism and cultural and natural heritage; and competitiveness and business environment development. These priorities correspond to the funding priorities, as well. The total budget available for this programme is of EUR 40.3 million, of which the EU contribution is of EUR 34.3 million. So far, 23 projects were financed, under 92 collaborations and 19 themes, among which the most sought one is Tourism, followed by Agriculture and Health and social services. A similar main objective can be observed in the case of the *IPA CBC Croatia – Bosnia and Herzegovina – Montenegro* programme, under similar funding priorities, but with a much larger budget: EUR 67.3 million (EU contribution of EUR 57.2 million). 24 projects have been successful under this programme, covering 14 themes, among which the top three refer to Health and social services, Tourism and SME and entrepreneurship.

IPA CBC Hungary – Serbia has as main objective the development of the cross-border area through intensified economic cooperation and sustainable use of natural and cultural resources. The funding priorities focus on Improving cross-border water management and risk prevention systems; Reducing traffic bottlenecks in the cross-border transport network; Encouraging cooperation in tourism and cultural heritage preservation; and Enhancing SMEs' economic competitiveness through innovation-driven development. The total allocation for the programme is EUR 76.6 million, of which EU contribution is EUR 65.1 million. There were 59 projects funded so far, covering 23 themes, by far the most numerous being Cultural heritage and arts and Tourism.

ENI CBC Hungary-Slovakia-Romania-Ukraine is interesting through the fact that the programme area covers three EU Member States and one non-member (Ukraine), aiming to promote a more intense social and economic cooperation in the regions sharing a common border. Four main topics of cooperation comprise this programme: Promotion of local culture and preservation of historical heritage; Environmental protection, climate change mitigation and adaptation; Improvement of accessibility to the regions, development of sustainable and climate-proof transport and communication networks and systems; and Common challenges in the field of safety and security. The programme receives an allocation of EUR 74 million from the ENI and ERDF. 39 projects received support under this programme on 22 themes, out of which three themes emerged as highly attractive: Cultural heritage and arts, Health and social sciences and Tourism.

Similar objectives are observed in the case of the *ENI CBC Poland-Belarus-Ukraine*: Heritage (Promotion of local culture and history, Promotion and preservation of natural heritage), Accessibility (Improvement and development of transport services and infrastructure, Development of ICT infrastructure), Security (Support to the development of health protection and social services, Addressing common security challenges), and Borders (Support to border efficiency and security, Improvement of border management operations, customs and visas procedures). The available budget for this programme is of EUR 201.4 million, with the largest allocation on the Accessibility thematic objective (EUR 61 mil.). 69 projects received funding, especially on themes such as Improving transport connections, Safety and Cultural heritage and arts.

Figure 10. Area of the Cross-border Cooperation Programme Poland-Belarus – Ukraine 2014-2020 (dark green – core area, light green – adjoining area)



The *ENI CBC Poland-Russia* aims to support cross-border cooperation in the social, environmental, economic and institutional aspects. The main priorities outlined in the Programme Strategy are Cooperation on historical, natural and cultural heritage for their preservation and cross-border development; Cooperation for the clean natural environment in the cross-border area; Accessible regions and sustainable cross-border transport and communication; and Joint actions for border efficiency and security. The programme co-financing amounts EUR 62.3 million, encompassing ERDF (EUR 20.6 million), European Neighbourhood Instrument (EUR 20.9 million) and the Russian Federation (EUR 20.6 million).

Euroregions

Euroregions	
Main models of delivery	Voluntary associations, lobbying, strategic planning, joint project development and implementation
Territorial scale	Local, Regional
Spatial emphasis	Proximity, Network
Territorial coverage	CE countries, CE countries and neighbouring territories
Typologies of stakeholders involved	Local, regional and national authorities and institutions, experts, non-governmental organisations, private bodies
Areas of cooperation	Economic development, accessibility and transportation, environment, education and culture, social cohesion, health, spatial planning, research and innovation, governance, security Interreg.
Available instruments	Financial aid, strategies and action plans, knowledge exchange

One typology of partnerships is strongly related to cross-border cooperation as joint actions aimed at addressing common challenges and capitalising on untapped potential in border areas of the European territory. This cooperation can be facilitated by the euroregions, which can be defined as *an organisation or institution that:*

- *Covers a cross-border territory and usually hosts a corresponding population (...) or provides a specific service for the population in the surrounding area (...);*
- *Represents a declared will of cooperation (...), being reinforced by public institutionalisation via political agreement; and*
- *Clearly shows signs of joint activities as well as a consolidation of public cross-border policies, particularly when developing a common strategy.⁹¹*

The purpose of this typology of partnerships is to support a better collaboration between partners from neighbouring countries through an organised platform for communicating and exchanging experiences, as well as through joint project development and implementation and even the provision of a specific service, for example through a cross-border equipment (tunnels, airports, hospitals Interreg.).

Currently, there are approximately more than 300 Euroregional organisations, including large-scale cross-border cooperation structures, transboundary parks and cross-border equipments⁹². Out of these, 70 organisations include members from CE countries, with an active presence of partners from Hungary and Slovakia, especially in EGTCs, followed by members from the Czech Republic, Germany, Austria and Poland. The lowest numbers in terms of euroregions involved are registered by Italy, Slovenia and Croatia, the latter being included in only 2 such partnerships.

Table 5. Euroregions in CE countries

NO.	BORDER AND CROSSBORDER REGIONS	COUNTRY
1	Euroregion PRO EUROPA VIADRINA	Germany, Poland
2	Euroregion Spree-Neiße-Bober-Sprewa-Nysa-Bóbr	Germany, Poland
3	Euroregion Neiße-Nisa-Nysa	Germany, Czech Republic, Poland
4	Euroregion Glacensis	Czech Republic, Poland
5	Euroregion Praded - Pradziad	Czech Republic, Poland
6	Euroregion Silesia	Czech Republic, Poland
7	Euroregion Tešínské Slezsko – Slask Cieszynski	Czech Republic, Poland
8	Euroregion ELBE/LABE	Germany, Czech Republic
9	Euroregion Erzgebirge - Krušnohorí	Germany, Czech Republic
10	EUREGIO EGRENSIS	Czech Republic, Germany
11	Euregio Bayerischer Wald - Šumava - Mühlviertel	Germany, Czech Republic, Austria
12	Euregio Silva Nortica	Austria, Czech Republic
13	Euroregion Weinviertel - Jižní-Morava - Záhorie	Austria, Czech Republic, Slovakia
14	Euroregion Bílé -Biele Karpaty	Czech Republic, Slovakia
15	Euroregion Beskidy - Beskydy	Poland, Czech Republic, Slovakia
16	Euroregion Tatry	Poland, Slovakia
17	Euroregion Pomerania	Germany, Poland
18	Euregio Bayerischer Wald - Böhmerwald	Germany, Czech Republic, Austria

⁹¹ Source: Durà A., Camonita F., Berzi M. and Noferini A., 2018. Euroregions, Excellence and Innovation across EU borders. A Catalogue of Good Practices. Barcelona, Department of Geography, UAB

⁹² Based on information from https://www.aebr.eu/en/members/list_of_regions.php and Durà A., Camonita F., Berzi M. and Noferini A., 2018. Euroregions, Excellence and Innovation across EU borders. A Catalogue of Good Practices. Barcelona, Department of Geography, UAB and Cross-border EGTCs from European Committee of the Regions, 2020. EGTC monitoring report 2018-2019

NO.	BORDER AND CROSSBORDER REGIONS	COUNTRY
19	Regionalverband Hochrhein - Bodensee	Germany
20	EuRegio Salzburg - Berchtesgadener Land - Traunstein	Austria, Germany
21	Inn-Salzach-Euregio	Austria, Germany
22	Euregio Inntal	Austria, Germany
23	Euregio Zugspitze - Wetterstein - Karwendel	Germany, Austria
24	Euregio Steiermark - Slowenien	Austria, Slovenia
25	Slovenian-Hungarian Crossborder Development Council	Slovenia, Hungary
26	EuRegio West/Nyugat Pannonia	Austria, Hungary
27	Euroregion Podunajský Trjopolok	Hungary, Slovakia
28	Euroregion Vagus - Danubius - Ipolia	Hungary, Slovakia
29	Euroregion Ister-Granum	Hungary, Slovakia
30	Ipel' - Ipoly Euroregion	Slovakia, Hungary
31	Euroregion Neogradensis	Hungary, Slovakia
32	Euroregion Slaná-Rimava	Hungary, Slovakia
33	Euroregion Kras	Slovakia, Hungary
34	Euroregion Košice - Miskolc / Zemplén	Hungary, Slovakia
35	Europaregion Tirol - Südtirol / Alto Adige - Trentino	Austria, Italia
36	Autonome Provinz Bozen - Südtirol	Italia
37	Autonome Provinz Trient	Italia
38	Region Trentino - Südtirol	Italia
39	Regione Veneto	Italia
40	Regione Friuli Venezia Giulia	Italia
41	Republic of Slovenia	Slovenia
42	ARGE Kärnten-Slowenien	Austria, Slovenia
43	ABAÚJ - ABAÚJBAN	Hungary, Slovakia
44	Arrabona	Hungary, Slovakia
45	Bánát - Triplex Confinium Limited Liability (BTC)	Hungary, Romania, Serbia
46	BODROGKŐZI	Hungary, Slovakia
47	Euregio Senza Confini	Austria, Italy
48	GO Territorio dei comuni: Comune di Gorizia, Mestna Občina Nova Gorica e Občina Šempeter-Vrtojba	Italy, Slovenia
49	European Common Future Building	Hungary, Romania
50	European Border Cities	Hungary, Romania
51	Poarta Europa GECT	Hungary, Romania
52	GEOPARK KARAWANKEN	Austria, Slovenia
53	MASH	Hungary, Slovenia
54	MURABA	Hungary, Slovenia
55	Mura Region	Croatia, Hungary

NO.	BORDER AND CROSSBORDER REGIONS	COUNTRY
56	Novohrad-Nógrád	Hungary, Slovakia
57	Novum	Poland, Czech Republic
58	Pannon	Hungary, Slovenia, Croatia
59	Parc européen Alpi Marittime – Mercantour	Italy, France
60	Pons Danubii	Hungary, Slovakia
61	Spoločný región	Czech Republic, Slovakia
62	Svinka	Hungary, Slovakia
63	Torysa	Hungary, Slovakia
64	TRITIA	Czech Republic, Slovakia, Poland
65	Tisza	Hungary, Ukraine
66	Ung-Tisza-Túr-Sajó (UTTS)	Hungary, Slovakia, Romania
67	Via Carpatia	Hungary, Slovakia
68	Karst-Bodva	Hungary, Slovakia
69	PROUD	Germany, Czech Republic
70	CESCI (<i>Large scale cross-border cooperation</i>)	Hungary

Source: Based on information from https://www.aebr.eu/en/members/list_of_regions.php, Durà A., Camonita F., Berzi M. and Noferini A., 2018. *Euroregions, Excellence and Innovation across EU borders. A Catalogue of Good Practices*. Barcelona, Department of Geography, UAB and Cross-border EGTCs from European Committee of the Regions, 2020. *EGTC monitoring report 2018-2019*

These partnerships encourage the cooperation between various stakeholders, facilitating both vertical and horizontal coordination. The great majority of partners are represented by public actors – provincial, regional or sub-state entities, together with other public institutions such as development agencies, associations, universities Interreg. At the same, a series of private actors are also sometimes involved in euroregions, but unfortunately this is rarely happening and they are generally represented by chambers of commerce or other agencies for business promotion.

In order for these partners to unite under the umbrella of an Euroregion, there are several legal instrument that facilitate this cooperation: public law agreements (mainly a political agreement whose enforcement depends on the level of commitment from the members), European Groupings of Territorial Cooperation (EGTCs), NGOs as private law associations, as well as other typologies such as European Economic Interest Grouping (EEIG) or the Local Grouping of Territorial Cooperation (LGTC) – similar entities to the EGTCs, but only used for cross-border economic activities or with a more reduced European coverage.

Through these established structures, partners from the euroregions can jointly implement actions and projects funded both from external sources, as well as from their own budget. An analysis of cross-border cooperation practices in euroregions reveals the fact that most active partnerships are usually involved in a series of areas of cooperation such as local economic development, accessibility and transport, environment, education and culture, social cohesion, health, spatial planning, research and innovation, governance or security⁹³. Among these initiatives, there are numerous best practices that can be identified concerning CE countries, which are indicative of the flows facilitated through this typology of partnerships. Some of them regard:

- TIP – Transborder Integrated Platform – a project implemented by Gorizia-Nova Gorica EGTC (Italy, Slovenia) during 2011-2015 with a total budget of 1,326,990 Euros (out of which 1,009,356 Euros from EU Funds). This project was dedicated to the development of truck terminals and intermodal areas that would contribute to a better connectivity inside the region by linking settlements in the cross-border area with nearby cities.

⁹³ Source: Durà A., Camonita F., Berzi M. and Noferini A., 2018. *Euroregions, Excellence and Innovation across EU borders. A Catalogue of Good Practices*. Barcelona, Department of Geography, UAB

- Euregio Bodensee Day Pass – a project implemented by the International Lake Constance Conference (Germany, Austria, Switzerland and Liechtenstein) during 2009-2012 with a total budget of 600,000 Euros (out of which 149,400 Euros from EU Funds). This project's objective was to facilitate the flows of inhabitants and tourists in the region by promoting an integrated service of public transportation (train, bus and ferries) around and across Lake Constance.
- Caves Culture Experience Inntal – a project implemented by Inntal Euregio (Austria, Germany) during 2008-2012 with a total budget of 335,006 Euros (out of which 277,064 Euros from EU Funds). This project's achievement was a tourist route jointly promoting four cave paths through the improved accessibility of the four caves, but also through an integrated promotion system.
- 3 EuRegio Summits: Natural spaces and soft mobility – a project implemented by EuRegio Salzburg - Berchtesgadener Land – Traunstein (Germany, Austria) during 2012-2014 with a total budget of 260,425 Euros (out of which 151,055 Euros from EU Funds). This project contributed to the development of a 160-km E-biking route connecting three mountain peaks in the region, promoting a sustainable exploration of cultural and natural landscapes.⁹⁴

Although these typologies of partnership were firstly started mostly as associations governed by private law (NGOs), nowadays many of them are turning into European Grouping of Territorial Cooperation or they establish as an EGTC from the beginning. This indicated the need of the members to implement a legal instrument that provides the tools for better governance, more efficient decision making processes and the opportunity for attracting EU funds.

European Employment Services (EURES)

Euroregions	
Main models of delivery	Interregional networks
Territorial scale	Local, Regional
Spatial emphasis	Proximity, Network
Territorial coverage	CE countries
Typologies of stakeholders involved	Public employment services, trade unions, employers' organisations
Areas of cooperation	Workers' mobility
Available instruments	Job Mobility Portal, counselling and guidance, events (career days, workshops, recruitment events Interreg.)

EURES (European Employment Services) is a network that facilitates work mobility among the EEA countries. The network is a cooperation between the European Commission and other members and partners that focuses on offering counselling and guidance to both employers and workers that wish to take advantage of work mobility opportunities. Public employment services, trade unions and various employers' organisations are the partners within the network.

The services provided by EURES are available through the EURES Job Mobility Portal, where employers and jobseekers can register and make available their vacancies or CVs in order to be matched to the right opportunities. Currently, there are approximately 2.9 million jobs and 240,000 CVs available on the portal⁹⁵. Additional services are available through the human network of EURES, where around 1,000 employees from the 32 member countries offer counselling for career development and job search, as well as provide the relevant information concerning rules and regulations of each member countries⁹⁶.

The EURES network is funded through the Employment and Social Innovation (EaSI) programme, managed by the European Commission. EaSI combines three former EU programmes, which now constitute the axis of the programme:

⁹⁴ Based on Durà A., Camonita F., Berzi M. and Noferini A., 2018. Euroregions, Excellence and Innovation across EU borders. A Catalogue of Good Practices. Barcelona, Department of Geography, UAB

⁹⁵ Source: The European Job Mobility Portal, <https://ec.europa.eu/eures/public/homepage>

⁹⁶ Source: European Commission, Report from the Commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions on EURES activity January 2016-June 2018, 2019.

PROGRESS, EURES and Microfinance and Social Entrepreneurship. The objectives of the programme include support and promotion of work mobility within EEA countries, adequate social protection, quality employment and improved working conditions. All the actions taken within the EaSI programme are conducted in accordance with EU and national objectives that target employment, social affairs and inclusion⁹⁷. For the period of 2014-2020, the EaSI programme has a total budget of EUR 919,469,000, out of which 18% is allocated to the EURES axis⁹⁸.

Within the EURES network there are 8 cross-border partnerships, involving 14 countries. Two of these partnerships target directly CE countries, namely Germany, The Czech Republic, Poland, Italy and Slovenia. The goal of the partnerships is in correlation with the objectives of the EURES network and targets job mobility within these 5 countries. Their work includes counselling, advice and guidance for employers and workers from each respective country, organizing networking events, as well as monitoring cross-border job mobility, the job market and the obstacles that arise within the targeted regions⁹⁹.

EURES-TriRegio is a partnership between parts of Germany (Dresden, Chemnitz), Poland (Legnicko-Głogowski, Wałbrzyski) and The Czech Republic (Severozápad, Liberecký kraj, Královéhradecký kraj). The number of workers commuting across these borders have increased between 2015-2018, the only exception being Poland, where the number of Czech and German commuters has decreased by 1.3% and 2.2.% respectively. The highest share is seen on the German borders, where 21.8% more Polish and 15.7% more Czech citizens commute for work to Germany. The main targeted industries differ for each country and they are as follows¹⁰⁰:

- Germany: provision of other economic services and manufacturing for both Polish and Czech citizens;
- Poland: manufacturing, trade, maintenance and repair of motor vehicles for Czech citizens; manufacturing and provision of freelance, scientific and technical services for German citizens;
- The Czech Republic: manufacturing and provision of other economic services for Polish citizens; provision of other economic services, energy and water supply and sewage and waste disposal for German citizens.

The overall aim of the partnership is to create a combined labour market for the citizens of the area, while at the same time maintaining national social and employment standards. Currently, 12 EURES Advisers work in the area and provide guidance for both employers and jobseekers. The activity of the partnership consists in providing guidance, access to relevant information and various events such as career days and thematic workshops to further aid the interested citizens.

⁹⁷ Source: <https://ec.europa.eu/social/main.jsp?catId=1081>

⁹⁸ Source: <https://ec.europa.eu/social/main.jsp?catId=1083&langId=en>

⁹⁹ Source: <https://ec.europa.eu/eures/public/en/eures-in-cross-border-regions#/details/4218>

¹⁰⁰ EURES – TriRegio, Arbeits- und Ausbildungsmarkt kompakt, 2019.

Figure 11. EURES TriRegio map



Source: <https://www.eures-triregio.eu/region.html>

The partners within the cross-border regions are the 5 public employment services from Saxony, Bohemia and Lower Silesia and the respective 3 trade unions and 3 employers' organisations.

The main projects within EURAS TriRegio include Information and advice day events, Vocational guidance measures and the Trinational job exchange (GIRT). The Information and advice day events provide individual and group guidance for interested jobseekers, as well as the possibility for employers or local authorities to present and/or promote their services. The vocational guidance measures target primary, middle and vocational school students that are being offered relevant information on working in the cross-border region, as well as the chance to participate in job fairs, company visits, job coaching or intercultural activities. The GIRT project is a recruitment event where employers from all three states are encouraged to present their vacancies. Furthermore, information on living and working conditions in the respective countries are provided¹⁰¹. In 2017, 294 events were organized, which were attended by more than 7,500 citizens. They resulted in 8,282 individual and 92 group contacts made between EURES advisers, employers and citizens. Additionally, 7 group meetings were organised in the field of cleaning, automotive, transport and hotel and catering sectors, as well as 13 workshops where relevant information on cross-border mobility was presented, accounting for 250 participants. The youth were targeted through 5 career guidance sessions, where over 200 Czech and Polish students were informed about the dual vocational system in Germany¹⁰².

All these activities concluded that a higher cooperation level is needed among partners, authorities and external entities such as local companies and SMEs, in order to support the demand for employment counselling in the cross-border region.

¹⁰¹ EURES Deutschland, EURES in der Grenzregion – Grenzpartnerschaften und Kooperationen, 2018.

¹⁰² European Commission, Projects and organisations funded by the European Union Programme for Employment and Social Innovation (EaSI) – Report IX, 2019.

One of the activities that will be carried on as a best practice, is the Traditional Youth Exchange initiative. This is based on the counselling and company visits offered to 16 Czech students and two educational consultants in Germany¹⁰³.

EURADRIA is a partnership between Italy, Slovenia and Croatia, comprising the following 6 regions: Obalno-kraška region, Notranjsko-kraška region, Goriška region, Friuli-Venezia Giulia, Istria, Primorsko-goranska region. The goal of the project is to enhance work mobility between these regions and to support job seekers and employers in the process of finding a job/candidate. EURADRIA consists of 9 partners, namely: Regione Autonoma Friuli Venezia Giulia, INAS Slovenia, Obalna sindikalna organizacija (OSO-KS 90), Unione Regionale UIL del Friuli Venezia Giulia, Primorska Gospodarska Zbornica – Chamber of Commerce and Industry of Primorska – PGZ, U.S.R CISL FRIULI VENEZIA GIULIA, Območna obrtno-podjetniška zbornica/OOZ Nova Gorica, SDGZ–URES - Slovensko deželno gospodarsko združenje – Unione Regionale Economica Slovena and INCA Slovenia. All these entities are either employment services, trade unions or employers' associations¹⁰⁴.

Figure 12. EURADRIA map



Source: https://www.ess.gov.si/o_zrsz/razvojni-projekti/zakljuceni-projekti/projekt/euradria

In 2017, four steering committee meetings and 11 thematic working groups were organised together with the partners, that targeted data collection, data analysis, action analysis, new proposals and the E-TOPs project focusing on implementing EURES regulations and the importance of traineeships in the cross-border market. This was further analysed through a comparison of regulation framework available for traineeships both in Italy and Slovenia, as a means to deepen the legislative frameworks of both countries. In terms of client services, 1,684 requests were registered, with 150 frontier workers being reached directly. Furthermore, 2 workshops were conducted for 37 Slovenian employers from private companies and SMEs. Throughout the project, a survey template and a methodology for data collection was provided and two surveys were carried out to analyse the situation of cross-border mobility in the EURADRIA region¹⁰⁵.

¹⁰³ European Commission, Projects and organisations funded by the European Union Programme for Employment and Social Innovation (EaSI) – Report IX, 2019.

¹⁰⁴ Source: <https://euradria.eu/en/il-progetto/il-parternariato/>

¹⁰⁵ European Commission, Projects and organisations funded by the European Union Programme for Employment and Social Innovation (EaSI) – Report X, 2019.

Additionally, a permanent observatory was established in the cross-border region to monitor the employment market, as well as the mobility patterns between the regions. The observatory is managed by the Autonomous region of Friuli Venezia Giulia in Italy¹⁰⁶.

The lessons learned, which will be carried further, include the good understanding of the labour mobility in the cross-border region provided by the extensive analysis conducted through various means, as well as the increased collaboration between partners that enhanced the understanding of the barriers and needs in the region¹⁰⁷.

Statistics of partnerships: Horizon 2020, LIFE and Interreg programmes

Environmental hazards and flows

Table 6 Partnerships and cooperation: environment thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Total projects on Horizon 2020	Total projects on Interreg programmes	Total projects on LIFE	Total projects
ITC4	184	12	66	262
ITH5	166	27	54	247
AT13	177	32	14	223
SI04	111	58	23	192
DE21	152	18	13	183
ITC1	91	40	33	164
ITH3	84	38	31	153
DE30	125	5	17	147
HR04	60	59	15	134
HU11	93	18	0	111
PL91	102	7	0	109
ITC3	44	45	17	106
CZ01	66	14	16	96
HR03	30	51	6	87
AT12	67	15	3	85
DE11	70	8	4	82
DE40	70	5	4	79
AT22	61	13	4	78
DE13	44	12	12	68
ITH4	26	37	2	65
SI03	29	18	12	59
DE12	47	6	1	54
DE80	29	16	3	48
SK01	14	21	12	47
DED2	23	18	5	46

¹⁰⁶ Source: <https://euradria.eu/en/il-progetto/chi-siamo/>

¹⁰⁷ European Commission, Projects and organisations funded by the European Union Programme for Employment and Social Innovation (EaSI) – Report X, 2019.

CZ06	17	18	9	44
PL21	34	2	8	44
DEE0	39	2	2	43
HU12	33	8	0	41
HU21	26	7	4	37
SK03	13	15	8	36
HU33	14	16	5	35
ITH2	21	4	8	33
DED5	32	0	1	33
HU32	9	21	2	32
ITH1	14	13	4	31
AT31	19	11	1	31
PL22	18	6	6	30
AT33	11	13	4	28
CZ05	13	12	3	28
CZ03	16	10	2	28
DED4	23	5	0	28
PL51	17	8	2	27
PL63	12	14	1	27
PL71	24	3	0	27
HU22	14	12	0	26
DE27	9	8	6	23
PL41	20	1	2	23
SK02	14	8	1	23
ITC2	3	17	2	22
PL81	18	4	0	22
CZ07	14	1	2	17
HU31	8	7	2	17
PL42	9	8	0	17
CZ02	8	3	5	16
AT21	6	8	2	16
DE14	10	5	1	16
SK04	8	4	3	15
AT11	3	9	3	15
DE22	4	7	3	14
DEG0	12	0	2	14
PL62	9	1	3	13
AT32	4	6	3	13
DE25	10	0	2	12
DE26	10	1	0	11
DE23	3	4	3	10
DE24	2	5	2	9
HU23	7	1	1	9

CZ08	3	1	4	8
AT34	3	4	1	8
CZ04	0	6	0	6
PL82	2	2	0	4
PL84	0	4	0	4
PL61	2	0	1	3
PL92	2	0	0	2
PL52	1	1	0	2
PL43	0	2	0	2
PL72	0	0	0	0
Total per thematic area	919	378	292	1589

Table 7 Partnerships and cooperation: environment thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Number of projects
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	30
2014 - 2020 Interreg V-A Italy - Croatia	28
2014 - 2020 Interreg V-A Italy - France (Maritime)	25
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	24
2014 - 2020 Interreg V-A Romania - Hungary	17
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	16
2014 - 2020 Interreg VB Danube	16
2014 - 2020 Interreg VB Central Europe	13
2014 - 2020 Interreg Europe	11
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	11
2014 - 2020 Interreg VB Adriatic - Ionian	11
2014 - 2020 Interreg V-A Austria - Czech Republic	10
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	10
2014 - 2020 Interreg V-A Italy - Slovenia	10
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	10
2014 - 2020 Interreg V-A Italy - Switzerland	9
2014 - 2020 Interreg VB Mediterranean	9
2014 - 2020 Interreg VB North West Europe	9
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	8
2014 - 2020 Interreg V-A Austria - Hungary	8
2014 - 2020 Interreg V-A Italy - Austria	8
2014 - 2020 Interreg V-A Slovenia - Croatia	8
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	7
2014 - 2020 Interreg VB Alpine Space	7
2014 - 2020 Interreg V-A Slovakia - Austria	6
2014 - 2020 Interreg V-A Slovenia - Austria	6
2014 - 2020 Interreg VB Baltic Sea	6

2014 - 2020 Interreg IPA CBC Croatia-Serbia	5
2014 - 2020 Interreg IPA CBC Hungary - Serbia	5
2014 - 2020 Interreg V-A Slovakia - Czech Republic	5
2014 - 2020 Interreg V-A Slovakia - Hungary	5
2014 - 2020 Interreg V-A Czech Republic - Poland	4
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	3
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	3
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	3
2014 - 2020 Interreg V-A Poland - Germany / Saxony	3
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	2
2014 - 2020 Interreg VB North Sea	2
2014 - 2020 Mediterranean Sea Basin ENI CBC	2
2014 - 2020 URBACT III	2
2014 - 2020 Interreg V-A Lithuania - Poland	1
2014 - 2020 Interreg V-A Poland - Slovakia	1
2014 - 2020 ESPON 2020	0
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	0
2014 - 2020 Interreg V-A Germany - The Netherlands	0
2014 - 2020 Interreg V-A Slovenia - Hungary	0
2014 - 2020 Interreg VB Northern Periphery and Arctic	0
2014 - 2020 Poland - Russia ENI CBC	0
Total per thematic area	378

Commuting patterns

Table 8 Partnerships and cooperation: commuting patterns thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Total projects on Interreg programmes*	Region (NUTS2) code	Total projects on Interreg programmes
SI04	11	DE40	2
ITC3	11	ITH4	2
CZ03	9	PL42	2
HU32	8	PL43	2
HU33	8	PL63	2
CZ08	7	PL84	2
SI03	7	DE21	1
AT22	6	AT32	1
SK01	5	AT33	1
HR04	5	CZ04	1
HU22	5	DE22	1
PL51	5	DED5	1

DE13	4	DEE0	1
SK02	4	DE12	1
SK03	4	DE27	1
SK04	4	HR03	1
PL22	4	HU23	1
AT31	4	PL41	1
CZ07	4	PL82	1
DE14	4	PL72	0
PL52	4	DE30	0
HU21	3	ITC1	0
DE11	3	CZ01	0
ITH3	3	CZ06	0
AT34	3	DE24	0
CZ05	3	DE25	0
DE23	3	DE26	0
DED2	3	DEG0	0
HU11	3	HU12	0
AT11	3	AT12	0
AT13	3	CZ02	0
AT21	3	ITC2	0
HU31	3	ITH2	0
PL62	2	PL21	0
PL91	2	PL61	0
ITC4	2	PL71	0
ITH5	2	PL81	0
DE80	2	PL92	0
DED4	2	Total per thematic area	101
ITH1	2	*total number of projects includes only Interreg cooperation programmes	

Table 9 Partnerships and cooperation: commuting thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Number of projects
2014 - 2020 Interreg V-A Romania - Hungary	13
2014 - 2020 Interreg V-A Italy - France (Maritime)	10
2014 - 2020 Interreg V-A Slovakia - Hungary	8
2014 - 2020 Interreg V-A Czech Republic - Poland	8
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	6
2014 - 2020 Interreg VB Danube	5
2014 - 2020 URBACT III	5
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	4
2014 - 2020 Interreg V-A Slovenia - Austria	4
2014 - 2020 Interreg V-A Lithuania - Poland	4

2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	3
2014 - 2020 Interreg V-A Austria - Czech Republic	3
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	3
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	3
2014 - 2020 Interreg V-A Poland - Germany / Saxony	3
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	2
2014 - 2020 Interreg VB Central Europe	2
2014 - 2020 Interreg V-A Austria - Hungary	2
2014 - 2020 Interreg V-A Italy - Austria	2
2014 - 2020 Interreg IPA CBC Croatia-Serbia	2
2014 - 2020 Interreg V-A Slovakia - Czech Republic	2
2014 - 2020 Interreg V-A Poland - Slovakia	2
2014 - 2020 Interreg V-A Italy - Switzerland	1
2014 - 2020 Interreg VB Alpine Space	1
2014 - 2020 Interreg VB Baltic Sea	1
2014 - 2020 Mediterranean Sea Basin ENI CBC	1
2014 - 2020 Interreg V-A Slovenia - Hungary	1
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	0
2014 - 2020 Interreg V-A Italy - Croatia	0
2014 - 2020 Interreg Europe	0
2014 - 2020 Interreg VB Adriatic - Ionian	0
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	0
2014 - 2020 Interreg V-A Italy - Slovenia	0
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	0
2014 - 2020 Interreg VB Mediterranean	0
2014 - 2020 Interreg VB North West Europe	0
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	0
2014 - 2020 Interreg V-A Slovenia - Croatia	0
2014 - 2020 Interreg V-A Slovakia - Austria	0
2014 - 2020 Interreg IPA CBC Hungary - Serbia	0
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	0
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	0
2014 - 2020 Interreg VB North Sea	0
2014 - 2020 ESPON 2020	0
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	0
2014 - 2020 Interreg V-A Germany - The Netherlands	0
2014 - 2020 Interreg VB Northern Periphery and Arctic	0
2014 - 2020 Poland - Russia ENI CBC	0
Total per thematic area	101

Research and development

Table 10 Partnerships and cooperation: research and development thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Total projects on Horizon 2020	Total projects on Interreg programmes	Total projects on R&D support*	Total projects
DE21	1760	16	57	1833
ITC4	951	12	24	987
AT13	782	22	66	870
DE30	712	2	20	734
DE12	564	12	21	597
ITH5	458	5	14	477
ITH3	403	27	12	442
ITC1	406	20	7	433
PL91	343	0	35	378
SI04	299	38	38	375
DE11	327	19	5	351
AT22	315	12	21	348
CZ01	285	17	32	334
HU11	282	12	29	323
ITC3	263	8	7	278
DED2	236	6	5	247
DE13	186	26	2	214
DE14	198	8	6	212
ITH4	169	29	8	206
ITH2	193	1	11	205
DEG0	155	0	5	160
AT31	134	22	3	159
DE40	140	2	5	147
HR04	101	20	22	143
DE25	136	2	4	142
PL21	118	4	12	134
AT12	124	6	0	130
PL41	116	2	6	124
AT33	108	7	6	121
DED5	108	0	5	113
DE26	78	1	3	82
AT21	71	10	1	82
CZ03	56	20	3	79
DEE0	71	3	4	78
SK01	62	11	3	76
DE80	67	6	1	74
CZ05	56	2	14	72
PL63	61	6	4	71

SI03	48	21	2	71
DE27	58	11	0	69
DE23	59	7	2	68
CZ06	50	6	5	61
DED4	49	2	1	52
AT32	40	11	1	52
HR03	28	14	7	49
PL51	41	3	4	48
DE24	39	3	6	48
DE22	36	11	1	48
PL22	38	3	5	46
ITH1	36	7	0	43
HU33	34	3	2	39
HU32	27	1	4	32
PL71	21	4	6	31
HU22	14	15	1	30
SK04	18	9	1	28
CZ08	21	3	2	26
CZ02	25	0	0	25
SK02	12	8	4	24
HU21	18	3	0	21
HU12	19	0	1	20
SK03	14	2	4	20
CZ07	15	2	2	19
PL81	14	2	3	19
PL61	18	0	0	18
AT34	8	10	0	18
AT11	10	6	0	16
PL42	12	1	1	14
HU31	7	4	2	13
HU23	10	2	0	12
PL62	6	2	1	9
PL84	6	1	0	7
PL82	4	2	1	7
ITC2	2	5	0	7
PL43	4	1	0	5
PL92	4	1	0	5
PL52	4	0	0	4
CZ04	3	1	0	4
PL72	3	0	0	3
Total per thematic area	6178	200	321	6699

* based on Horizon 2020 programme data

Table 11 Partnerships and cooperation: research and development thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Number of projects
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	15
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	15
2014 - 2020 Interreg V-A Italy - Austria	13
2014 - 2020 Interreg VB Central Europe	12
2014 - 2020 Interreg VB Alpine Space	12
2014 - 2020 Interreg Europe	12
2014 - 2020 Interreg V-A Austria - Czech Republic	11
2014 - 2020 Interreg VB Danube	10
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	10
2014 - 2020 Interreg V-A Italy - Slovenia	8
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	7
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	7
2014 - 2020 Interreg V-A Slovenia - Austria	6
2014 - 2020 Interreg V-A Slovakia - Hungary	5
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	5
2014 - 2020 Interreg V-A Austria - Hungary	5
2014 - 2020 Interreg VB Mediterranean	5
2014 - 2020 Interreg VB Adriatic - Ionian	4
2014 - 2020 Interreg VB North West Europe	4
2014 - 2020 Interreg V-A Slovakia - Czech Republic	3
2014 - 2020 Interreg V-A Slovakia - Austria	3
2014 - 2020 Interreg V-A Germany - The Netherlands	3
2014 - 2020 Interreg V-A Italy - France (Maritime)	2
2014 - 2020 Interreg V-A Lithuania - Poland	2
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	2
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	2
2014 - 2020 Interreg IPA CBC Croatia-Serbia	2
2014 - 2020 Interreg V-A Italy - Switzerland	2
2014 - 2020 Interreg VB Baltic Sea	2
2014 - 2020 Interreg V-A Italy - Croatia	2
2014 - 2020 URBACT III	1
2014 - 2020 Interreg V-A Poland - Germany / Saxony	1
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	1
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	1
2014 - 2020 Interreg IPA CBC Hungary - Serbia	1
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	1
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	1
2014 - 2020 Interreg VB North Sea	1

2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	1
2014 - 2020 Interreg V-A Romania - Hungary	0
2014 - 2020 Interreg V-A Czech Republic - Poland	0
2014 - 2020 Interreg V-A Poland - Slovakia	0
2014 - 2020 Mediterranean Sea Basin ENI CBC	0
2014 - 2020 Interreg V-A Slovenia - Hungary	0
2014 - 2020 Interreg V-A Slovenia - Croatia	0
2014 - 2020 ESPON 2020	0
2014 - 2020 Interreg VB Northern Periphery and Arctic	0
2014 - 2020 Poland - Russia ENI CBC	0
Total per thematic area	200

Tourism and cultural & natural heritage

Table 12 Partnerships and cooperation: tourism thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Total projects on Interreg programmes*	Region (NUTS2) code	Total projects on Interreg programmes
HR03	88	PL72	18
SK02	82	AT31	17
SK01	70	DE22	17
ITC2	65	HU21	17
HR04	64	CZ04	16
ITH4	63	PL52	16
PL61	63	DE21	15
CZ05	56	HU11	15
CZ03	50	AT21	14
ITH5	50	AT32	14
PL21	45	HU23	14
PL22	44	ITH2	14
PL92	44	DE40	13
SK04	40	CZ01	12
HU22	39	PL62	11
ITC1	38	DE13	10
PL91	38	DE27	9
ITC4	37	DED4	8
HU33	33	PL63	8
AT33	32	AT34	7
ITC3	31	DE11	6
HU32	30	DE14	6
PL42	30	DE24	6
DED2	28	SI03	6

DE23	27	DED5	5
PL41	26	DEE0	4
CZ06	24	DEG0	4
ITH1	24	DE25	3
CZ08	23	HU12	3
PL84	22	ITH3	3
DE80	21	SI04	3
PL51	21	PL81	2
PL71	21	CZ02	1
SK03	21	DE12	1
CZ07	20	PL82	1
AT13	19	DE26	0
HU31	19	DE30	0
AT11	18	PL43	0
AT12	18	Total per thematic area	865
AT22	18	*total number of projects includes only Interreg cooperation programmes	

Table 13 Partnerships and cooperation: tourism thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Number of projects
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	74
2014 - 2020 Interreg V-A Czech Republic - Poland	73
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	51
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	41
2014 - 2020 Interreg V-A Poland - Slovakia	35
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	34
2014 - 2020 Interreg V-A Italy - Austria	32
2014 - 2020 Interreg V-A Slovakia - Hungary	32
2014 - 2020 Interreg V-A Lithuania - Poland	31
2014 - 2020 Interreg Europe	27
2014 - 2020 Interreg VB Mediterranean	25
2014 - 2020 Interreg V-A Slovakia - Czech Republic	25
2014 - 2020 Interreg V-A Romania - Hungary	25
2014 - 2020 Interreg IPA CBC Hungary - Serbia	24
2014 - 2020 Interreg VB Central Europe	22
2014 - 2020 Interreg V-A Italy - France (Maritime)	22
2014 - 2020 Interreg V-A Italy - Croatia	22
2014 - 2020 Interreg V-A Slovenia - Croatia	22
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	21
2014 - 2020 Interreg VB Adriatic - Ionian	21
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	19
2014 - 2020 Interreg V-A Italy - Switzerland	19
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	17

2014 - 2020 Interreg V-A Austria - Czech Republic	15
2014 - 2020 Interreg V-A Slovenia - Hungary	15
2014 - 2020 Interreg VB Danube	14
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	13
2014 - 2020 Interreg V-A Poland - Germany / Saxony	12
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	11
2014 - 2020 Interreg V-A Slovenia - Austria	10
2014 - 2020 Interreg IPA CBC Croatia-Serbia	10
2014 - 2020 Interreg V-A Italy - Slovenia	9
2014 - 2020 Interreg V-A Austria - Hungary	8
2014 - 2020 Poland - Russia ENI CBC	8
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	7
2014 - 2020 Interreg VB Alpine Space	6
2014 - 2020 Interreg V-A Slovakia - Austria	5
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	5
2014 - 2020 URBACT III	3
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	2
2014 - 2020 Interreg VB Baltic Sea	1
2014 - 2020 ESPON 2020	1
2014 - 2020 Interreg VB North West Europe	0
2014 - 2020 Interreg V-A Germany - The Netherlands	0
2014 - 2020 Interreg VB North Sea	0
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	0
2014 - 2020 Mediterranean Sea Basin ENI CBC	0
2014 - 2020 Interreg VB Northern Periphery and Arctic	0
Total per thematic area	865

Electricity and renewable energy

Table 14 Partnerships and cooperation: electricity and renewable energy thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Total projects on Horizon 2020	Total projects on Interreg programmes	Total projects
ITC4	204	9	213
DE21	207	6	213
AT13	178	9	187
SI04	126	27	153
HR04	95	33	128
DE12	120	8	128
PL91	111	5	116
DE30	110	4	114

ITH5	91	17	108
CZ01	94	9	103
HU11	85	10	95
ITC1	79	13	92
DE11	84	7	91
AT22	63	13	76
ITC3	70	6	76
SI03	30	31	61
CZ02	54	2	56
ITH3	41	14	55
DE13	47	2	49
DED2	47	2	49
ITH4	22	17	39
ITH2	35	3	38
SK01	30	6	36
AT31	34	1	35
HR03	13	21	34
DE40	31	2	33
ITH1	26	6	32
DE25	31	1	32
PL21	21	5	26
DE80	19	6	25
PL63	15	7	22
PL22	19	3	22
AT12	21	1	22
DE27	18	3	21
DED5	18	3	21
AT11	12	7	19
SK02	17	2	19
DE26	18	0	18
HU12	15	2	17
AT33	10	6	16
CZ04	12	4	16
CZ03	13	3	16
PL71	14	1	15
HU22	8	6	14
HU32	8	6	14
PL51	8	6	14
DEE0	13	1	14
DE14	9	4	13
PL41	13	0	13
DED4	9	3	12
DE24	11	1	12

DEG0	9	2	11
CZ06	4	5	9
PL42	4	5	9
DE22	5	4	9
CZ05	9	0	9
HU23	2	6	8
AT32	4	4	8
HU33	4	4	8
SK04	2	5	7
AT34	3	4	7
CZ08	3	4	7
CZ07	5	2	7
DE23	6	1	7
AT21	2	4	6
HU21	3	3	6
SK03	3	3	6
PL61	5	1	6
HU31	4	1	5
PL72	2	1	3
PL82	2	1	3
ITC2	1	1	2
PL81	1	1	2
PL92	1	1	2
PL43	1	0	1
PL52	1	0	1
PL62	1	0	1
PL84	0	0	0
Total per thematic area	941	154	1095

Table 15 Partnerships and cooperation: electricity and renewable energy thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Number of projects
2014 - 2020 Interreg VB Mediterranean	24
2014 - 2020 Interreg Europe	22
2014 - 2020 Interreg VB Central Europe	14
2014 - 2020 Interreg VB Danube	11
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	7
2014 - 2020 Interreg IPA CBC Croatia-Serbia	7
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	6
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	4
2014 - 2020 Interreg V-A Italy - Austria	4
2014 - 2020 Interreg V-A Italy - Slovenia	4
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	4

2014 - 2020 Interreg V-A Czech Republic - Poland	3
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	3
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	3
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	3
2014 - 2020 Interreg V-A Slovenia - Austria	3
2014 - 2020 Interreg VB Alpine Space	3
2014 - 2020 Interreg VB North West Europe	3
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	2
2014 - 2020 Interreg V-A Slovakia - Hungary	2
2014 - 2020 Interreg V-A Romania - Hungary	2
2014 - 2020 Interreg V-A Italy - France (Maritime)	2
2014 - 2020 Interreg V-A Italy - Croatia	2
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	2
2014 - 2020 Interreg V-A Austria - Hungary	2
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	2
2014 - 2020 Interreg VB Baltic Sea	2
2014 - 2020 Interreg V-A Slovakia - Czech Republic	1
2014 - 2020 Interreg IPA CBC Hungary - Serbia	1
2014 - 2020 Interreg VB Adriatic - Ionian	1
2014 - 2020 Interreg V-A Slovenia - Hungary	1
2014 - 2020 Interreg V-A Poland - Germany / Saxony	1
2014 - 2020 ESPON 2020	1
2014 - 2020 Interreg V-A Germany - The Netherlands	1
2014 - 2020 Interreg VB North Sea	1
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	0
2014 - 2020 Interreg V-A Poland - Slovakia	0
2014 - 2020 Interreg V-A Lithuania - Poland	0
2014 - 2020 Interreg V-A Slovenia - Croatia	0
2014 - 2020 Interreg V-A Italy - Switzerland	0
2014 - 2020 Interreg V-A Austria - Czech Republic	0
2014 - 2020 Poland - Russia ENI CBC	0
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	0
2014 - 2020 Interreg V-A Slovakia - Austria	0
2014 - 2020 URBACT III	0
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	0
2014 - 2020 Mediterranean Sea Basin ENI CBC	0
2014 - 2020 Interreg VB Northern Periphery and Arctic	0
Total per thematic area	154

Manufactured goods and transportation flows (incl. economic cooperation)

Table 16 Partnerships and cooperation: manufactured goods and transportation (incl. economic cooperation) thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Manufactured goods & transportation		Economic coop.		Manuf. goods	Econ. coop.	TOTAL (manuf. goods and econ. coop)
	H2020	Interreg	H2020	Interreg	Total	Total	
DE21	357	4	140	8	361	148	509
ITC4	249	13	148	11	262	159	421
AT13	186	13	110	15	199	125	324
ITC1	201	12	48	13	213	61	274
DE30	157	2	94	4	159	98	257
ITH5	110	13	100	24	123	124	247
DE11	152	5	43	12	157	55	212
HU11	86	21	72	14	107	86	193
PL91	108	3	65	10	111	75	186
SI04	76	12	51	31	88	82	170
AT22	110	4	41	9	114	50	164
ITC3	109	10	30	7	119	37	156
ITH3	57	15	32	26	72	58	130
HR04	46	13	29	37	59	66	125
CZ01	69	3	34	8	72	42	114
AT31	58	3	27	12	61	39	100
DE12	63	0	33	2	63	35	98
ITH4	27	14	21	16	41	37	78
SI03	20	6	15	27	26	42	68
AT12	37	2	20	6	39	26	65
DE13	32	3	20	6	35	26	61
HR03	13	13	10	24	26	34	60
SK01	16	5	22	13	21	35	56
PL41	19	3	30	3	22	33	55
DED2	33	2	15	3	35	18	53
DE14	33	2	8	9	35	17	52
DE40	25	7	14	6	32	20	52
PL63	20	7	19	4	27	23	50
ITH2	18	0	30	2	18	32	50
CZ03	22	2	10	14	24	24	48
CZ02	37	0	5	1	37	6	43
DE80	14	9	14	6	23	20	43
AT33	17	2	16	8	19	24	43
DE27	25	3	7	5	28	12	40
PL22	21	3	13	3	24	16	40
CZ04	33	4	0	1	37	1	38

SK03	12	6	14	5	18	19	37
CZ06	21	4	7	4	25	11	36
DE25	22	0	12	0	22	12	34
PL51	14	1	11	8	15	19	34
ITH1	14	5	7	6	19	13	32
PL21	15	2	12	2	17	14	31
DED5	18	1	11	0	19	11	30
AT32	13	2	8	7	15	15	30
SK04	8	5	6	11	13	17	30
CZ05	7	0	14	9	7	23	30
PL82	12	4	11	2	16	13	29
CZ07	25	0	2	1	25	3	28
AT21	9	3	9	7	12	16	28
DEG0	14	2	10	0	16	10	26
DED4	13	3	10	0	16	10	26
HU22	2	7	8	8	9	16	25
AT34	10	3	4	7	13	11	24
DEE0	9	2	10	2	11	12	23
HU32	0	6	8	9	6	17	23
PL71	10	0	11	1	10	12	22
HU12	11	2	4	4	13	8	21
PL42	6	4	5	6	10	11	21
SK02	4	2	5	10	6	15	21
HU21	3	0	12	5	3	17	20
DE23	14	1	3	1	15	4	19
AT11	2	7	3	5	9	8	17
DE22	3	2	3	9	5	12	17
PL81	1	6	5	4	7	9	16
DE26	14	0	1	0	14	1	15
HU33	4	2	6	3	6	9	15
PL84	0	5	1	9	5	10	15
PL61	3	0	10	2	3	12	15
DE24	6	0	7	1	6	8	14
HU31	3	0	2	9	3	11	14
CZ08	3	2	5	3	5	8	13
PL62	0	2	10	1	2	11	13
PL72	1	0	6	1	1	7	8
ITC2	1	1	2	3	2	5	7
PL52	0	0	4	3	0	7	7
HU23	0	0	5	1	0	6	6
PL43	0	1	4	0	1	4	5
PL92	0	1	2	2	1	4	5
Total per thematic area	1077	124	959	209	1201	1168	2369

Table 17 Partnerships and cooperation: manufactured goods and transportation (incl. economic cooperation) thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Econ. cooperation	Manuf. goods	Total
2014 - 2020 Interreg Europe	24	3	27
2014 - 2020 Interreg VB Central Europe	14	12	26
2014 - 2020 Interreg VB Mediterranean	19	0	19
2014 - 2020 Interreg VB Danube	11	6	17
2014 - 2020 Interreg V-A Italy - Croatia	9	8	17
2014 - 2020 Interreg V-A Italy - Switzerland	9	8	17
2014 - 2020 Interreg V-A Slovakia - Hungary	14	2	16
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	10	5	15
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	0	15	15
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	5	6	11
2014 - 2020 Interreg V-A Italy - France (Maritime)	4	7	11
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	3	6	9
2014 - 2020 Interreg V-A Austria - Hungary	2	7	9
2014 - 2020 Interreg V-A Italy - Austria	7	1	8
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	6	2	8
2014 - 2020 Interreg VB Baltic Sea	6	2	8
2014 - 2020 Interreg IPA CBC Croatia-Serbia	7	0	7
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	4	3	7
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	2	5	7
2014 - 2020 Interreg V-A Lithuania - Poland	7	0	7
2014 - 2020 Interreg V-A Czech Republic - Poland	5	1	6
2014 - 2020 Interreg VB Alpine Space	2	4	6
2014 - 2020 Interreg V-A Slovenia - Austria	5	0	5
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	4	1	5
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	0	5	5
2014 - 2020 Interreg VB Adriatic - Ionian	2	3	5
2014 - 2020 Interreg V-A Austria - Czech Republic	4	1	5
2014 - 2020 Interreg V-A Italy - Slovenia	3	1	4
2014 - 2020 Interreg V-A Romania - Hungary	1	3	4
2014 - 2020 Interreg IPA CBC Hungary - Serbia	3	1	4
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	3	0	3
2014 - 2020 Interreg VB North West Europe	2	1	3
2014 - 2020 Interreg V-A Poland - Slovakia	1	2	3
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	2	1	3
2014 - 2020 URBACT III	3	0	3

2014 - 2020 Interreg V-A Poland - Germany / Saxony	1	1	2
2014 - 2020 Interreg V-A Slovakia - Czech Republic	1	0	1
2014 - 2020 Interreg V-A Slovenia - Hungary	1	0	1
2014 - 2020 Interreg V-A Germany - The Netherlands	1	0	1
2014 - 2020 Interreg V-A Slovenia - Croatia	1	0	1
2014 - 2020 Poland - Russia ENI CBC	0	1	1
2014 - 2020 Mediterranean Sea Basin ENI CBC	1	0	1
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	0	0	0
2014 - 2020 ESPON 2020	0	0	0
2014 - 2020 Interreg VB North Sea	0	0	0
2014 - 2020 Interreg V-A Slovakia - Austria	0	0	0
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	0	0	0
2014 - 2020 Interreg VB Northern Periphery and Arctic	0	0	0
Total per thematic area	209	124	333

Institutional cooperation

Table 18 Partnerships and cooperation: institutional cooperation thematic cooperation area during 2014-2020 programming period

Region (NUTS2) code	Total projects on Interreg programmes*	Region (NUTS2) code	Total projects on Interreg programmes
SI04	120	AT31	20
HR04	83	CZ01	20
SI03	81	CZ04	20
AT13	65	SK04	20
ITH5	64	PL42	19
ITH3	61	PL63	19
HR03	59	PL82	19
ITC1	58	SK02	19
HU11	55	AT34	18
ITC4	53	DE22	18
DE21	47	ITH2	18
PL84	44	PL21	18
ITH4	43	PL52	17
HU22	42	SK03	17
PL51	40	AT32	16
PL22	39	DE30	16
SK01	39	HU21	16
AT22	37	DEE0	15
CZ03	37	HU23	15
CZ08	37	DE27	13
CZ05	36	DE24	11

ITH1	34	HU31	11
PL91	32	ITC2	11
ITC3	31	PL71	10
HU32	30	PL41	9
CZ06	28	DE23	8
DE40	28	PL43	8
DED2	27	PL61	8
AT33	26	DE14	7
DED4	26	DE25	7
AT11	24	DED5	7
DE80	24	DE12	6
PL81	24	DEG0	4
CZ07	23	HU12	4
DE11	23	PL72	4
HU33	23	CZ02	2
PL62	22	PL92	2
AT21	21	DE26	1
DE13	21	Total per thematic area	821
AT12	20	*total number of projects includes only Interreg cooperation programmes	

Table 19 Partnerships and cooperation: institutional cooperation thematic cooperation area during 2014-2020 programming period (number of projects by Interreg programme)

Interreg cooperation programme	Number of projects
2014 - 2020 Interreg Europe	125
2014 - 2020 URBACT III	53
2014 - 2020 Interreg V-A Czech Republic - Poland	45
2014 - 2020 Interreg VB Central Europe	44
2014 - 2020 Interreg V-A Germany / Saxony - Czech Republic	43
2014 - 2020 Interreg V-A Lithuania - Poland	43
2014 - 2020 Interreg VB Danube	41
2014 - 2020 ESPON 2020	30
2014 - 2020 Interreg VB Alpine Space	28
2014 - 2020 Interreg V-A Germany / Bavaria - Czech Republic	28
2014 - 2020 Poland - Belarus - Ukraine ENI CBC	26
2014 - 2020 Interreg V-A Austria - Germany / Bavaria (Bayern - Österreich)	21
2014 - 2020 Interreg V-A Germany / Brandenburg - Poland	20
2014 - 2020 Interreg VB Mediterranean	19
2014 - 2020 Interreg V-A Italy - Austria	18
2014 - 2020 Interreg V-A Romania - Hungary	17
2014 - 2020 Interreg V-A Slovakia - Czech Republic	17
2014 - 2020 Interreg V-A Slovakia - Hungary	16
2014 - 2020 Interreg V-A Poland - Denmark - Germany - Lithuania - Sweden (South Baltic)	15

2014 - 2020 Interreg VB Adriatic - Ionian	14
2014 - 2020 Interreg V-A Italy - Switzerland	13
2014 - 2020 Interreg V-A Germany - Austria - Switzerland - Liechtenstein (Alpenrhein - Bodensee - Hochrhein)	12
2014 - 2020 Interreg V-A Slovenia - Austria	12
2014 - 2020 Interreg V-A France - Italy (ALCOTRA)	11
2014 - 2020 Interreg V-A Germany / Mecklenburg - Western Pomerania / Brandenburg - Poland	11
2014 - 2020 Interreg V-A Austria - Hungary	10
2014 - 2020 Interreg V-A Italy - Slovenia	10
2014 - 2020 Interreg V-A Poland - Germany / Saxony	9
2014 - 2020 Interreg V-A Italy - Croatia	8
2014 - 2020 Interreg V-A Italy - France (Maritime)	8
2014 - 2020 Interreg IPA CBC Hungary - Serbia	7
2014 - 2020 Interreg V-A France - Germany - Switzerland (Rhin supérieur-Oberrhein)	7
2014 - 2020 Interreg IPA CBC Croatia-Serbia	6
2014 - 2020 Interreg V-A Austria - Czech Republic	6
2014 - 2020 Interreg VB Baltic Sea	5
2014 - 2020 Interreg V-A Slovenia - Hungary	5
2014 - 2020 Interreg V-A Slovakia - Austria	5
2014 - 2020 Hungary - Slovakia - Romania - Ukraine ENI CBC	4
2014 - 2020 Interreg IPA CBC Croatia - Bosnia and Herzegovina - Montenegro	4
2014 - 2020 Interreg VB North West Europe	4
2014 - 2020 Interreg V-A Poland - Slovakia	2
2014 - 2020 Interreg V-A Slovenia - Croatia	2
2014 - 2020 Mediterranean Sea Basin ENI CBC	1
2014 - 2020 Interreg VB Northern Periphery and Arctic	1
2014 - 2020 Interreg V-A Germany - The Netherlands	0
2014 - 2020 Poland - Russia ENI CBC	0
2014 - 2020 Interreg VB North Sea	0
2014 - 2020 Interreg V-A Belgium - Germany - The Netherlands Euregio Meuse-Rhin / Euregio Maas-Rijn / Euregio Maas-Rhein	0
Total per thematic area	821

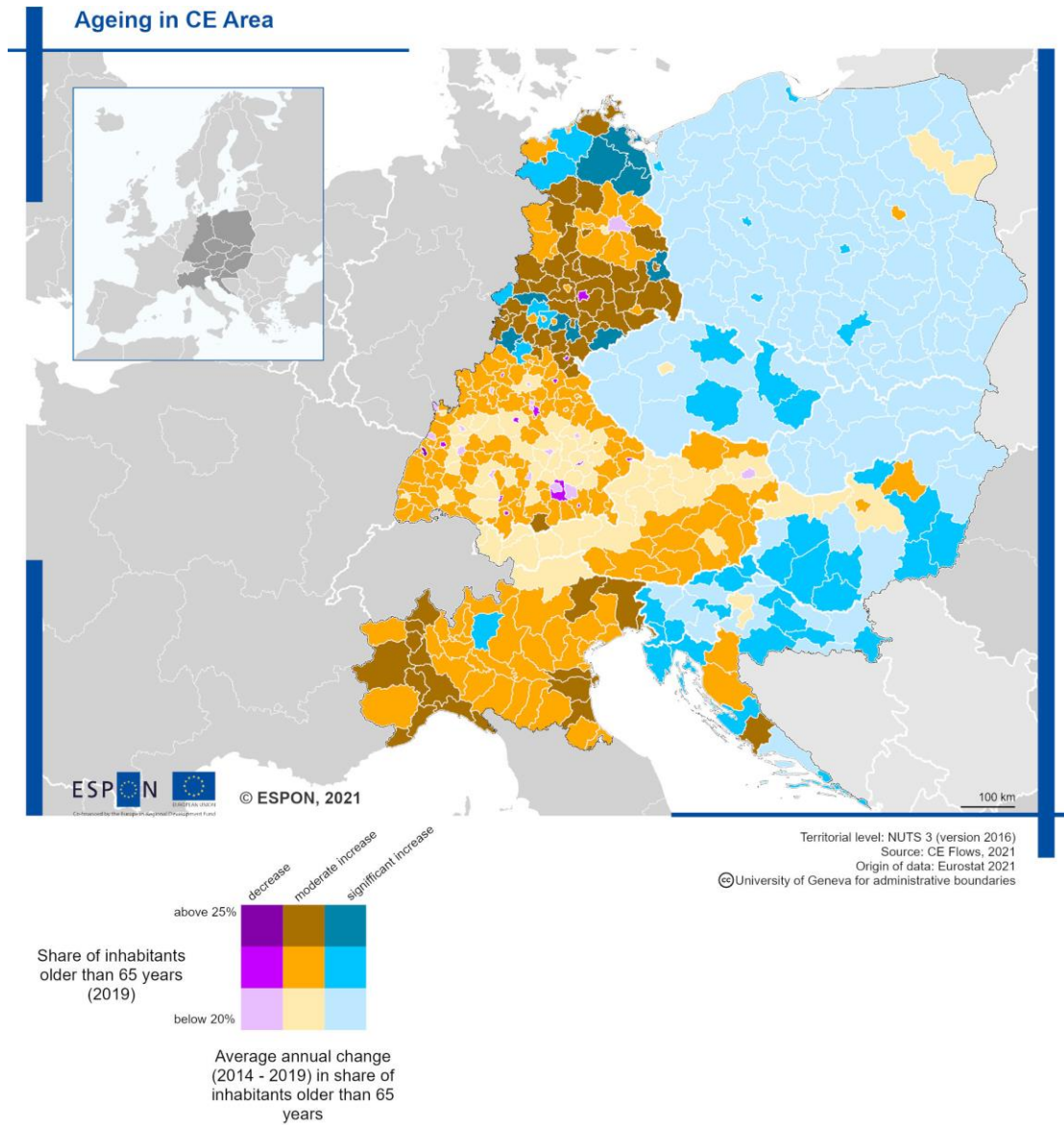
Annex 2: Spatial dynamics of ageing in the CE area

Demographic change, in terms of the development of the share of individuals aged 65 years and over, affects regions to various degrees throughout the CE Area, with some regions experiencing significant inflows of young people, and other regions experiencing ageing to a stronger degree. The bivariate

Map 19 is composed of two components: the share of individuals aged 65 years and older (in 2019) and the average growth rate of this population share between 2014 and 2019¹⁰⁸.

¹⁰⁸ A deeper colour gradient represents a region with a relatively higher share of the population aged 65 years and older (in 2019). Conversely, a lighter gradient represents a region with a lower population share in that segment. The range of colours (from purple to blue) represents the average annual growth rate of that population segment (2014-2019), with purple corresponding to a shrinking segment and blue to an increasing segment.

Map 19. Ageing in the CE Area

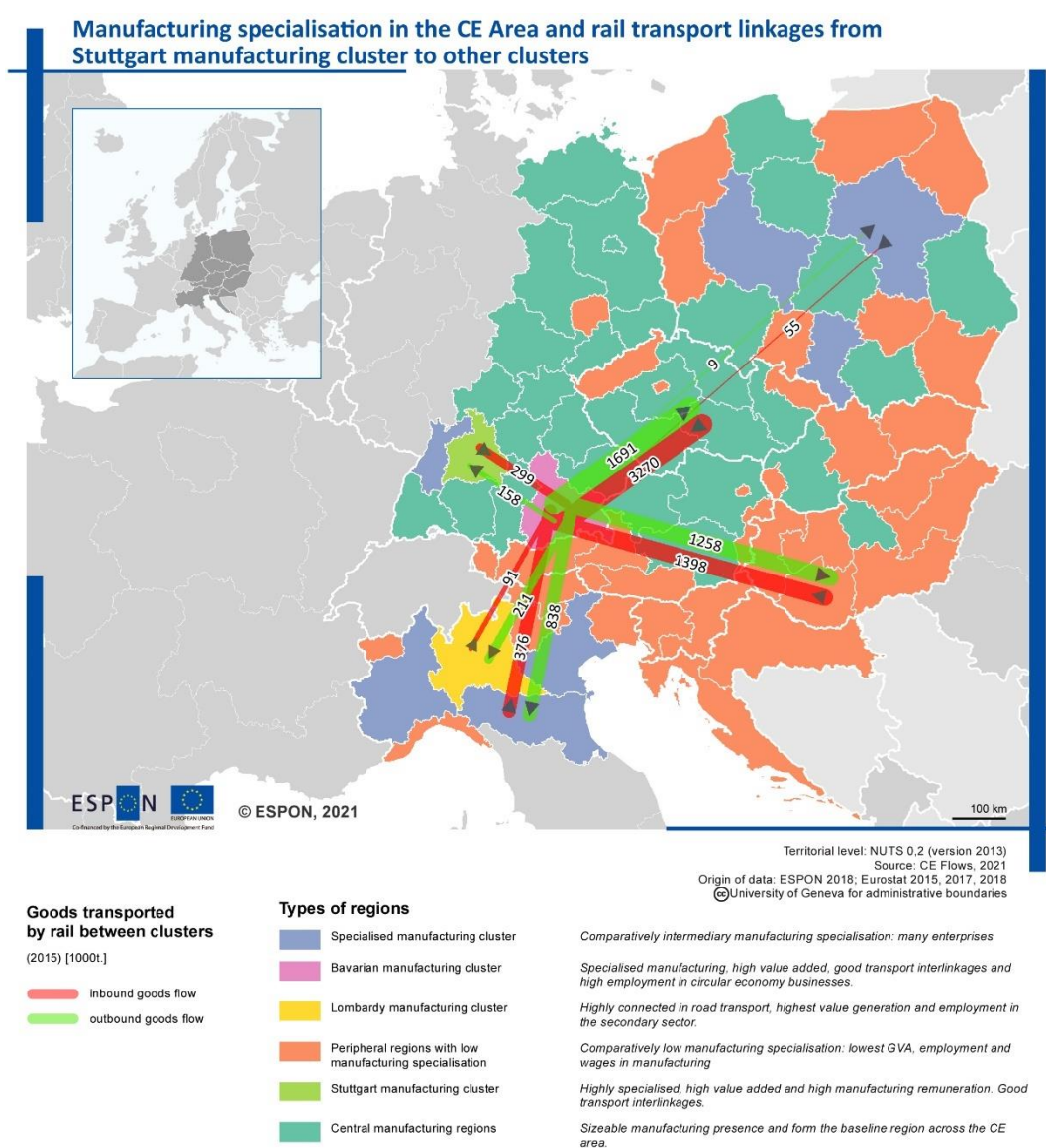


Annex 3: Cluster analysis – manufacturing flows

The assessment of the manufacturing capacities and the rail transport flows between the manufacturing hotspots of the CE area produced one map per cluster, as each map illustrates the rail cargo flows between the individual clusters. This is an extension of the analysis presented in Section 2.1. The clusters visualised in the maps below follow the characterisation presented in Section 2.1.

The rail cargo transport volumes originating in the *Stuttgart manufacturing cluster* are presented in Map 20. The *Stuttgart manufacturing cluster* is one of the most specialised manufacturing regions in the CE Area. From the goods flows to other clusters, the Stuttgart manufacturing cluster is most interlinked with the *central manufacturing regions*, the *specialised manufacturing cluster (west)*, and to a lesser extent the *Bavarian manufacturing cluster*. This is likely due to the highly developed transport infrastructure (see Section 2.4) and the proximity to other manufacturing hotspots.

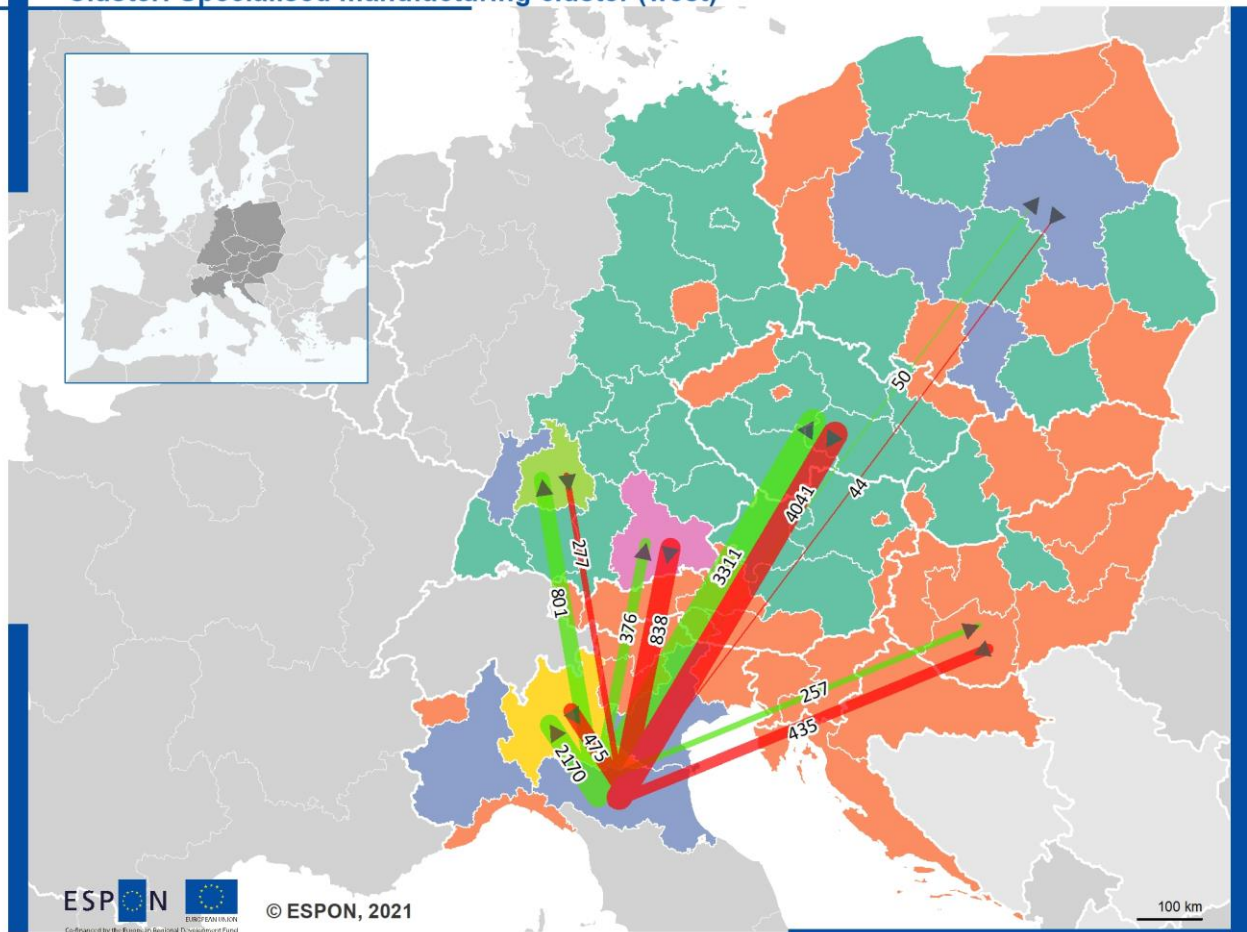
Map 20. Manufacturing goods and rail transport: Stuttgart manufacturing cluster



The *specialised manufacturing cluster (west)* as one of the leading manufacturing zones in the CE Area follows similar patterns (see Map 21) as the *Stuttgart manufacturing cluster*. Interlinkages (measured by rail cargo flows) are strongest to the *Lombardy manufacturing cluster* and *central manufacturing regions*, followed (to a significantly lower extent) by the two German manufacturing hotspots. Well-developed infrastructure and overall synergies created by a high density of specialised manufacturing companies fuel these exchanges.

Map 21. Manufacturing goods and rail transport: Specialised manufacturing cluster (west)

**Manufactured goods and transportation flows in the CE Area
Cluster: Specialised manufacturing cluster (west)**



Territorial level: NUTS 0,2 (version 2013)
Source: CE Flows, 2021
Origin of data: ESPON 2018; Eurostat 2015, 2017, 2018
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Goods transported by rail between clusters

(2015) [1000t.]

- inbound goods flow
- outbound goods flow

Types of regions

- Specialised manufacturing cluster
- Bavarian manufacturing cluster
- Lombardy manufacturing cluster
- Peripheral regions with low manufacturing specialisation
- Stuttgart manufacturing cluster
- Central manufacturing regions

Comparatively intermediary manufacturing specialisation: many enterprises

Specialised manufacturing, high value added, good transport interlinkages and high employment in circular economy businesses.

Highly connected in road transport, highest value generation and employment in the secondary sector.

Comparatively low manufacturing specialisation: lowest GVA, employment and wages in manufacturing

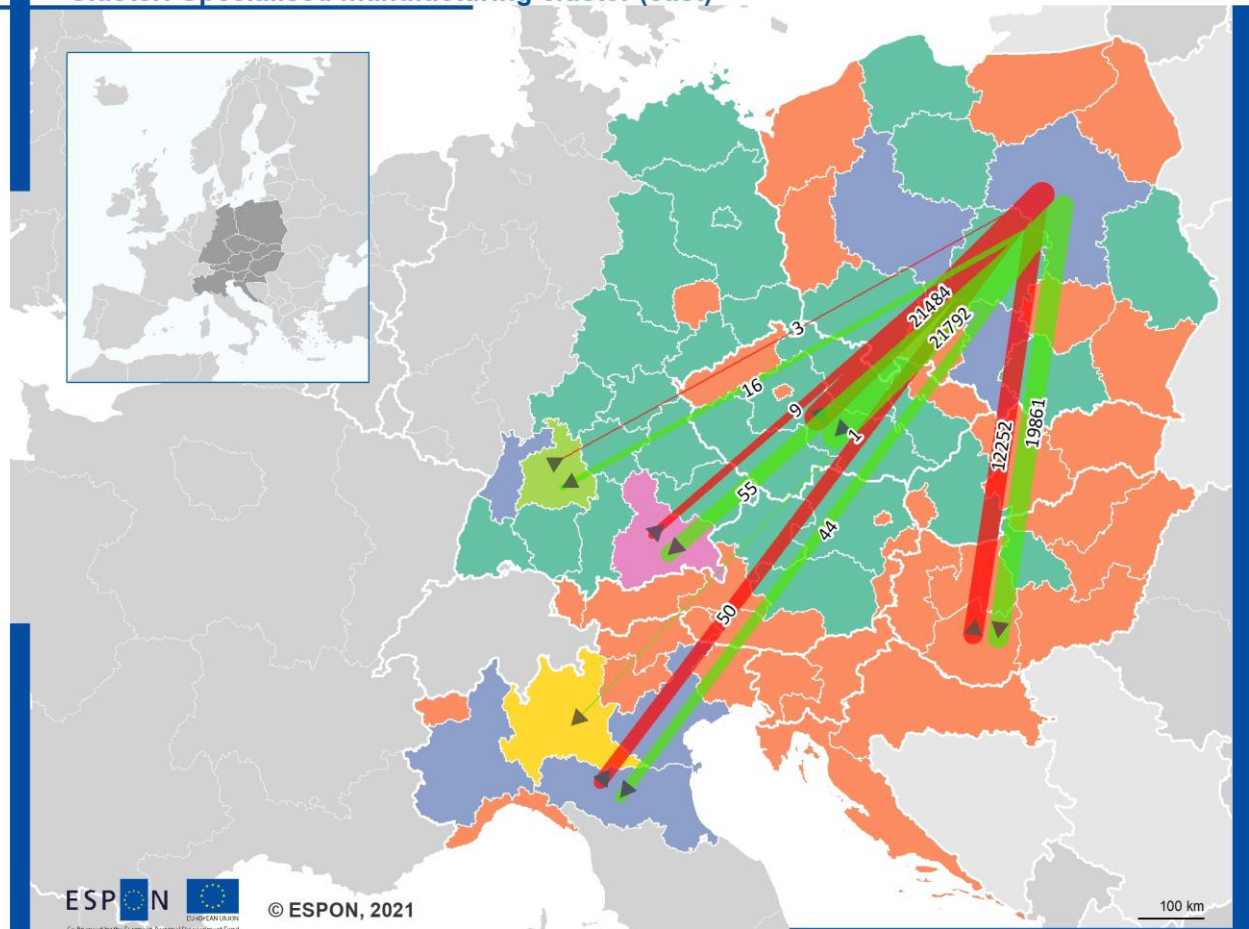
Highly specialised, high value added and high manufacturing remuneration. Good transport interlinkages.

Sizeable manufacturing presence and form the baseline region across the CE area.

The *specialised manufacturing cluster (east)* mirrors the characteristics of its western peer: it is situated in the heartland of Poland. The cluster is well-interlinked (Map 22) with the two geographically closer clusters, the *central* and *peripheral* regions.

Map 22. Manufacturing goods and rail transport: Specialised manufacturing cluster (east)

**Manufactured goods and transportation flows in the CE Area
Cluster: Specialised manufacturing cluster (east)**



Territorial level: NUTS 0.2 (version 2013)
Source: CE Flows, 2021
Origin of data: ESPON 2018; Eurostat 2015, 2017, 2018
© University of Geneva for administrative boundaries

Goods transported by rail between clusters
(2015) [1000t.]

- ▬ inbound goods flow
- ▬ outbound goods flow

Types of regions

- ▬ Specialised manufacturing cluster
- ▬ Bavarian manufacturing cluster
- ▬ Lombardy manufacturing cluster
- ▬ Peripheral regions with low manufacturing specialisation
- ▬ Stuttgart manufacturing cluster
- ▬ Central manufacturing regions

Comparatively intermediary manufacturing specialisation: many enterprises

Specialised manufacturing, high value added, good transport interlinkages and high employment in circular economy businesses.

Highly connected in road transport, highest value generation and employment in the secondary sector.

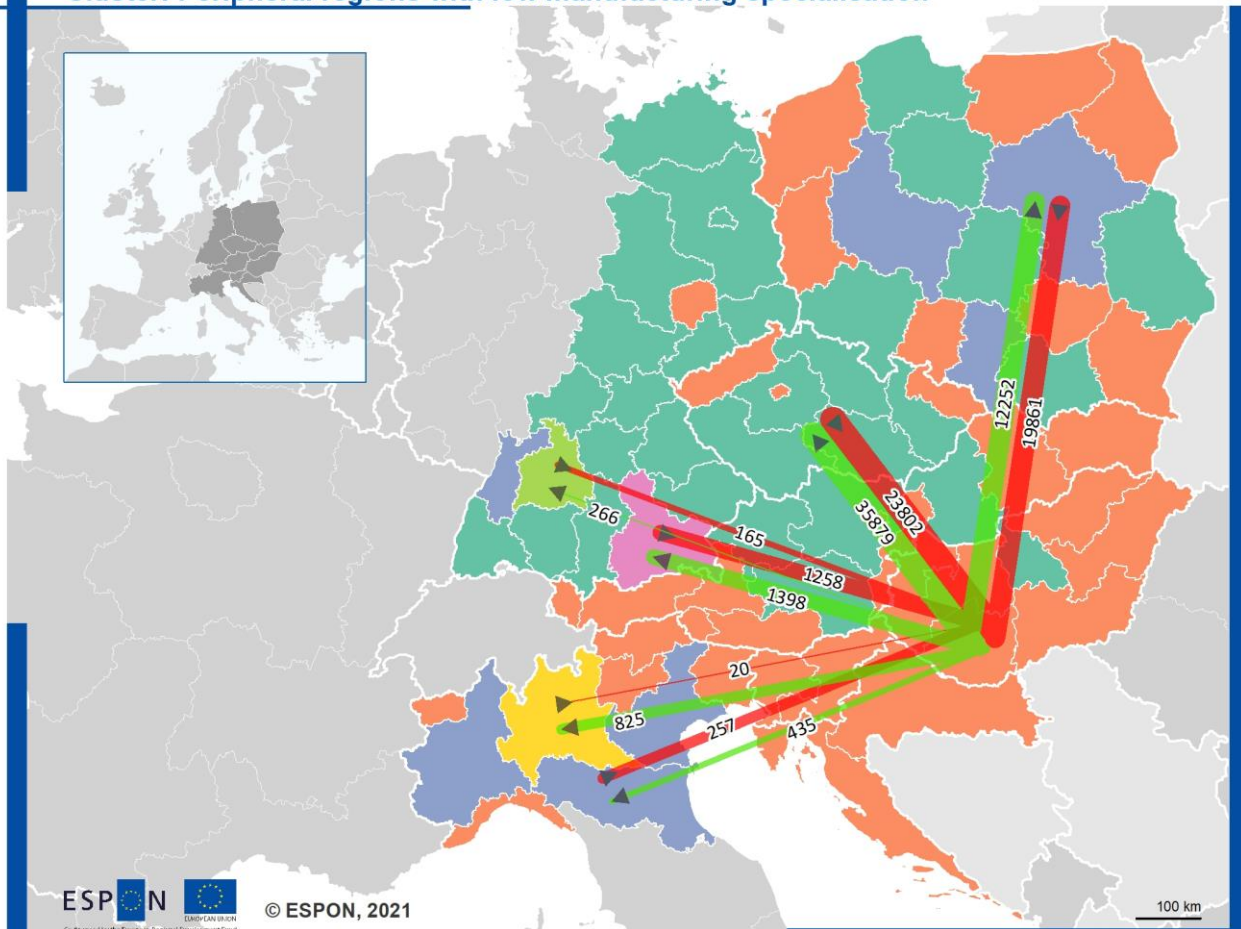
Comparatively low manufacturing specialisation: lowest GVA, employment and wages in manufacturing

Highly specialised, high value added and high manufacturing remuneration. Good transport interlinkages.

Sizeable manufacturing presence and form the baseline region across the CE area.

Map 23. Manufacturing goods and rail transport: Peripheral regions with low manufacturing specialisation

**Manufactured goods and transportation flows in the CE Area
Cluster: Peripheral regions with low manufacturing specialisation**



© ESPON, 2021

100 km

Territorial level: NUTS 0.2 (version 2013)
Source: CE Flows, 2021
Origin of data: ESPON 2018; Eurostat 2015, 2017, 2018
© University of Geneva for administrative boundaries

Goods transported by rail between clusters (2015) [1000t.]

- inbound goods flow
- outbound goods flow

Types of regions

- Specialised manufacturing cluster
- Bavarian manufacturing cluster
- Lombardy manufacturing cluster
- Peripheral regions with low manufacturing specialisation
- Stuttgart manufacturing cluster
- Central manufacturing regions

Comparatively intermediary manufacturing specialisation: many enterprises

Specialised manufacturing, high value added, good transport interlinkages and high employment in circular economy businesses.

Highly connected in road transport, highest value generation and employment in the secondary sector.

Comparatively low manufacturing specialisation: lowest GVA, employment and wages in manufacturing

Highly specialised, high value added and high manufacturing remuneration. Good transport interlinkages.

Sizeable manufacturing presence and form the baseline region across the CE area.

These two maps (Map 22 and Map 23) highlight the East-West Axis still apparent in the CE Area. Despite the significant manufacturing output of the eastern manufacturing cluster and the peripheral regions, this part of the CE Area lacks the manufacturing hotspots of the western regions. However, judging by the rail cargo flows, interlinkages with the remainder of the programme area occur predominantly via the central manufacturing regions.

Annex 4: Assumptions for scenario modelling

Table 20. Assumptions for the New Normality scenario

Period	2021-2030 (New Normality)
<i>Coefficients</i>	<i>Post-crisis</i>
<i>Macro factors</i>	
Debt/GDP	Convergence towards Maastricht parameter
Interest rate	Increased debt levels cause higher interest rates
Inflation rate	Reprisal of inflation rates
Deficit/GDP	Maastricht targets are met by northern European countries; some relaxing of Maastricht rules for southern European countries
GDP growth US-JP-BRIC	Mild GDP growth in US and Japan; growth in BRIC Countries
FDIs	FDIs resume to pre-COVID levels
Consumption levels	Consumption levels regain pre-COVID levels
Investment	Major boost in investments due to the recovery plan
Export and import levels	Major reprisal of import and export levels (+10% w.r.t. pre-COVID levels)
<i>Regional factors</i>	
Industrial specialisation	Pre-COVID levels for high-tech activities; permanent minor contraction for tourism and transport; contraction for other manufacturing
Supplier/Buyer relations within the production chain	Supplier/Buyer relations resume to pre-COVID levels
Innovation	Major increase in innovation-intensive regions; medium increase in medium performing regions; minor increase in other areas
Trust and social capital	Partial (+5%) reprisal of trust levels everywhere w.r.t. the lockdown period
Death rate	Return to pre-COVID rates
Energy efficiency	Increase (+10%) due to the measures issued in the recovery plan

Source: Authors' elaboration

Table 21. Assumptions for the integration scenarios

Scenario	Integration scenario	Partial Integration scenario
<i>Macro factors</i>		
Export and import levels	Stronger reprisal of import and export levels (+10% w.r.t. New Normality scenario) in CE countries	Stronger reprisal of import and export levels, but less than in the scenario without COVID consequences (+5% w.r.t. New Normality scenario) in CE countries
<i>Regional factors</i>		
Foreign Direct Investment	Full reprisal (+10%) of FDI increases in line with the pre-COVID trend	Partial (+5%) reprisal of FDI increases in line with the pre-COVID trend
Quality of government	Increase everywhere, stronger in CE countries	Increase everywhere, stronger in CE countries
Industrial specialisation	Pre-COVID levels for high-tech activities	Border effects in high-tech manufacturing activities for CE areas

Trust and social capital	Full (+10%) reprisal of trust levels everywhere w.r.t. the lockdown period	Partial (+5%) reprisal of trust levels everywhere w.r.t. the lockdown period
Urban networks	Increase everywhere w.r.t. New Normality scenario; stronger in CE countries	Increase everywhere w.r.t. New Normality scenario; stronger in CE countries
Tourism	Increase everywhere; stronger in CE areas.	Slowdown of touristic flows integration in CE areas

Source: Authors' elaboration

Annex 5: Regional disparity trends in the three scenarios

In this section we focus on the major effects that the way in which lockdowns have been enacted will have on the likely evolution of regional disparities, represented by the Theil index. In this report, we calculate this index to show disparities within the CE area (total disparities), that can in turn be split between CE country disparities (between country Theil Index) and disparities among regions in each CE country (within countries Theil Index). The idea behind these indices is to observe the intertemporal changes in total variation of per capita GDP levels, and also to trace the sources of these variations in variation within each country (viz. whether per capita income levels are substantially different among regions of the same country) and between countries (capturing instead international income differentials).

The Theil Index of Regional inequalities is calculated as follows:

$$Theil = \frac{1}{N} \sum_{i=1}^N \frac{y_i}{\bar{y}} \ln \left(\frac{y_i}{\bar{y}} \right)$$

where N is the number of regions, y_i is the variable of interest in the i th region (in this case, regional GDP) and \bar{y} is the average regional GDP calculated for all regions (OECD, 2016).

Results for average yearly regional GDP growth rates for the period 2021-2030 in the three integration scenarios are shown in Table 22. According to the reference scenario, Table 22 shows (Column 2) that Countries hit the hardest from the crisis are expected to also register a comeback, with faster growth rates found for Portugal, France, Croatia, and Italy.

While Column 3 in Table 22 suggests that in an integration scenario without permanent consequences of the COVID-induced lockdowns would mostly benefit CE area Countries, a second integration scenario that models instead ever-lasting economic damage from the lockdowns would slow down everyone's growth rates, while of course missed growth would be mostly concentrated in CE Countries.

Table 22. Average yearly regional GDP growth rates for the period 2021-2030 in the three scenarios

Country	2020-2030 GDP growth, reference scenario	2020-2030 GDP growth, integration scenario	2020-2030 GDP growth, slower int. scenario
Austria	4.13	4.61	2.27
Belgium	4.29	4.29	2.31
Bulgaria	5.18	5.18	2.80
Cyprus	4.69	4.69	2.56
Czechia	4.14	4.63	2.27
Germany	4.34	4.60	2.36
Denmark	4.74	4.74	2.57
Estonia	5.22	5.22	2.84
Greece	5.06	5.06	2.73
Spain	5.23	5.23	2.82
Finland	4.07	4.07	2.24
France	5.55	5.55	2.99
Croatia	5.43	6.32	3.15
Hungary	4.56	5.00	2.48
Ireland	4.69	4.69	2.56
Italy	5.45	5.69	2.94
Lithuania	4.57	4.57	2.49
Luxembourg	4.95	4.95	2.67
Latvia	4.80	4.80	2.58
Malta	5.16	5.16	2.76
Netherlands	4.52	4.51	2.43
Poland	4.25	4.70	2.32
Portugal	5.44	5.43	2.94
Romania	4.38	4.38	2.39

Sweden	4.47	4.47	2.43
Slovenia	4.20	4.70	2.31
Slovakia	4.94	5.39	2.68
UK	4.25	4.25	2.31
<i>EU</i>	<i>4.75</i>	<i>4.87</i>	<i>2.57</i>

Source: Authors' elaboration

Figure 13 shows for each scenario all three indices:

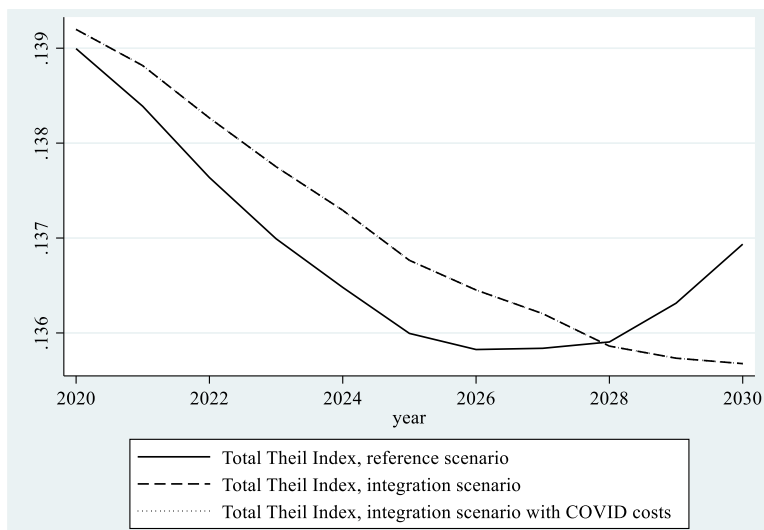
- the total disparities in the CE area (Figure 21.a);
- the between CE country disparities (Figure 21.b); and
- the within CE country disparities (Figure 21.c).

On the X-axis time (2020-2030) is represented, while on the Y-axis the intensity of the disparities indicators are shown. When only two graphs seem to appear, this is due to the fact that no difference can be found between the two integration scenarios, thus producing perfectly overlapped lines.

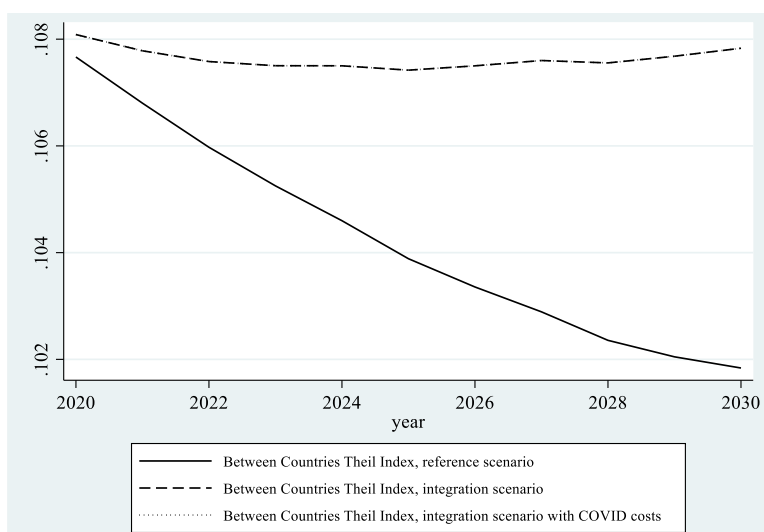
Figure 13.a suggests that, in the reference scenario, total disparities (continuous black line) decrease. When looking at national GDP growth simulation results, this trend is explained by the fact that the rebound after the pandemic will be particularly marked in the poorest countries of the CE area (Hungary, Croatia, Slovakia).

Figure 13. Total, between Countries, and within Countries Theil index for the three scenarios

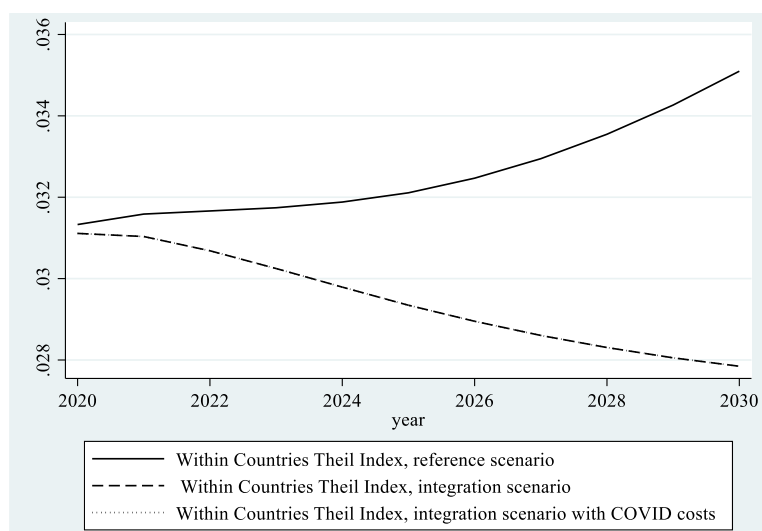
a. Total Theil index for the three scenarios



b. Between Countries Theil index for the three scenarios



c. Within Countries Theil index for the three scenarios



Source: Authors' elaboration

The same decreasing trend is registered in the integration scenario (black dashed line), as shown in Figure 13.a. Interestingly, disparities decrease less than in the reference scenario. The two integration scenarios show similar disparity trends since the slowdown of the integration process does not influence the distribution of GDP at national and regional level, rather the aggregate growth.

The total trends in disparities can be explained in terms of between countries and within countries. The reference scenario shows that the between country disparities decrease (Figure 13.b) and the within country disparities increase (Figure 13.c). The between country disparities decrease because the rebound is higher in poorer countries, while the within country disparities increase because the pre-COVID tendency of a concentrated development (i.e. a process of economic growth whereby economic resources and productivity tend to disproportionately increase in a few areas of the countries, not homogeneously) remains. This last increase becomes in the long run so high that it can no longer be counterbalanced by the decrease in the between country disparities, so that the total disparities register an increase. Conversely, thanks to a spatially equal distribution of integration advantages, like the increasing intensity of cooperation relations, stronger networks, and higher trust, both between and within disparities in the two integration scenarios remain rather stable.

Annex 6: Additional results of the MASST4 model on the costs of the COVID-related lockdowns

In addition to the regional breakdown of the MASST simulations performed for this project, this technical appendix provides a discussion of the national results.

Table 23, Column 3 shows the results of the forecasts of the national GDP contraction induced by the Spring 2020 lockdowns across (almost) the whole EU. For ease of comparison, Column 2 also shows the corresponding simulations of the EC as of June 2020 as a benchmark (EC, 2020). MASST simulations turn out to be in all in all very close to those presented in EC (2020b) and clearly hint at a major loss mostly for Countries both most directly affected by the medical consequences of the pandemic, while simultaneously opting for early, and most severe, lockdown measures.

Interestingly, the strong interrelations among EU economies have transferred the negative effects of the lockdowns even to places where measures have been somewhat more relaxed¹⁰⁹ (e.g., Austria), or almost non-existent (e.g. Sweden).

Table 23. Forecasted national growth rates in EC (2020) and according to the MASST4 model simulations

Country	EC forecasts June 2020	MASST forecasts
Austria	-7.1	-7.5
Belgium	-8.8	-7.8
Bulgaria	-7.1	-5.7
Cyprus	-7.7	-5.9
Czechia	-7.8	-7.2
Germany	-6.3	-6.9
Denmark	-5.2	-7.5
Estonia	-7.7	-6.0
Greece	-9	-11.7
Spain	-10.9	-11.3
Finland	-6.3	-7.8
France	-10.6	-10.9
Croatia	-10.8	-9.4
Hungary	-7	-7.1
Ireland	-8.5	-7.0
Italy	-11.2	-10.7
Lithuania	-7.1	-6.1
Luxembourg	-6.2	-7.3
Latvia	-7	-5.9
Malta	-6	-5.6

¹⁰⁹ On the basis of the Risk of Openness Index calculated by the University of Oxford; see e.g. Hale et al. (2020).

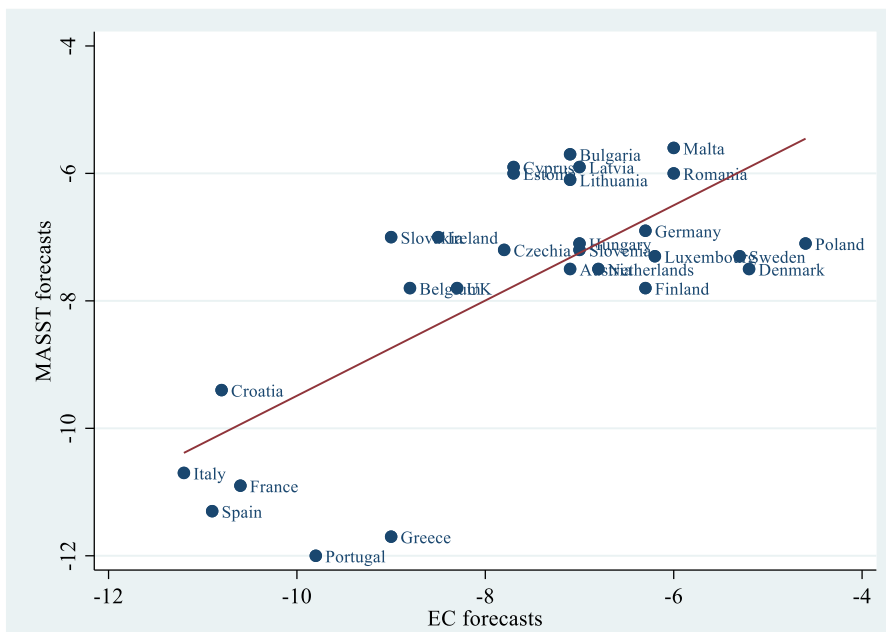
Netherlands	-6.8	-7.5
Poland	-4.6	-7.1
Portugal	-9.8	-12.0
Romania	-6	-6.0
Sweden	-5.3	-7.3
Slovenia	-7	-7.2
Slovakia	-9	-7.0
UK	-8.3	-7.8

Source: Authors' elaboration

These figures are also displayed on the scatter plot shown in

Figure 14. All GDP estimates remain very close to a regression line interpolating the relationship between the two data series. A simple univariate regression between the two lines finds an estimated β equal to 0.75, with a remarkable 0.51 R^2 .

Figure 14. EC (X-Axis) and MASST4 (Y-Axis) forecasts of expected GDP contraction in 2020

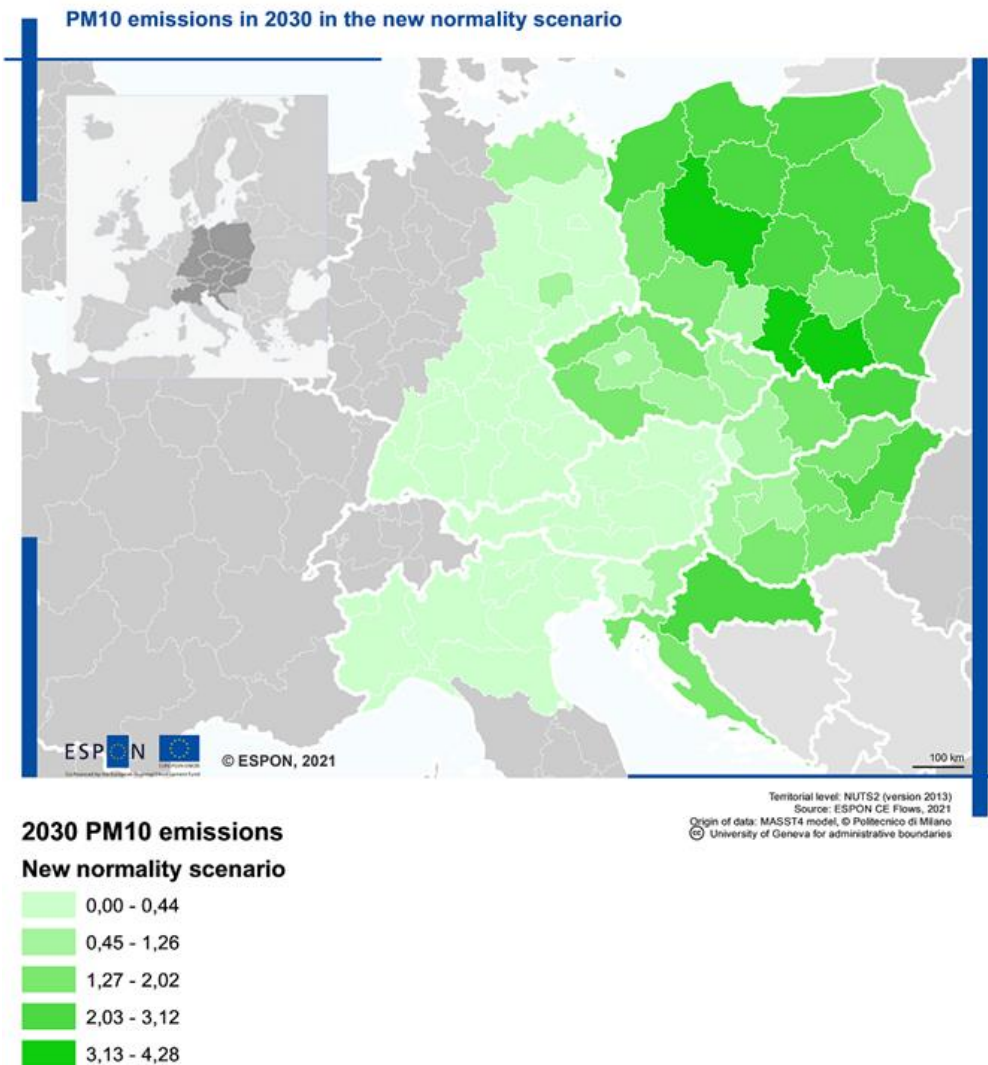


Source: Authors' elaboration

Additional results for the non-economic foresights

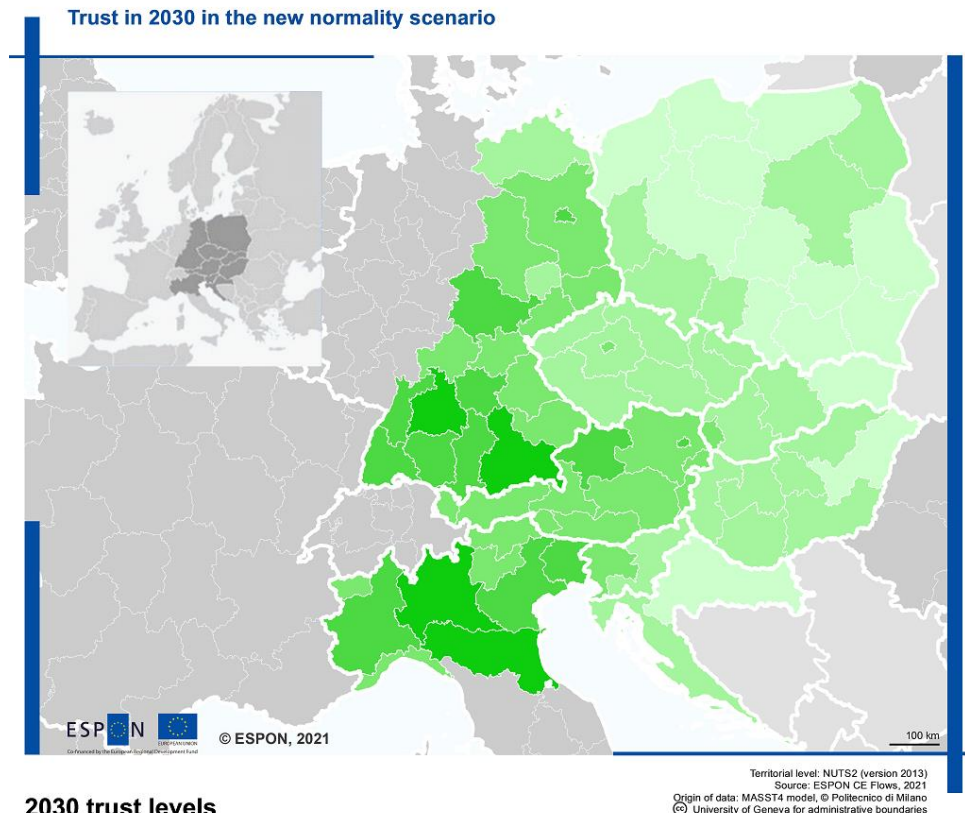
Map 24 shows PM10 emissions in 2030 in the new normality scenario. Despite the gradual shift of employment in manufacturing activities into service industries that come with the process of long development involving CE countries, the map still shows a remarkable concentration of emissions in the Eastern part of the CE area, with a minor concentration in capital regions in CE countries, and a much stronger concentration in rural areas where manufacturing hotspots are located.

Map 24. PM10 emissions in 2030 in the new normality scenario



Map 25 shows instead the percentage of people reporting they have a high level of trust in others in the new normality scenario. The map still discounts the overall lower levels of trust that are usually recorded in CE countries (see e.g. Growiec and Growiec, 2014), while higher levels are still found in the south-eastern tip of Germany, in most Austrian regions, and in northern Italy, as already discussed in Putnam et al. (1993).

Map 25. Trust in 2030 in the new normality scenario



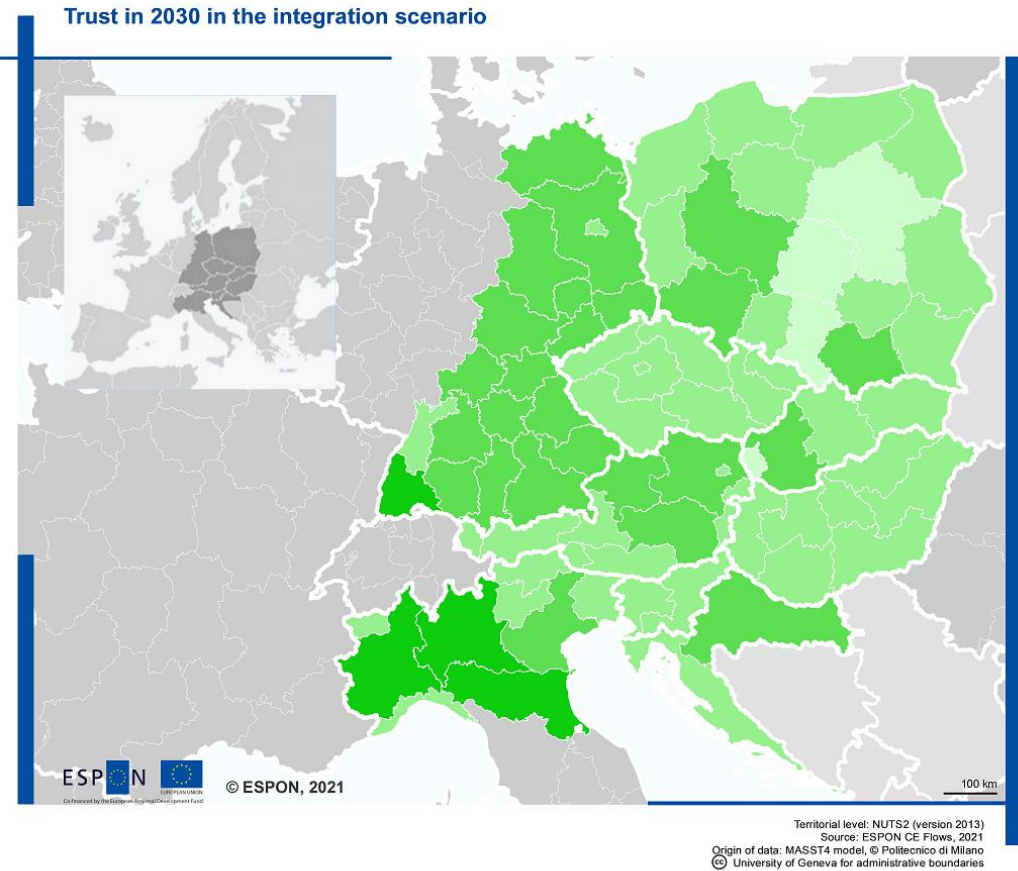
2030 trust levels

New normality scenario

	0,25 - 0,31
	0,32 - 0,36
	0,37 - 0,42
	0,43 - 0,52
	0,53 - 0,74

Map 26 shows the same indicator for the integration scenario. Interestingly, results suggest that in most CE regions a tighter integration causes generalized increases of trust, especially in areas that are already well endowed with this crucial piece of social capital. However, the area of Warsaw and the surrounding NUTS2 regions seem to benefit less from such scenario. This is in line with the recent debate on the inverted U-shaped relationship between city and region size and life satisfaction, which also brings along several social capital-related indicators (see e.g. Lenzi and Perucca, 2018).

Map 26. Trust in 2030 in the integration scenario



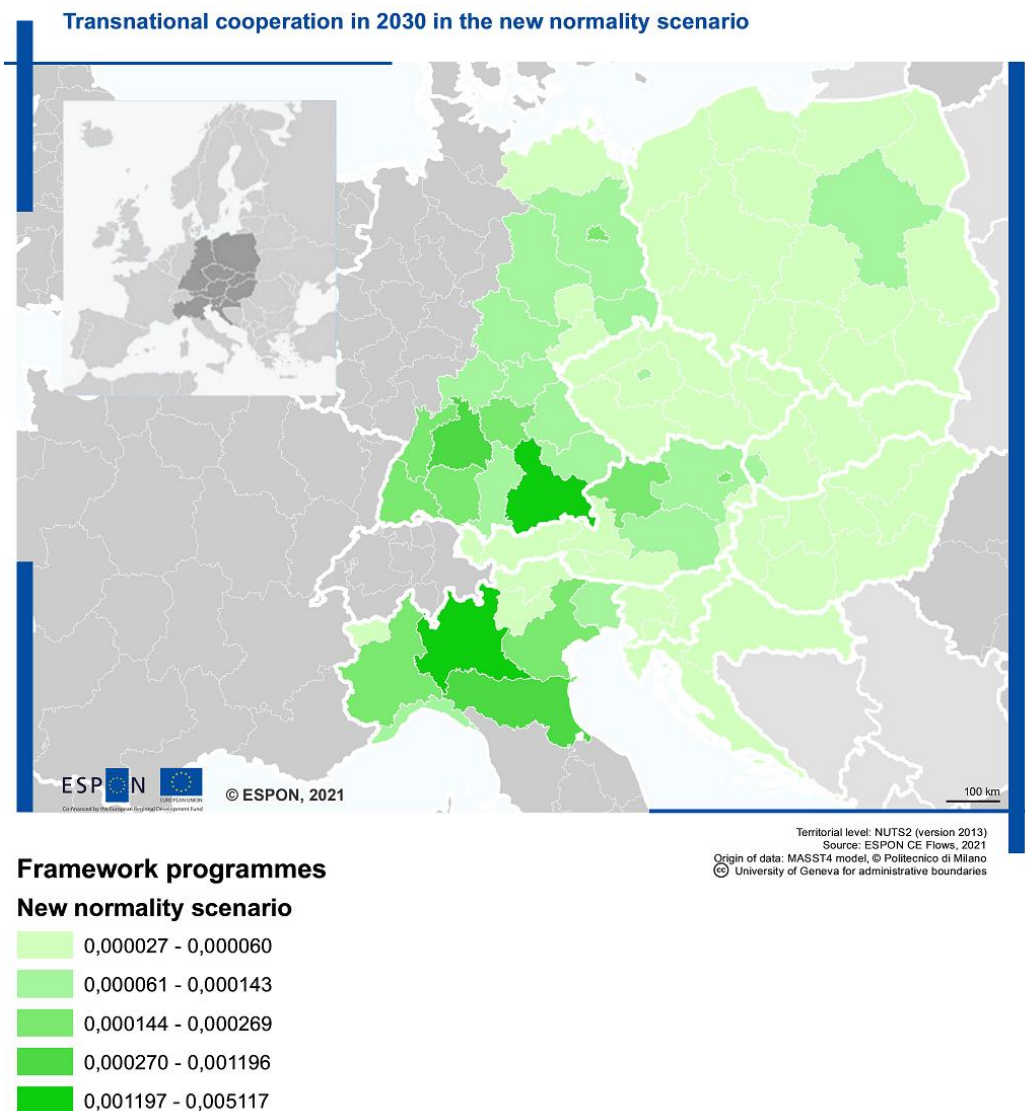
2030 trust levels

Integration scenario, difference w.r.t. new normality scenario

	-0,007 - 0,001
	0,002 - 0,007
	0,008 - 0,019
	0,020 - 0,033

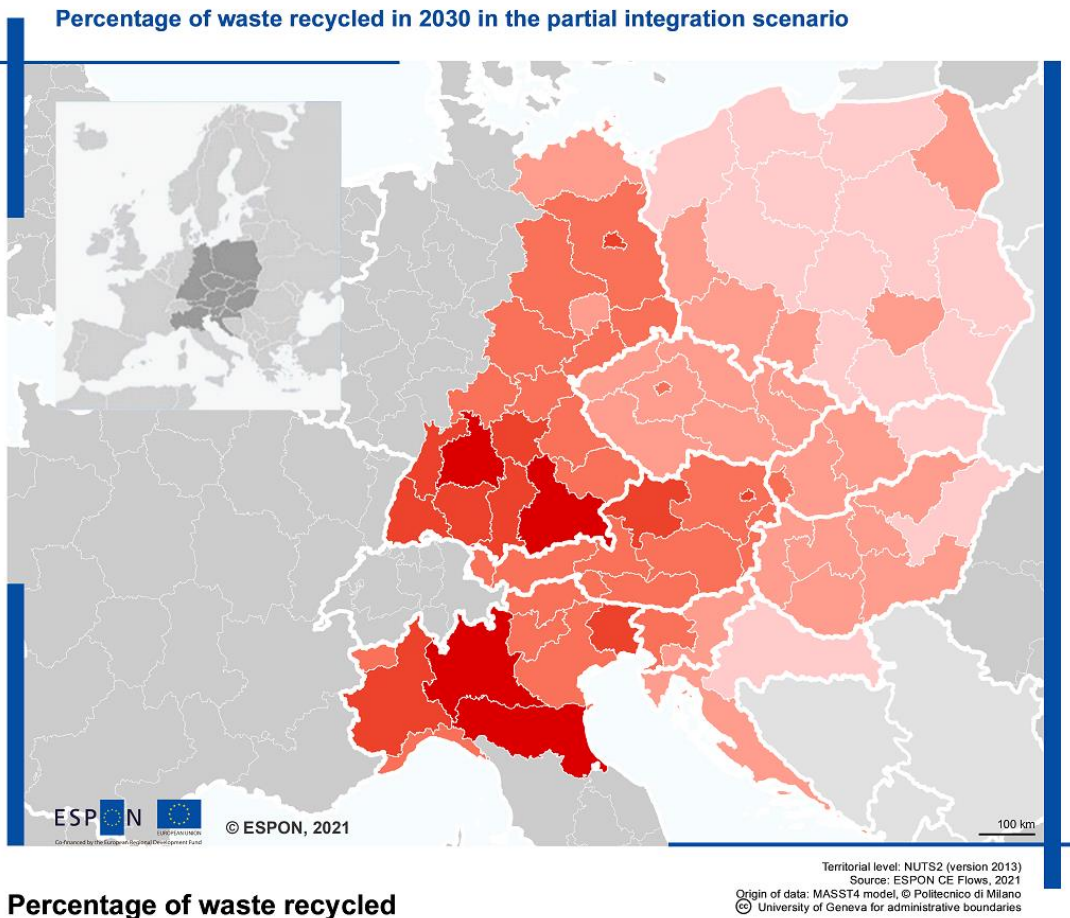
Map 27 shows instead the intensity of transnational cooperation in 2030 in the new normality scenario. Using one of the indicators already discussed in the main body of the report above, viz. the intensity of Framework Programme project participation per 1,000,000 inhabitants, map 23 suggests that in the new normality scenario a remarkable concentration of scientific cooperation activities is still to be found in major urban areas, including Munich, Milan, Warsaw, and, to a lesser extent, Vienna, Berlin, and Bratislava.

Map 27. Transnational cooperation in 2030 in the new normality scenario



Map 28 shows instead the percentage of waste recycled in 2030 in the Partial Integration scenario. In this scenario, the costs of the COVID-19 pandemic slow down the process of integration among CE regions, and this has a consequence in terms of a widely diffused lower capacity to recycle waste, that tends to affect especially western regions. This environmental cost needs to be taken into account in case this somewhat more pessimistic scenario tends to take place and the consequences of the pandemic are enduring.

Map 28. Percentage of waste recycled in 2030 in the Partial Integration scenario



Percentage of waste recycled

Partial integration scenario, difference w.r.t. new normality scenario

- 1,18 - -0,96
- 0,95 - -0,63
- 0,62 - -0,48
- 0,47 - -0,37
- 0,36 - -0,21



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