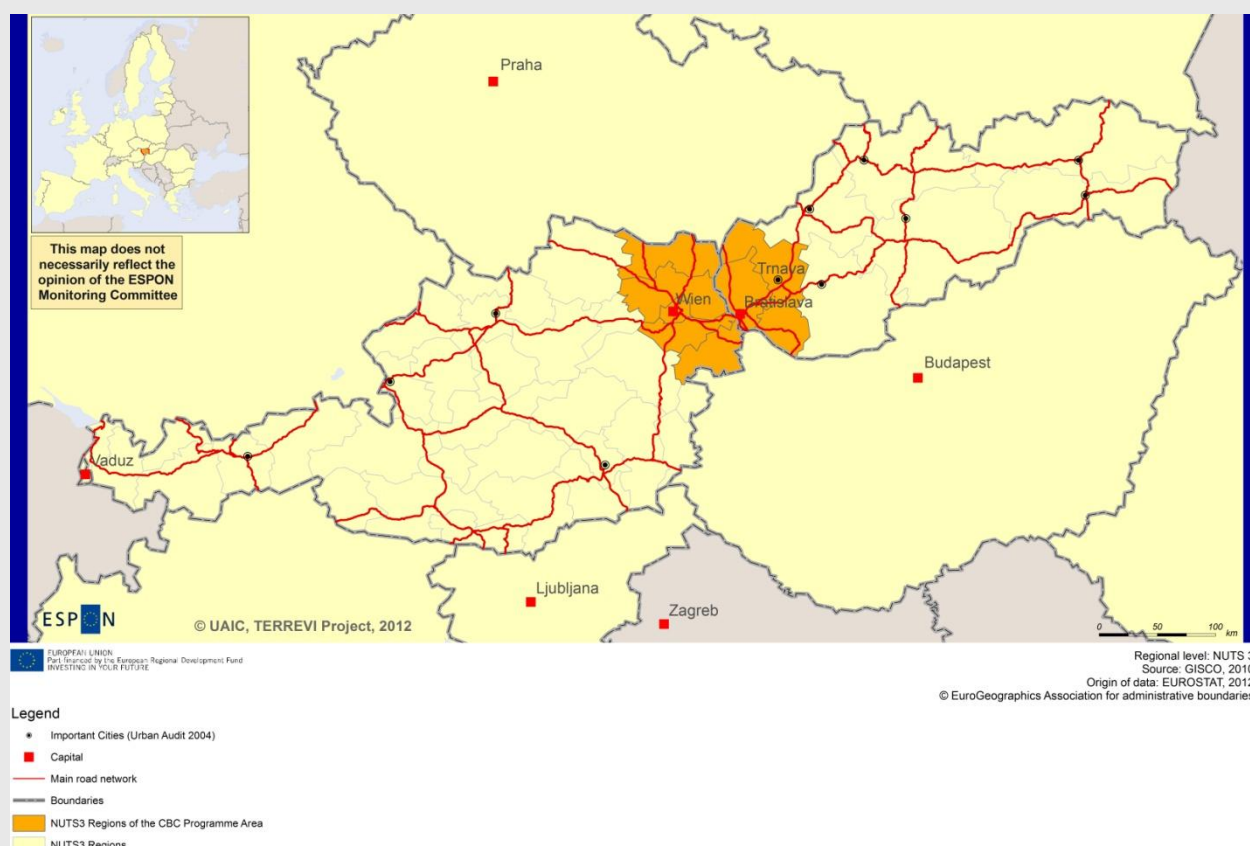


# ESPON Evidence Report Slovak Republic – Austria



ESPON Project TerrEvi

August 2013

This report presents a more detailed overview of the analytical approach to be applied by the project. This "Scientific Platform and Tools" Project is conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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This basic report exists only in an electronic version.

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## Executive summary

The ESPON TerrEvi project aims at providing evidence for Structural Funds (SF) programmes to support the development of the programmes planned for the period of 2014-2020. The present territorial evidence report is one of ten case studies. This fact sheet has been complemented by the results of the discussions at the March 2013 workshop. The present report assesses the situation of the Slovak Republic – Austria CBC region in view of developing a future programme and achieving the three objectives of the Europe 2020 Strategy, namely smart, sustainable and inclusive growth.

Generally, the workshop participants expressed the need for ESPON material to be more closely linked with the Europe 2020 themes and issues. The participants would also welcome more regular communication from ESPON. With regards to content, the workshop participants argued that it would be more efficient for programmes (and especially small programmes) to have access to less aggregated data especially in the maps, possibly narrowed down to data at NUTS3 level.

### Context information

The border area witnesses population increases mainly in the Wiener Umland (3.03%) and Bratislava (2.77%) departments. The increase around in the former is due its geographic location between both capitals and its experience of residential and functional exurbanisation processes. In the Bratislava area the developments are linked with the periurbanisation or suburbanization process. The immigration of young adults contributes to a less aging demographic structure in Austria in contrast to Slovakia, where the population in the capital is older than in the Trnava region. The highest share of old people in the area lies in the Weinviertel district with a percentage of older people exceeding the critical threshold of 20%. Economically, the programme area benefits from numerous opportunities interlinked with the presence of the two capitals which are the economic engines of their countries. Similarly, Vienna is positioned at the centre of the European continent and therefore plays an important role in the continental transport system which can result in competitive advantages for the whole region. The Weinviertel district faces a disadvantage due to its poor integration

in the economic circuit which is reflected in a lower GDP/capita. Major key potentials in the programme area result from a shrinking border effect and the existence of two urban growth poles which not only compete but also mutually complement. From our point of view, the economic and demographic challenge to integrate the Austrian Weinviertel can benefit from being part of the CBC region. Additionally, an improved overall performance of the Slovak Republic is attainable. The unemployment rate and likewise the Gender GAP unemployment indicator differ significantly between Slovakia (14%) and Austria (4.2%). Another capacity of the CBC region with a perception as a polycentric area is the reduction of the urban-rural gradient in the employment rate.

### Europe 2020: Smart growth – main findings

- With regards to the share of R&D expenditure in the national GDP, one of the five headline targets in the Europe 2020 Strategy, the Slovak Republic – Austria CBC lags behind the EU27+4 figures as well as the figures for the other CBC areas. There is much discrepancy in that regard between both countries, with better figures in Austria than in the Slovak Republic. There is hence a West-East (Austria / Slovak republic) gradient as well as within the countries (with values above the national level in Austrian regions and values below the national level in the Slovak regions). In this respect, further cooperation and knowledge exchange has to be done within the CBC region.
- Looking at the employment in knowledge-intensive sectors, the CBC area shows higher level than Austria and the Slovak Republic at their national levels. There is a West-East gradient with the Austrian regions having higher levels than the Slovak regions. Moreover, the capitals have a stronger concentration of employment in knowledge-intensive sectors than the other areas.
- As concerns the implementation of the Digital Agenda of the EU, the number of individuals in the CBC area regularly using the internet is slightly above the European figures. The level in the Slovak Republic is somewhat lower, which should however be a matter of time. Conspicuous are the high development in the last decade in both countries and a

homogenous level in the whole CBC area which is attributable to the closeness of the two capital cities. The latter supports the assumption of the capability in the polycentric area.

- The area is very diverse and scattered in terms of patterns of innovation. While the Bratislava region is qualified as a 'smart and creative diversification area', the rest of the area on the Slovak side is qualified as a 'creative imitation area' (one of the least innovative areas of Europe). The Vienna district is a 'European Science-based area' (one of the most innovative areas in Europe) and the other Austrian parts in the CBC area are 'applied science areas'. In the programme, measures aimed at encouraging the mobility of high skilled workers or enhancing the participation in research networks, especially in less innovative regions, may be crucial for increasing the level of R&D knowledge. Regions with a low innovation capacity have to develop an original and unique knowledge domain, based on its productive vocations.

The indicators were considered useful by the workshop participants (Managing Authority and the Joint Technical Secretariat) especially for the programming needs analysis. However, it was mentioned several times throughout the discussion that the programme was too small to go into the discussion about the territorial evidence in the programming steps results indicators and project selection. The indicator 'households using high-speed internet connection' has been qualified as not relevant at all for the programme. Due to the small size of the programme, the representatives would also welcome an analysis at NUTS-3 level to get a more differentiated view on certain aspects. Moreover, it was mentioned that ESPON could be linked closer to Europe2020 themes.

### **Europe 2020: Sustainable growth – main findings**

- In the CBC area, wind energy seems to have less potential than in the EU27+4 or all CBC areas altogether. The wind energy potential of the CBC area is above the Austrian national level and below the Slovak national level. The area has the 2nd lowest wind power potential level compared to the rest of Europe. Other alternative energy sources as well as further options for energy efficiency and reduction of demand should therefore be identified.

- Due to the polycentric structure the ozone concentration in the area is higher than the Austrian as well as the Slovak national levels, and higher compared to the other CBC areas. It is however similar to the EU27+4 level. The concentration is significantly higher in the urban parts of the CBC area than in the suburban or rural areas. Especially in Slovakia it should be ensured the territorial impact of EU Directives about resource efficiency.
- The Slovak Republic-Austria programme is as vulnerable to climate change as the EU27+4 area, the other CBC areas and the national level of Austria. The Slovak Republic in general however has a higher level of vulnerability than the CBC area which underlines the importance to improve adaptation.
- The CBC area's capacity to adapt to climate change is comparable to the EU27+4. Only Vienna stands out for its high above-average capacity to adapt to climate change. In this respect the ability to prevent and moderate potential damages as well as the cognition of new opportunities opened up by climatic changes should be increased.
- While the Slovak Republic – Austria CBC area's waste collection is rated at 100%, there is evidence of intraregional disparities. While Austria is above average for the majority of key elements included in good waste management, the Slovak Republic is one of the Member States with the largest implementation gaps. For those member states it is of great importance to develop waste treatment, a recycling system for municipal waste and alternatives to land filling. Exchange of knowledge and experience should be increased within the CBC region.

At the workshop, in addition to the general comments mentioned above (some of the indicators being inadequate to the small size of the programme), the participants argued that more aggregate indicators would be welcome in the field of renewable energies (wind energy is too specific). With regards to waste management, more specific topics such as recycling or waste separation were said to be missing. The participants also suggested including an indicator or mention of Natura 2000 in the data set. The network should be

integrated into the process of developing territorial evidence in Structural Funds programming.

### **Europe 2020: Inclusive Growth – main findings**

- The Slovak Republic – Austria CBC area shows lower long-term unemployment rates than the EU27+4 in general; the rate is however higher than the Austrian national level.
- The at-risk-of-poverty rate in the CBC area is lower than the EU27+4 level, the CBC areas in total as well as both the national level of Austria and the national level of the Slovak Republic. There are significant differences in the Slovak Republic however with a gradient between the capital region and the east of the country. A strengthening of rural regions should be forced in this scope in order to stop effects such as selective migration.
- The same is true for the share of individuals with secondary or tertiary education attainment which is higher compared to the EU27+4 level, in fact, the five regions belonging to the area have one of the best values at EU level. It is however not as high as the national Slovak level. With regards to the participation of adults in education and training, Vienna has already exceeded the target for 2020. In Slovakia, the level for this indicator is much higher in Bratislava than in Western Slovakia. In a personal view, rural areas in general have to catch up the educational system and mentality concerning lifelong learning.
- Whichever way Europe is going to develop with regards to demographic changes by 2050, the situation differs between Austria and the Slovak Republic. The changes have more negative impacts for the Slovak Republic than for Austria. Only in the worst case scenario analysed are the impacts negative for both, the Austrian as well as the Slovak labour force.
- The employment rate is higher in Austria than in the EU27+4 as a whole and the CBC areas altogether. The results are more negative for the Slovak Republic, and especially for the region of Trnavsky Kraj.

The indicator on the change in labour force resulted in intense discussion during the workshop. Although the indicator has been considered to be relevant for the programme, there should be a differentiation between geographical and economic issues. Also, it should be differentiated between two separate periods namely 2005-2020 and 2020 to 2050. Also, dated data was an issue - the figures should be more recent than 2010. Moreover, the participants were missing economic indicators in the 'inclusive growth' section, such as GDP, demographic change and dynamic economic issues, which should not be merely mentioned in the context information section.

**ESPON indicators used by TerrEvi.** The below-mentioned table indicates possible links between the 32 indicators of the ESPON maps on smart, sustainable and inclusive growth presented in this factsheet and the investment priorities for the next funding period 2014-2020. Linking future investment priorities and the indicators used by TERREVI shows that ESPON produces evidence that can be used and support a territorially differentiated development and management of territorial cooperation programmes. In other words, ESPON results can support work linked to achieving territorial cohesion and the implementation of the Europe 2020 strategy.

<div><div>ESPON indicators used by TerrEvi</div><div>2014-2020 Thematic Objectives</div></div>	Share of R&D infrastructure	Private sector R&D expenditures	Employment in Knowledge-Intensive services	Human resources in science and technology	Territorial patterns of innovation	Private use of e-commerce	ICT employment	Tourist arrivals	Travel cost to nearest maritime port	Openness to extra-ESPON and neighbourhood trade	Quality of natural landscape	Wind power potential	Wave power potential	Maritime flows	Combined adaptive capacity to climate change	Potential impact of climate change	Potential vulnerability to climate change	Employment rate	Long-term unemployment rate	Change in population in 2005-2050	Share of old people	Regional sex ratio structure	People at risk of poverty	People with high education	Young academics	Regional early school leavers	Adults in education and training
Strengthening research, technological development and innovation	X	X		X	X		X						X										X	X		X	
Enhancing access to and use and quality of ICT			X	X		X	X																				
Enhancing the competitiveness of SMEs	X	X			X					X																	
Supporting the shift towards a low-carbon economy in all sectors												X	X														
Promoting climate change adaptation, risk prevention and management															X	X	X										
Protecting the environment and promoting resource efficiency											X	X	X	X	X	X	X										
Promoting sustainable transport and removing bottlenecks in key network infrastructures									X					X													
Promoting employment and supporting labour mobility			X	X			X											X	X			X		X		X	
Promoting social inclusion and combating poverty																					X	X	X	X	X	X	
Investing in education, skills and lifelong learning by developing education and training infrastructure																							X	X	X	X	
Enhancing institutional capacity						X																					



## Introduction

ESPON supports policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory. It provides comparable information, evidence, analysis, and scenarios on territorial dynamics, which reveal territorial capitals and development potentials of regions and larger territories. Considering the programme area in its European context adds an important new perspective that can help shaping the programming and the places of implementing projects. The ESPON TerrEvi project focuses on producing evidence for Structural Funds programmes with the aim to support the development of the programmes to be carried out in the 2014-2020 period.

In order to support evidence based planning cartographic visualizations serve as an important medium of communication besides the usage of a common language, diagrams, plans or pictures in this document. Maps can attract attention to specific facts and circumstances with spatial impact since information is communicated and procedures are facilitated. In the ESPON Programme the majority of maps contain thematic representation of regional disparities based on indicators, comprised indicators or typologies. They display the actual state of affairs and therefore serve as a basis for comparison, contextualisation and joint action. In this sense, maps reinforce discussing the reality and performing policy action graphically and in a normative way.

One milestone of this work consisted in presenting selected ESPON research pieces in easy-to-understand factsheets for all territorial cooperation programme areas. The aim is to provide the reader with preliminary insight on types of territorial evidence ESPON holds at hand with regard to the possible investment priorities of future programmes.

[\(Link to the factsheets on the ESPON website\)](#)

The second milestone concerns ten specific programme case studies illustrating how ESPON material can be used to support the development of future programmes e.g. by giving a comparative European dimension to the envisaged programme work. The aim is to provide the reader with insight on different types of territorial

evidence ESPON holds at hand with regard to the possible investment priorities of future programmes, and to stimulate a debate on how this evidence can be used by future programmes.

Criteria like the coverage of all regional categories (less developed, transition, more developed regions), the variance of available budgets, the mix between old and new, small and large, central and peripheral Member States or the expression of willingness to cooperate with TerrEvi built the basis for a shortlist of 20 regions for the final selection of case studies by ESPON in an early stage of the project.

The TerrEvi team started to contact these preliminary selected programmes introducing the project and evaluating the possibility being one of the ten pilot cases. As a matter of fact and due to different reasons the final list of pilot cases consists of four regional programmes, one CBC programme and five TNC programmes:

- Molise (regional)
- Umbria (regional)
- Thessalia (regional)
- Norte (regional)
- Slovakia – Austria (CBC)
- North West Europe (TNC)
- North Sea (TNC)
- Alpine Space (TNC)
- Atlantic Area (TNC)
- South East Europe (TNC)

The list of pilot cases has been set up in coordination with the ESPON programme and has been approved by the ESPON Coordination Unit.<sup>1</sup>

The present report is one of ten evidence reports which have been produced to build the basis for the work of the case studies. A draft version of the document served as basis for a workshop with the programme in the first quarter of 2013. The workshop highlighted

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<sup>1</sup> The detailed selection procedure is part of the Interim Report of the TerrEvi project from December 2012.

the potential use of ESPON material for territorial cooperation programmes.

Following the workshop, this document has been amended taking into account the discussions as well as considerations concerning the usefulness of single indicators in various steps of the programme work.

The Slovakia – Austria CBC programme is free to use the material for their development and implementation of the programme for 2014-2020.

## **Methodology**

For this evidence report the TerrEvi project team conducted a workshop with the relevant stakeholders in charge for programming. In the following the workshop methodology is explained enabling readers of this paper to understand how the information has been collected.

Furthermore a User's Guide for the traffic lights in the Europe 2020 chapter of the evidence report is part of this methodology section.

### **Workshops**

The work on the evidence reports was organised in three main steps.

#### **Step 1 – Preparation Phase**

After the preliminary contacts made in summer 2012, the team contacted the Programme Authority, (by email) illustrating:

- the ESPON TerrEvi project and the organisation of the team;
- the reason why the area has been appointed to be a pilot case for ESPON 'Territorial Evidence Reports';
- the main steps of the case study activity.

Once the contacts have been established and the framework of the case study fixed, the project team prepares the set for the case study. More specifically the project team:

- sent the Factsheet to the authorities;
- presented a more detailed timetable and some draft contents for the workshop;
- discussed the process of the case study with the participants;
- started the organisation of the workshop.

#### **Step 2 - Draft Evidence report, workshop and final Evidence report**

Following the preliminary phase, the Draft Evidence Report was delivered to the programme authority. It entailed several indicators and highlighted territorial trends with a European perspective. All thematic objectives were covered and there has been a table to

match our selected indicators with the thematic objectives. The Draft Evidence Report has been sent to the workshop participants for diffusion.

The participants consisted in general of persons in charge for the programming (MA, JTS, external experts). The TerrEvi team addressed in the workshop five relevant programming stages:

- Needs Analysis
- Thematic Concentration
- Result Indicators
- Project Selection
- Stakeholder consultation

Following these stages as a basis the workshop had the structure below:

- Introduction (presenting the set of indicators)
- Relevance of indicators
  - The participants discussed together with the TerrEvi team how relevant/important the presented indicators are at which programming stage. This procedure was done three times, for the indicators in Smart, Sustainable and Inclusive growth separately.
- Discussion about issues of particular interest for the programme.
- Conclusion of the workshop covering the issues:
  - Where does your programme have use of ESPON? (to strengthen the territorial dimension / make your life easier)
  - What could ESPON do to be useful in future? (incl. relevance and availability of information)
  - Territorial dimension & structures (programme area in Europe, diversity within the programme area).

The results were collected by the TerrEvi team and fed into the draft evidence report (Results and feedback from the workshop).

### Step 3 – Feedback

Every programme received a draft version of the final evidence report comprising the workshop results in order to verify if the contents of the ESPON Evidence Report have been used comparing with the expectations collected in the workshop.

### Traffic lights for the programme area indicators: User's Guide

The traffic lights at the beginning of the chapter "Europe 2020" were created in order to graphically represent the situation of each analysed CBC<sup>2</sup> Area compared to the ones of EU-27+4 space, to the rest of CBC programme areas, and finally to each country participating to the CBC Area.

The median value, calculated depending on the values registered for every NUTS 2/NUTS 3 region composing the programme area was used as the central value indicator. The median of the programme area was compared successively to the ones computed for EU-27+4 territories, for the rest of the CBC areas and, ultimately, with those for the countries involved in the CBC Area.

Interval thresholds were obtained by calculating the arithmetic mean between the median and the values of the first (Q1) and third (Q3) quartiles. These calculations defined the lower (L1) and upper limits (L2) of each interval.

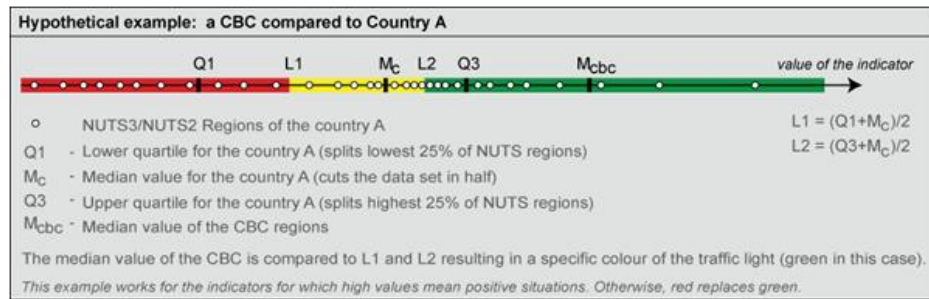
Therefore, we have three distinctive situations:

1. When the median value of the co-operation area is below L1, there will be a red traffic light indicating problems inside the CBC Programme Area (or green traffic light if there is a noticeable progress: i.e. long-term unemployment).
2. When the median value of the co-operation area is between the lower and the upper thresholds, there will be a yellow traffic light marking a similar situation of the CBC Area to the rest of the spatial structures.

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<sup>2</sup> This User's Guide was developed for the CBC area factsheets. The methodology also for TNC or regional programmes compared to the relevant national level(s) remains the same.

3. When the median value of the co-operation area is over L2, a green traffic light will be displayed (or red traffic light when there is a negative trend: i.e. potential vulnerability to climate change).

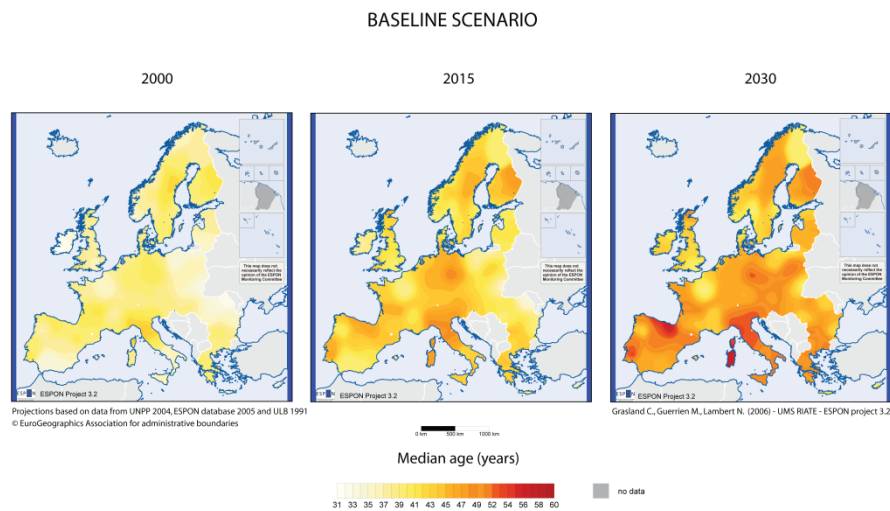


Choosing median as central value requires a special attention in analysing the traffic lights when the number of NUTS 2/NUTS 3 regions is below 7. Using percentiles implies also that the final result is highly dependent on the type of statistical distribution. This should be considered as well when establishing the relative situation of a CBC Area compared to a specific country.

## Context information

### Demographic perspectives

The European population is increasing at a slow pace and Europe is generally facing population trends like ageing and low fertility, and in some areas demographic decline. Population development has significant territorial consequences, and there are large disparities in the demographic profiles between countries and regions.



**Map 1 Demographic perspectives**

## Population change

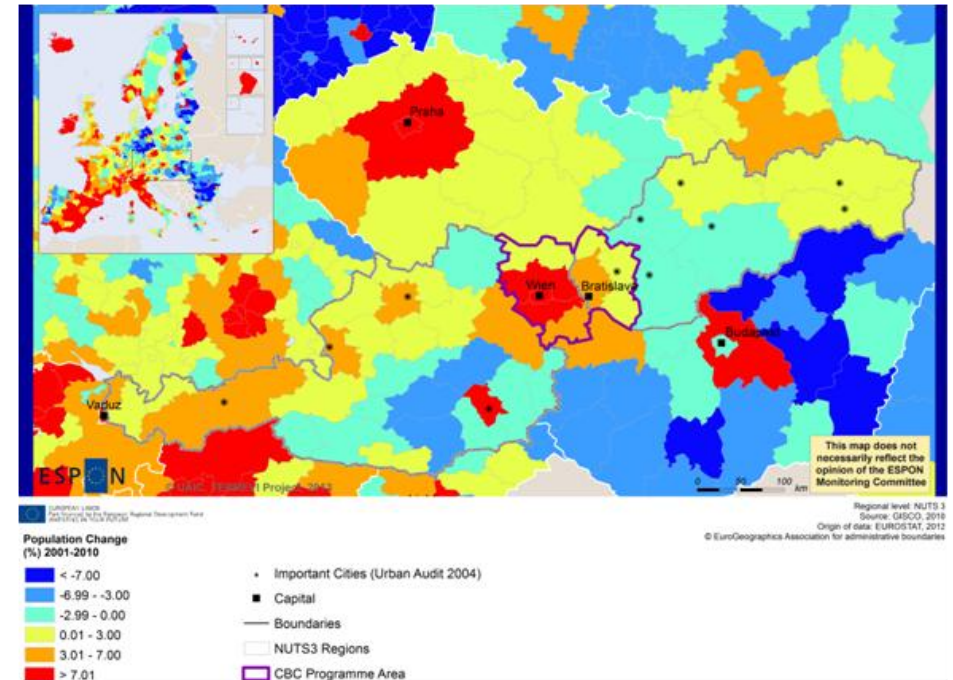
Population change, defined generally, is the difference in the size of a population between the end and the beginning of a given time period (usually one year). Specifically, it is the difference in population size on 1 January of two consecutive years.

A positive population change, when the result of net migration plus live births minus deaths is positive, is referred to as population growth, a negative one is called a population decrease. The crude rate of population growth is the ratio of total population growth during the year to the average population of the area in question that year. The value is expressed per 1 000 inhabitants.

The evolution of the population in the border area vary depending on the configuration of the metropolitan area, the progress of suburbanisation and periurbanisation processes, as well as the maintenance of areas with mainly agricultural profile. Departments with the most significant increase are Wiener Umland (3.03%) and Bratislava (2.77%). In the first area the positive evolution is explained by the layout of certain portions of it into the intermediate space between the two capitals, being the sector that has lately registered most evident residential and functional exurbanisation processes of the entire examined space. In the case of Bratislava, demographic masses involved in the mentioned process are less consistent, being still attached to the periurbanisation or even suburbanisation process (the case of Petržalka district).

At the opposite pole there is Weinviertel Austrian district with the demographic balance for the analyzed period, still invisible effects of counter-urbanization processes, in conjunction with mainly agricultural and viticultural profile explaining the dynamic model of the total balance of population.

This map was produced for the ESPON DEMIFER project.



**Map 2 Population change**

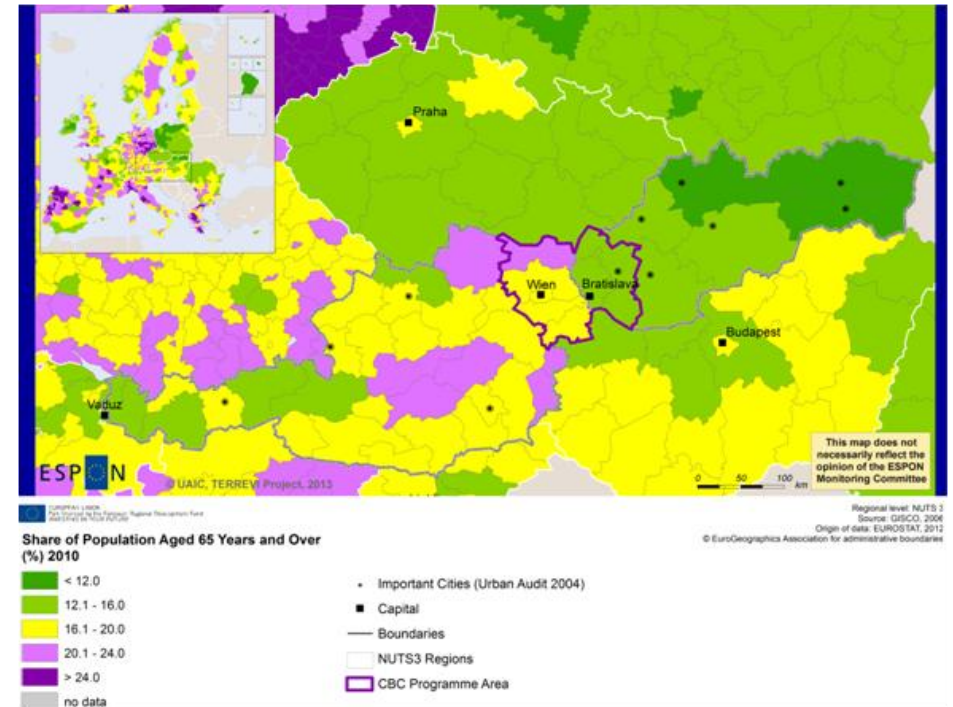
## Share of old people

The impact of demographic ageing within the European Union (EU) is likely to be of major significance in the coming decades. Consistently low birth rates and higher life expectancy will transform the shape of the EU-27's age pyramid; probably the most important change will be the marked transition towards a much older population structure and this development is already becoming apparent in several Member States. As a result, the proportion of people of working age in the EU-27 is shrinking while the relative number of those retired is expanding. The share of older persons in the total population will increase significantly in the coming decades, as a greater proportion of the post-war baby-boom generation reaches retirement. This will, in turn, lead to an increased burden on those of working age to provide for the social expenditure required by the ageing population for a range of related services.

Infra-regional differences in the share of elderly population are generated by going through different stages of demographic transition in the regions of the two countries and the differential effects of migration factors.

In Austria, thanks to the contribution of migration of young adult population, the country's capital retains less aging structure by age group, while in Slovakia Bratislava is slightly older than Trnava region.

The most aged sub-region of the area is represented by the Weinviertel district, an area with exodinamic demographic profile, being the only region from CBC where the percentage of elderly population exceeds the critical threshold of 20%.

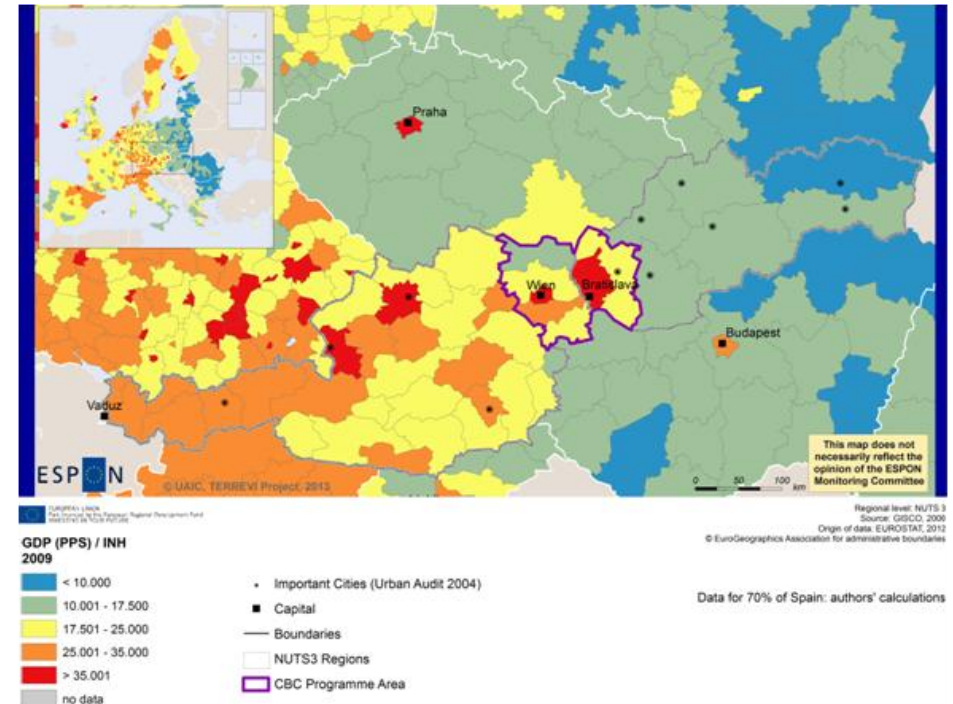




## GDP in PPS per capita

GDP (PPS) per capita is an important indicator of the level of economic competitiveness, being the ratio between the level of gross domestic product, expressed in purchasing power standards, and total population. Obtained by converting GDP to a fictive currency using special conversion factors, GDP in PPS per capita becomes an indicator comparable across countries by eliminating from national gross domestic products both the differences in currency expression and the differences in the prices levels between the countries. At EU level, the spatial distribution of GDP respects the principle of spatial autocorrelation, few deviations from the rule being generated either by the presence of competitive urban centres either by the border effect.

Being built around two important Central European capitals, Cross Border Cooperation Programme Slovakia - Austria benefits from many opportunities. Beyond the fact that Vienna and Bratislava are the economic engines of their countries, the reduced distance between them is also an important precondition for strengthening the economic links between the regions situated on both sides of the former Iron Curtain. Also, the geographical position in the centre of the European continent and the important role of Vienna in the continental transport system can constitute competitive advantages used by the entire region included in the program. Poor integration in the economic circuit remains a challenge for the district of Weinviertel, whose GDP / inh. does not exceed 16,000.



**Map 4 GDP (PPS)/Inh. (2009)**



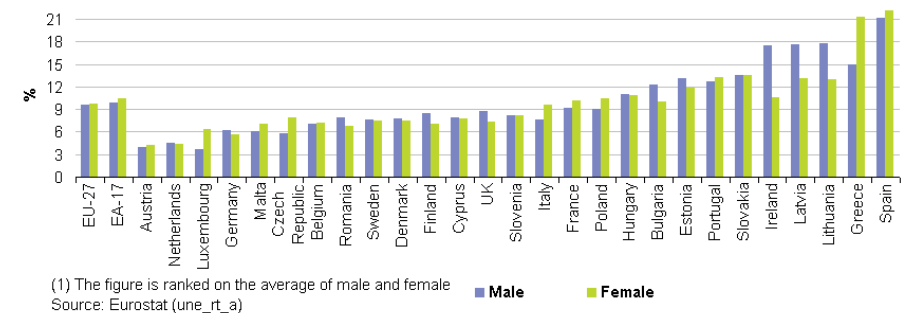
## Gender gap in unemployment

An unemployed person is defined by Eurostat, according to the guidelines of the International Labour Organization, as someone aged 15 to 74 without work during the reference week who is available to start work within the next two weeks and who has actively sought employment at some time during the last four weeks. The unemployment rate is the number of people unemployed as a percentage of the labour force.

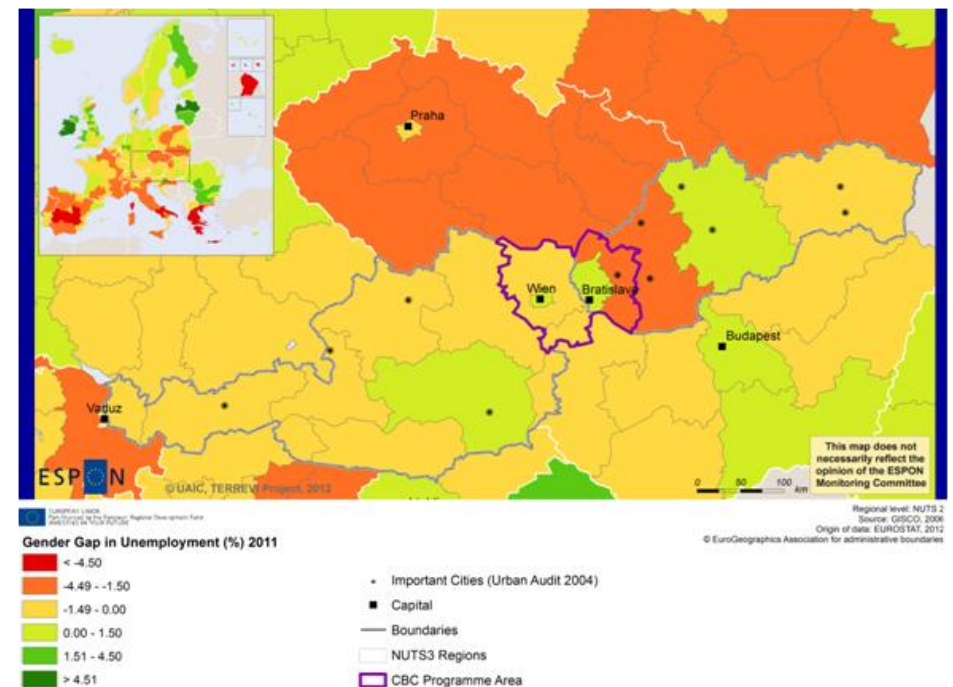
Eurostat estimates that 25.913 million men and women in the EU-27, of whom 18.703 million were in the euro area (EA-17), were unemployed in October 2012. Compared with September 2012, the number of persons unemployed increased by 204 000 in the EU-27 and by 173 000 in the euro area. Compared with October 2011, unemployment rose by 2 160 000 in the EU-27 and by 2 174 000 in the euro area. Between October 2011 and October 2012, the unemployment rate for males increased from 10.3 % to 11.6 % in the euro area and from 9.8 % to 10.7 % in the EU-27. The female unemployment rate increased from 10.7 % to 11.8 % in the euro area and from 10.0 % to 10.7 % in the EU-27.

### *Male and female unemployment trends*

Historically, women have been more affected by unemployment than men. In 2000, the unemployment rate for women in the EU-27 was around 10 %, while the rate for men was around 8 %. By the end of 2002, this gender gap had narrowed to around 1.3 percentage points and between 2002 and early 2007 this gap remained more or less constant. In recent years, most markedly since the first quarter of 2008, male and female unemployment rates in the EU-27 have converged and by the second quarter of 2009 the male unemployment rate was higher. The annual average unemployment rates for 2009 and 2010 were consequently slightly higher for men (9.1 % and 9.7% respectively) than for women (9.0 % and 9.6 %); in 2011 however, unemployment for males slightly declined in the EU-27, while that of women continued to increase such that the rate for males was again lower at 9.6 % than that for females (9.8 %).



**Figure 1 Unemployment rates, 2011 (%)**



**Map 5 Gender gap in unemployment**

Between Austria and Slovakia are observed major differences regarding the unemployment rate at the national level. If the Austria has one of the smallest rates of unemployment (4.2%), Slovakia is situated below the European average with a value of approximately 14%. Even if both of the states were affected by the economic crisis, may be referred that they have a decrease of the unemployment rate in year 2011. Regarding the Gender GAP unemployment indicator we can notice big differences between the regions that belong to the CBC area. The smallest gaps appear in the capitals of the two states (Bratislava – 1.5 and Wien – 0.9) while the region from the bottom is the Western Slovakia (Západné Slovensko) region with a GAP of 2.6.

## 1 Europe 2020

Europe, with its member states and their regions, is more exposed to global shocks and international competition than at any time before. As the world becomes more interdependent this trend will continue and shape policy thinking across sectors, borders and geographical scales. At the same time, Europe is characterised by a large territorial diversity meaning that global developments can imply rather different development possibilities and challenges for different European regions and cities.

The differences are partly defined by major geographical structures such as urban systems, access and connectivity, the geographical specificity or population density. At the same time, the differences are also spelled out in the larger development trends that affect an area, and the way and degree to which it is affected.

The data, indicators and territorial evidence provided by ESPON provides insight on both the main structures and larger territorial trends. The fine art is to identify what can actually be influenced by policy-making and, in particular, by place-based policy and territorial cooperation related to your programme area.

This chapter provides a selection of ESPON data related to Europe 2020 objectives of smart, sustainable and inclusive growth, giving also hints as regards the main thematic objectives envisaged in the draft regulations for the next period of EU Cohesion Policy. The Europe 2020 Strategy aims to enhance smart, sustainable and inclusive growth. This strategy has clear territorial dimensions. However, achieving these goals is challenging in the crisis-driven times. Furthermore, the economic disparities are growing as economic trends and the crisis have various impacts on different parts of Europe.

In the following the traffic light for each indicator represents how your programme territory compares to wider European and national medians where green = your programme area performs better for that indicator, yellow = similar, and red = worse.

In creating the traffic lights the median was used as central value indicator for all statistical variables due to its advantages (easy to interpret, it splits the statistical distribution in half) but especially

due to the constraints linked to the impossibility of computing means for several indicators (Climate Change, Wind Energy Potential etc.). Therefore, a special attention should be given in reading the median values when the number of NUTS 2 regions is below 7. Using percentiles implies also a high dependence of the final results on the type of statistical distribution. This fact should be considered when establishing the relative position of a CBC Programme Area to a specific country.

EU 27+4 in Traffic Lights and box-plots means the EU Member States as well as Iceland, Liechtenstein, Norway and Switzerland – the ESPON space.

## 1.1. Smart growth

Smart growth refers to developing an economy based on knowledge and innovation. In the framework of the Europe 2020 Strategy it means improving the EU's performance in education, research/innovation and digital society.

According to all indicators reported above, the Slovak Republic - Austria CBC area performs at a quite similar level to the EU27+4 space and all CBC ones. Considering the objective of R&D expenditure as percentage of the GDP - one of the five headline targets in the Europe 2020 Strategy - the CBC area is still lagging behind the EU27+4 space and all CBCs. Moreover, Slovak Republic - Austria is characterised by a high level of internal disparity due to a much better performance of the Austrian side. Concerning the ratio of employment in knowledge-intensive services to the total employment in 2010, the CBC area has the same values as both the EU27+4 space and all CBCs; slightly higher than both Austria and Slovak Republic. The distribution inside the CBC results in a medium level of internal disparity. In terms of percentage of individuals regularly using internet in 2011, the CBC has the same values as the EU27+4 space and all CBCs, but it performs similarly to Austria and better than Slovak Republic, with a low internal disparity.

	disparities in the CBC Area	median value of the CBC Area	EU-27+4	All CBC Areas	Austria	Slovak Rep.
Total Intramural R&D Expenditure (GERD). Percentage of the GDP (2009)	high	0.89	1.22	1.15	2.45	0.33
Employment in knowledge-intensive services as percentage of total employment (2010)	medium	38.1	39.0	38.2	35.1	31.0
Percentage of individuals regularly using internet (2011)	low	74.0	71.0	71.0	75.0	71.0

The value in front of each traffic-light represents the median value of the EU-27+4 space, of All CBC Areas, etc.  
 Thresholds for detecting disparities using the variation coefficient: low < 15%, medium 15 - 30%, high > 30%  
 Regional level of analysis: NUTS 2  
 Origin of data: EUROSTAT 2012

According to the classification of the KIT project, MAP 1 identifies four territorial patterns of innovation:

- 'Smart and creative diversification area' in the Bratislava region. It is defined by a low degree of local diversified applied knowledge, internal innovation capacity, high degree of local competences, creativity and entrepreneurship, external knowledge embedded in technical and organizational capabilities;
- 'Creative imitation area' in the Slovakian region of Trnava, outside the capital city region. It is defined by a low knowledge and innovation intensity, entrepreneurship, creativity, a high attractiveness and a high innovation potentials;
- 'European science-based area', in the Austrian capital city region of Vienna. It is characterised by strong knowledge and innovation, specialized in general purpose technologies, with a high generality and originality of science-based local knowledge;
- 'Applied science area', in the rest of the Austrian part, i.e. the regions of Weinviertel, Wiener Umland-Nordteil, Wiener Umland-Südteil, Nordburgenland. It is associated to a quite high generality and originality of science-based local knowledge, and a high degree of attractiveness of knowledge coming from other regions.

## Total intramural R&D expenditure (GERD) as percentage of GDP

OECD defines intramural expenditures as all expenditures for research and development (R&D) performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds. Expenditures made outside the statistical unit or sector but in support of intramural R&D (e.g. purchase of supplies for R&D) are included. Both current and capital expenditures are included.

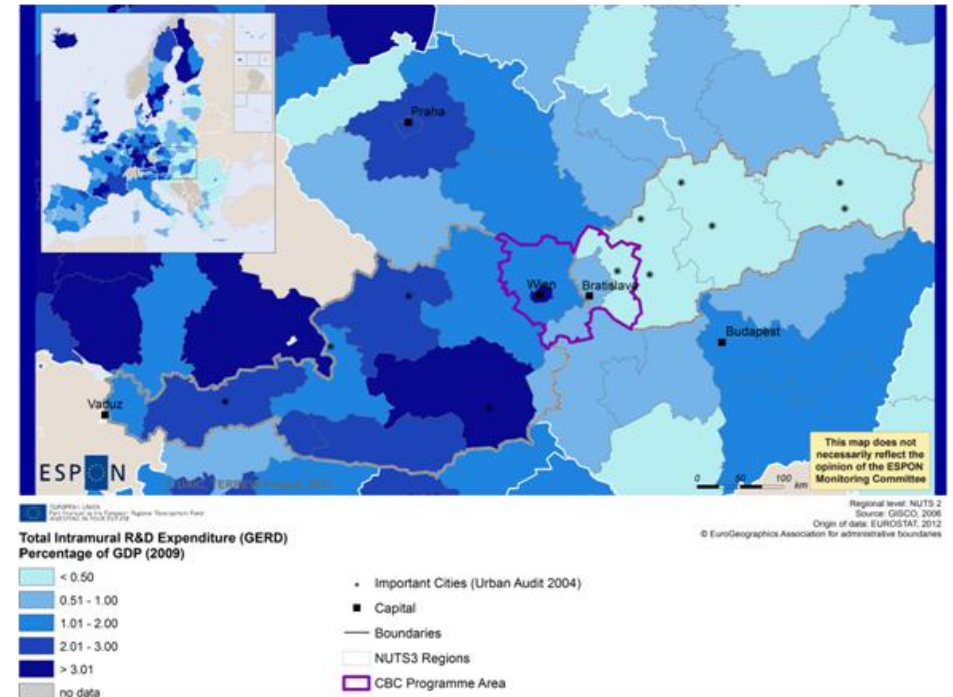
Regional (transnational and infranational) variations of R&D investments can be observed within this CBC area:

- First, a West-East gradient: higher values in Austrian regions (with a maximum in Wien region – 3.96%) and lower in Slovakia
- At national level, this CBC situation varies: from values above the national average, in the Slovakian regions, and under the national average, for the Austrian regions.

Still, capital cities concentrate the highest national shares of R&D investments.

- The situation at EU level: Wien region is the only one above the EU average value.

As the share of R&D expenditures on GDP and human capital endowment are often used as indicators for knowledge and innovation creation, regional variations can be interpreted in relation with the territorial patterns of innovation and some key findings of the ESPON-KIT project, such as:



**Map 6 Total intramural R&D expenditure (GERD) as percentage of GDP**

1. R&D expenditure has different territorial impact in terms of innovation. In average, 1 percentage point increase in R&D leads to 0.09 % increase in innovation but this is not the case across all types of regions.

Different social and institutional local conditions (e.g. the way innovation is generated at the regional level, features of the local labour market, the networks of research collaboration), lead to different territorial effects (ESPON KIT, DFR, vol.1).

The Austrian regions, for example, have different share of R&D expenditures on GDP but they are all strong knowledge producing regions, with a diversified knowledge production profile (Applied Science Area or European science-based areas).

2. R&D is more efficiently used in those regions that considerably invest in R&D, such as those in the European science-based area (Wien region) and, to a lower extent, in the Smart technological application area (Slovakian regions). On the other hand, regions characterized by low levels of R&D spending take little benefit from further investments in R&D to improve their innovation performance.

These results point to two key messages.

- First, returns to R&D (in terms of innovation performance) are likely to accrue in those regions where a critical mass of R&D efforts and investments is already concentrated.
- Second, regions differ considerably in their sources of knowledge for their innovative activities. Some regions strongly link their innovative performance to their large science and formal knowledge base, others are more likely to rely upon diverse sources of knowledge, possibly embedded in technical and managerial capabilities (e.g. Smart and creative diversification area – including the Slovakian regions).

3. R&D expenditure effort has the largest impact on knowledge production for those regions with strong orientation towards product innovation but for which the endowment of knowledge and innovation variables is smaller than the EU average (clusters 2 in Map 3.2., the case of Slovakian regions for this CBC).

- ESPON KIT researches confirm that the knowledge endowment relies upon tacit knowledge and that it is embedded into human capital, entrepreneurial and creative attitudes.

4. Labour mobility and research networks proved to be a fundamental factor in the creation of knowledge, the unequal distribution of such features in the territory could explain regional differences in innovation performance and economic development.

Therefore, policies aimed at encouraging the mobility of high skilled workers or enhancing the participation in research networks (as promoted by the European Commission through Marie Curie programs or the Framework Program Projects), especially in less innovative regions, may play a critical role in the creation of knowledge, and subsequent economic growth. Though, the effectiveness of such policies, crucially depends on each region's capacity to give returns to such labour mobility and the participation in research networks. To this respect, those regions that are more knowledge and innovation intensive obtain higher returns since they are able to translate internal and external knowledge into new specific commercial applications more efficiently than the less innovative regions. However, certain threshold effects seem to arise as evidenced by the negative influence of the networks' strength and the null impact of mobility in certain high performance regions.

- The concepts of local embeddedness of the local networks and labour market, as well as the degree of connectedness to external sources of knowledge, should constitute core ideas of a Smart Specialisation Strategy (*p.161*).

5. The innovation benefits stemming from additional investments in R&D and education are unevenly distributed:

- Competitive regions look more efficient in translating R&D and human capital into innovations than transition and convergence regions, where additional R&D and human capital do not yield increases in innovation level (if not a decrease).
- Metropolitan areas benefit from additional R&D and human capital to improve their innovative performance.

- The effect of knowledge embodied in human capital is comparable to that of R&D and it varies among regions. Knowledge embodied in human capital (measured as the share of population holding a tertiary degree) is more efficiently used (i.e. shows a greater elasticity) in regions endowed with a larger share of graduates, such as those in the European science-based area, in the Smart technological application area and in the Applied science area. On the other hand, regions characterised by a lower share of tertiary educated population benefit less (in terms of increased innovative performance) from an increase in the share of tertiary educated population being their elasticity of innovation to human capital nil, if not negative (such as in the Smart and creative diversification area).
- The relationship between formal knowledge and innovation is actual but, importantly, they allow to better qualify their interplay. In fact, on the one hand, investments in knowledge creation appear to be characterised by scale advantages and their returns are better exploited in areas characterised by a critical mass of knowledge resources. On the other, different knowledge sources from formal knowledge can be made available and exploited to engage in and to sustain innovation creation processes.

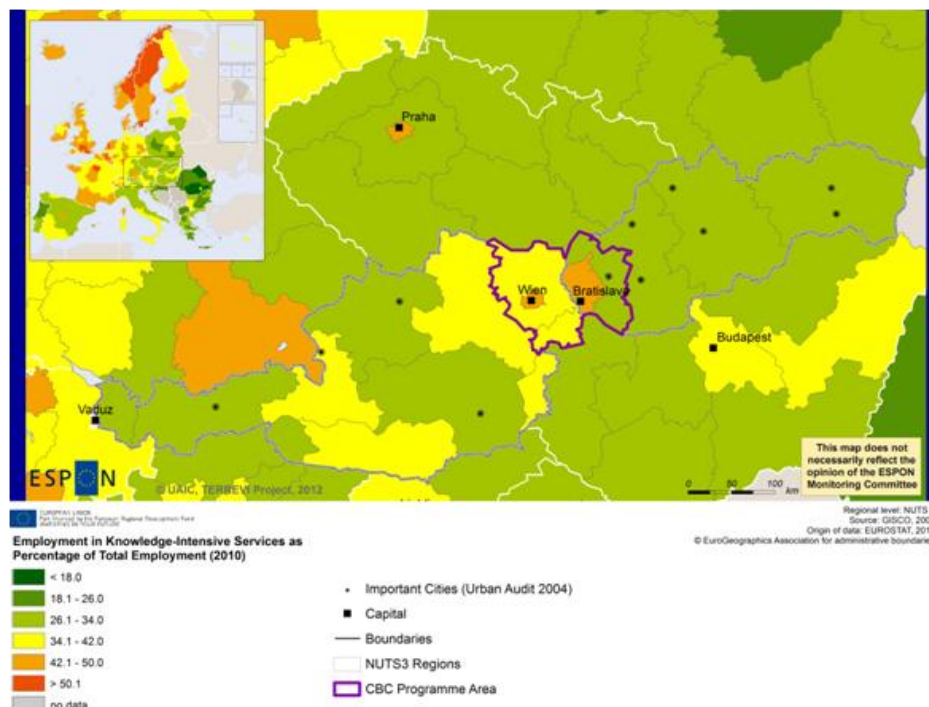
6. ESPON KIT, DFR, vol.1, p.189: on average, 1 percentage point increase in R&D spending yields a 0.12% increase in GDP growth rate. However, this mechanism takes place with different intensity across different groups of regions. Therefore further investments in new formal knowledge creation should be concentrated in those regions that are able to take the greatest advantages from it.

The European science-based area regions are better positioned to reap the growth benefits stemming from extra investments in R&D being their GDP growth rate elasticity to R&D greater than 0.3%. Applied science area regions, gain higher than average benefits from additional expenditures in R&D being their elasticity higher than the average value (0.177%). Smart and creative diversification area regions can benefit from an expansion of their knowledge base (although less than the average, being their elasticity close to 0.09%). The results support the idea that further investments in new

formal knowledge creation should be concentrated in those regions that are able to take the greatest advantages from it.

This map was originally proposed by the ESPON KIT project and has been re-produced in the ESPON TerrEvi project.





**Map 7 Employment in knowledge-intensive sectors**

## Employment in knowledge-intensive sectors

Two major aspects can be observed in the territorial variation of knowledge employment shares within the CBC area:

- A West-East gradient: excepting Bratislava region, the Austrian regions have higher shares of knowledge employment than the Slovakian ones (with the lowest value in Western Slovakia- 28.58 %).
- The presence of big cities is linked to the concentration of higher shares of knowledge employment: both Wien and Bratislava regions have shares above 47 %. The other 3 regions of this CBC have values under the EU average (38.59%).

This map was produced for the ESPON TerrEvi project.



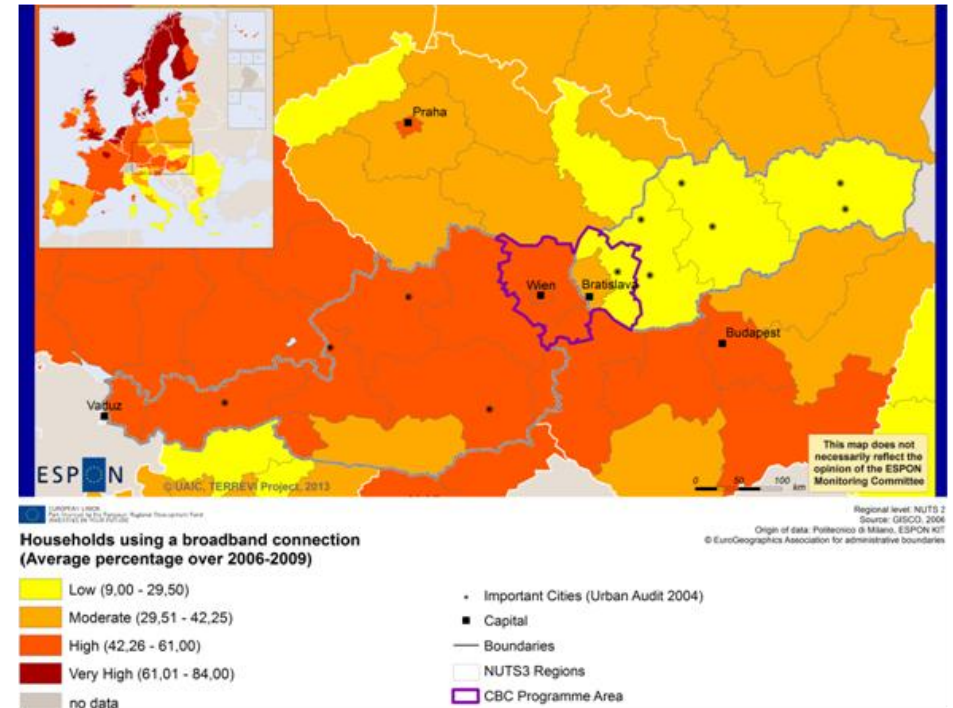
## Households using a high-speed Internet connection and individuals regularly using the Internet

One of the flagship initiatives for smart, sustainable and inclusive growth in the Europe 2020 strategy concerns a digital agenda for Europe. The aim of this initiative is to create a single digital market based on fast and ultrafast Internet and interoperable applications. The aim for 2013 is to have high-speed Internet access for all. For 2020 the aim is that all have access to much higher Internet speeds. The indicator on households using a high-speed Internet connection, used to measure and show the level and trends of Internet usage in Europe, is a way to measure the progress of this aim. The territorial distribution of this indicator captures the diffusion of an advanced Internet technology in everyday life and provides an interesting perspective on the social distribution of a new technology.

Data for the percentage of households using high-speed internet connection are collected in yearly surveys administrated by EUROSTAT. High-speed Internet connections are defined here as those Internet connections that have a capacity equal to or higher than 144 Kbits/s. For each of the years between 2006 and 2009 large data gaps exist. The map therefore presents a four year average of the 2006 to 2009 surveys. Regarding the individuals regularly using the Internet, the indicator is defined by the individuals using the internet at least once a week.

The Austria-Slovakia CBC shows an interesting case. High-speed internet being an indicator always associated with the urbanization. The closeness of the two capital cities (Wien and Bratislava) creates an apparent homogenization. At country level, the gap between Austria and Slovakia is relatively big, but the Bratislava Region has values of the high speed internet connection above the national level, being closer to the very high values shown by Austrian regions.

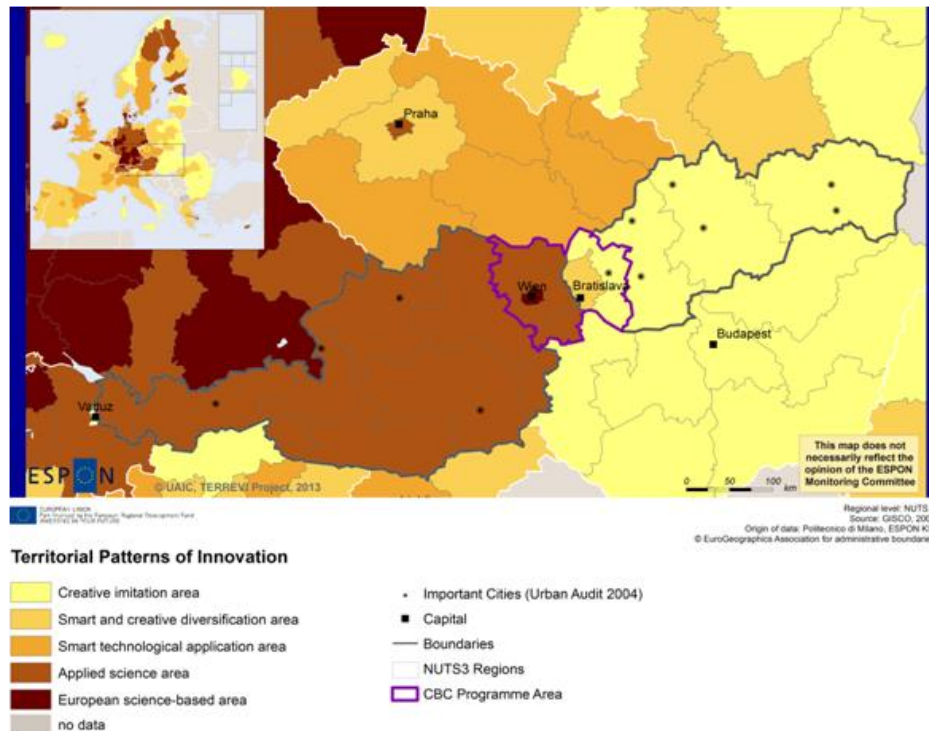
Regarding the percentage of individuals regularly using the internet, as for 2012 (Eurostat statistics) the two states of this CBC have similar values (76% for Austria and 74% for Slovakia), slightly above the European Union average (70%), both of them with high development in the last decade.



**Map 8 Territorial Dynamics in Europe – Trends in Internet Roll-out (ESPON, territorial Observation No. 4, April 2011)**

## Territorial pattern of innovation

ESPON-KIT project: Different territories have different territorial patterns of innovation (see map below). A territorial pattern of innovation is made of a combination of territorial specificities (context conditions) that are behind different modes of performing the different phases of the innovation process.



**Map 9 Territorial Patterns of Innovation**

The same west-east gradient can be observed in the distribution of territorial patterns of innovation, with:

- Cluster 5 in Wien region
- Cluster 4 for the other 2 Austrian regions
- Cluster 2 in Slovakia.

Cluster 5: European science-based areas – the most knowledge and innovation intensive regions

Features:

- A strong knowledge and innovation orientation primarily linked to their endogenous capacity to create new knowledge and to efficiently translate it into new products and processes as well as into managerial and/or organizational changes.
- An innovative attitude above the EU average (i.e. product, process, marketing and/or organizational innovation), a very strong knowledge orientation, the most directed to GPTs (and above the EU average), both in terms of amount of knowledge developed as well as in terms of specialization profile. This knowledge tends to be of greater generality and originality that is of greater technological value and more radical than the EU average.
- Strong pre-conditions for greater endogenous capacity of knowledge creation: highly educated population and strong scientific human capital (share of inventors on total population).
- Highest accessibility, high concentration of scientific human capital,
- Preconditions for knowledge and innovation acquisition: high receptivity but less creative, less attractive and less entrepreneurial than the EU average.
- Collective learning shows a comparable value to the EU average
- Future trends: the endogenous innovation pattern is expected to show a tight interplay in the creation of knowledge with other regions, and therefore being in an international scientific network.

Cluster 4: An applied science area: strong knowledge producing regions, with a diversified knowledge production profile.

Features:

- Lower mean values (than Cluster 5) for: share of EU total patents, share of scientific human capital and R&D expenditures, share of GPTs patents developed as well and GPTs specialization profile.

- More entrepreneurial, creative, attractive and with a larger capabilities potential than regions in cluster 5, albeit less than the EU average.
- A rather strong knowledge and innovation intensity, but less focused on GPTs than cluster 5, and more technologically diversified.

Policy recommendations: These regions have the chance to strengthen their position by specializing themselves in the production of applied knowledge, making use of the basic knowledge produced from the science based area. If this is the case, this group can become the 'an applied science area' of Europe.

Cluster 2: a smart and creative diversification area

Features:

- The knowledge and innovation variables show smaller values than the EU average but the capabilities indicator, which takes the highest mean value in this cluster. This suggests that the not negligible innovation activities carried out in regions belonging to this cluster mainly rely upon tacit knowledge embedded into human capital.
- *Highly entrepreneurial* (this variable takes the highest mean value in this cluster)
- *Strong creativity and attractiveness* (above EU average) that help to absorb and to adopt innovations developed elsewhere.

Opportunities:

The key advantages of these regions reside in their embedded human capital and the entrepreneurial and creative attitudes that can be wisely exploited in the pursue of upgrading innovative strategies.

Internal innovation capacity is highly fed by external knowledge, as it is the case for cluster 3, but the type of knowledge acquired from outside is neither basic nor applied formal knowledge; these regions highly take advantages from external knowledge which is embedded in technical and organizational capabilities, in technicians and SMEs managers (Cooke, 2005). Thanks to the high degree of creativity present in the area, these regions are able to take advantage from

specific capabilities present in regions with similar sectoral profiles, and innovate in different products in different industries.

Policy orientations: the embedded human capital and the entrepreneurial and creative attitudes can be wisely exploited in the pursue of upgrading innovative strategies.

Normative interventions should strengthen the innovative attitude and push these regions to become the 'smart and creative diversification area' in Europe.

Regions from cluster 3 and 2 have to develop an original and unique knowledge domain, based on its productive vocations; they have to discover the research and innovation areas in which they can hope to excel. This discovery comes from firms that have to achieve combinations between technologies and various elements of the value chain, and construct very different and unpredicted specific niche competitive advantage. This innovation pattern depends on territorial creativity. This is made of entrepreneurs able to actually access and absorb the knowledge produced in the world and ultimately utilize it to invent co-applications; this can more easily happen in a context open to innovation, which nourishes itself of external knowledge useful for its local purposes and needs. The probability to interact in this kind of innovative pattern is between regions with a similar technological vocation. Participation to industrial associations and / or the exploitation of external experts represent the channel through which the flow of knowledge comes into the region.

This map was produced for the ESPON KIT project.

## Results and feedback from the workshop

The indicators provided by ESPON projects for the section Smart Growth were viewed as useful especially for the programming steps needs analysis and thematic priority by the workshop participants comprising members from the Managing Authority and the Joint Technical Secretariat of the Slovakia – Austria CBC programme. Some aspects of the discussion:

- Thematic objective one and here especially the issue bringing together economy and the university sector in the two metropolitan areas Vienna and Bratislava is one of the programming priorities of the CBC programme. The indicator "Territorial Patterns of Innovation" was considered as the most interesting one.
- In many cases and steps of the workshop discussion the issues was raised that the programme is simply too small to go into the discussion about territorial evidence in the programming steps result indicators and project selection.

Finally, the indicators in the smart growth section were identified mainly as analysis indicators for the Slovakia – Austria programme.

## Programming steps

Focussing on details concerning the five programming steps, all but one of the reviewed indicators are relevant for the needs analysis, the thematic priority and to some extent for the stakeholder consultation. Only the indicator "Households using high-speed internet connection" has been chosen as not relevant at all for the programme.

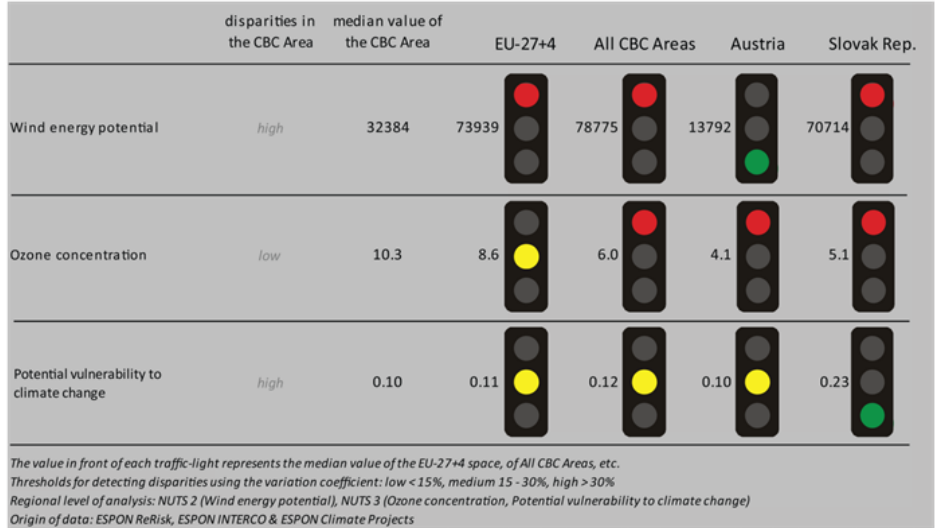
In case of the programming steps result indicators and project selection there was no relevance identified by the discussion group for all the smart growth indicators.

## Further Suggestions or Remarks

NUTS level	<ul style="list-style-type: none"><li>- In general more information on NUTS3 level would be useful for the programme. This would allow a more differentiated view on certain information, especially for a small programme like the CBC Slovakia-Austria.</li></ul>
Policy debate / EU 2020	<ul style="list-style-type: none"><li>- In the workshop there was mentioned the point of view ESPON could be closer to the policy debate around the whole EU 2020 topic and the ESPON material could be distributed more effectively.</li></ul>

1.2. Sustainable growth

Sustainable growth refers to promoting a more resource efficient, greener and more competitive economy. Within the Europe 2020 Strategy it means e.g. building a more competitive low-carbon economy that makes efficient, sustainable use of resources, protecting the environment, reducing emissions and preventing biodiversity loss, capitalising on Europe's leadership in developing new green technologies and production methods, and introducing efficient smart electricity grids. In the framework of the Europe 2020 Strategy it means focus on competitiveness, resource efficiency, climate change and biodiversity.



In the CBC area, wind energy seems to have low potential compared to the EU-27+4 as well as all CBC areas together. The value is also lower than in the Slovak Republic; however, it seems to have more potential than in Austria. It should be added that the disparity of the level of wind energy potential within the CBC area is high.

The ozone concentration in the CBC area is higher than in the CBC areas together and the Austrian as well as the Slovak national levels. It is somewhat comparable to the EU27+4 level. The CBC area is as vulnerable to climate change as the EU27+4 area, the CBC areas in

total and the national level of Austria. Only the Slovak Republic seems to have a higher value than the CBC area.

The Slovak side of the CBC area is likely to witness a minor territorial impact of Directive 11 on fossil fuel consumption (Map 13) than the Austrian side which should not be impacted at all.

Compared to an above-average level capacity in Austria, and a slightly below-average capacity in the Slovak Republic, the CBC area’s capacity to adapt to climate change is similar to the EU27+4. Vienna stands out for its highly above-average capacity to adapt to climate change according to the Box-Plot 1 on page 38.



## Wind Energy potential

The use of wind energy potential could be one of the cornerstones in building a competitive low-carbon economy in the EU.

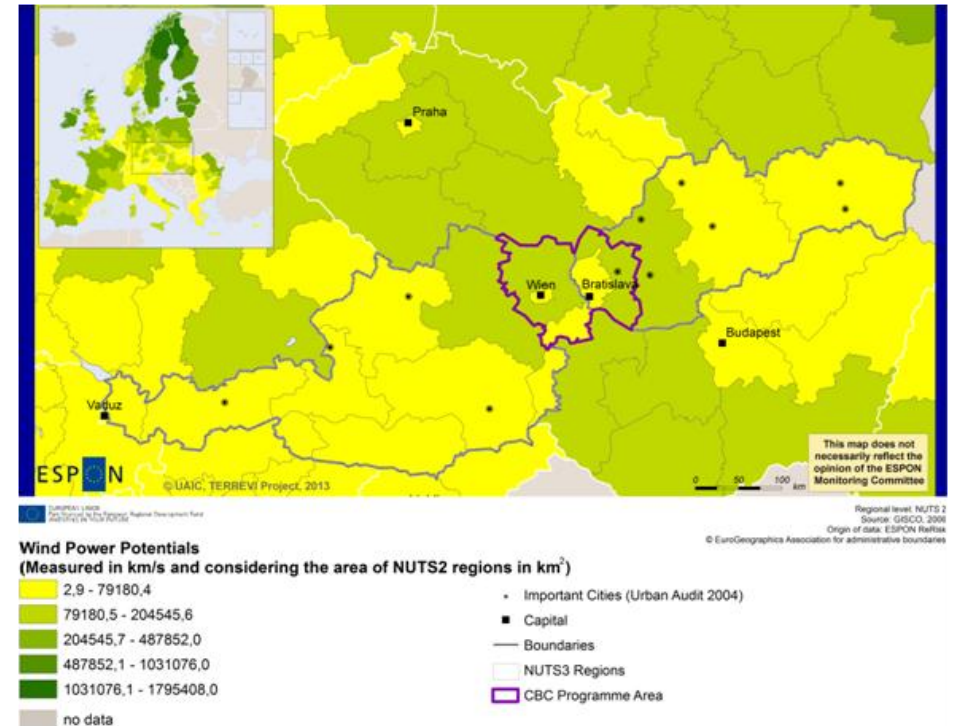
This indicator identifies those regions in Europe, which have the highest potential for producing electricity from on-shore wind power. However, the European Environmental Agency [EEA 2009] has introduced some restrictions when calculating the maximum potential, mainly due to environmental reasons. ReRisk has followed these recommendations, using the "restrained" wind potential for the regional analysis. The EEA explains that the report provides an "analysis of local wind resources across Europe, primarily based on wind speed data. Those findings are then used along with projections of wind turbine technology development to calculate the maximum amount of wind energy that could be generated (the technical potential) in 2020 and 2030.

Evidently, raw potential is only part of the story. Policymakers need to know how much wind energy is feasible in practical terms and that calls for the integration of other factors into the analysis. For that reason, the subsequent analysis uses various proxies to convey both the (socially and environmentally) 'constrained potential' for wind energy development and the 'economically competitive potential'.

To calculate 'constrained potential', Natura 2000 and other protected areas are excluded from the calculations of wind energy potential. Although it is not illegal to site wind farms on Natura 2000 sites, they provide a useful proxy for the restrictions implied by biodiversity protection".

Wind power potential is measured in m/s, but the ReRisk indicator also accounts for the area size of the regions (km<sup>2</sup>).

The development and utilisation of renewable energy technologies is a top priority in Europe in 2030. Although considerable economic growth has prevailed in Europe, total energy demand has declined considerably, with CO<sub>2</sub> emission reductions of more than 40% compared to 1990 levels. Energy production from renewable sources has grown most extensively, while the demand of coal and oil has been almost excluded in the industrial, residential and energy sectors.



Map 10 Wind power potential (m/s/km<sup>2</sup>)

The demand of natural gas has shown a modest decrease while the phase-out programmes on nuclear reactors have continued resulting in a progressive reduction of energy supply from this source. Nevertheless, the transport sector has become notably less energy intensive and oil dependant. Europe shows now a new balance between centralised vs. decentralised sources; with particular emphasis on integration of energy systems adapted according to different territorial needs and characteristics as well as potential hazards, among others resource depletion and exposure to extreme weather. The large renewable energy systems mainly solar- thermal, wind and wave; are located in places away from urban areas, a development which has been accompanied by the enlargement and modernization of the power grid.

Wind power potential map highlights the regions with the greatest wind power potential, with high wind speeds and large area size. Slovakia - Austria region has 2<sup>nd</sup> lowest wind power potential. The area fits the trend imposed by Central and Southern Europe, dominated by low wind power potential.

In Slovakia, the rapid increase in installed capacity of PV plants also led to upward pressure on the price of electricity. Accordingly, the existing support system for renewables is in the process of being changed and a new system is expected to be implemented in 2012. Besides feed-in- tariffs, RES is supported by loans and grants from SLOVSEFF, which subsidise the construction and upgrading of small hydro plants (with maximum installed capacity of 10 MW), wind power, solar systems for heating, biomass, geothermal, biogas and landfill gas.

In addition to finance, SLOVSEFF provides support in the form of simplified energy audits, advice on rational energy use and consultancy and assistance. The Fund finances RES projects that are able to produce a rate of return of at least 10%. Proposed changes in the system are outlined in the Analysis of Renewable Support and Proposal for its Reassessment. The aim is to implement sustainable support schemes which will contribute to meeting renewable energy objectives in a cost-effective way without having a significant impact on the price of electricity. The feed-in-tariffs set will be linked to the development potential of each specific renewable energy source. The main measures are:

- An auction system for feed-in-tariffs for fixed annual amounts of installed capacity in selected types of renewable (solar and wind power, especially). These amounts will be regulated by the Ministry of Economy and RONI with the aim of maintaining the stability of the distribution network and achieving the objectives of the National Action Plan on Renewable Energy Support.
- Feed-in-tariffs that are in line with the aim of minimising the effect on electricity prices.
- The centralisation of the purchase and administration of electricity from renewables in order to increase liquidity in the energy market and lower the costs of distribution.

This map was produced for the ESPON ReRisk project.

## Ozone concentration

The INTERCO ESPON project proposed *the Ozone concentration* as one of the indicators for territorial cohesion. The indicator was calculated using the number of days with ground-level ozone concentration above  $120 \mu\text{g}/\text{m}^3$  and population-weighted aggregated value at NUTS 3 level.

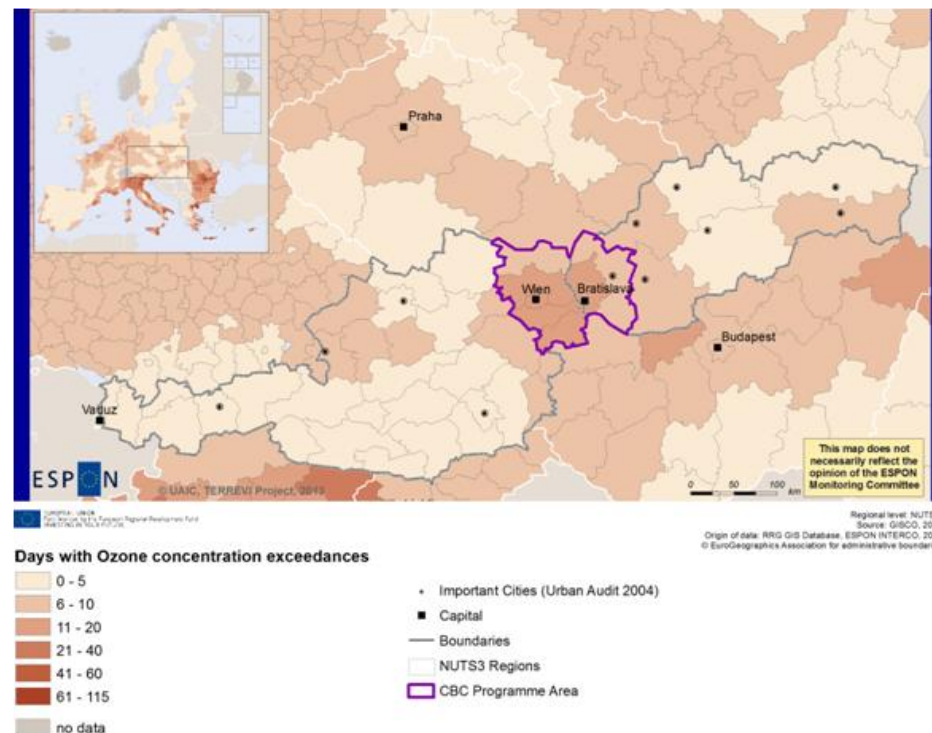
The analysis revealed that the number of days with concentration exceedances is quite low for most European regions with some exceptions, reflecting measures already implemented over the last decade for improving the air quality; the conclusion is that from a territorial cohesion perspective, the indicator on Ozone concentration already presents the smallest spatial disparities, followed by PM10, while soil sealing still yield very high disparities.

Air pollution, through PM10 and ozone concentration are very representative of the incoherent policies between local levels when they are managed by administrative bounds though pollution meets no such circulation constraints and have a tremendous impact on public health. (...) to be effective the policies and regulation should be coherent in all territories. For many countries the general number of days with Ozone concentration exceedances with less or equal 5 days is rather low (Scandinavia, Ireland, Spain, Baltic States, Poland).

The highest number of exceedances occurs frequently in the Mediterranean region, the lowest in northern Europe (Map 11).

Differences in the distribution of ozone precursors emission sources, the chemical composition of the air, and climatic conditions along the north-south and east-west gradients in Europe result in considerable regional differences in summer ozone concentrations.

This map was produced for the ESPON INTERCO project.



**Map 11 Ozone concentration exceedances**



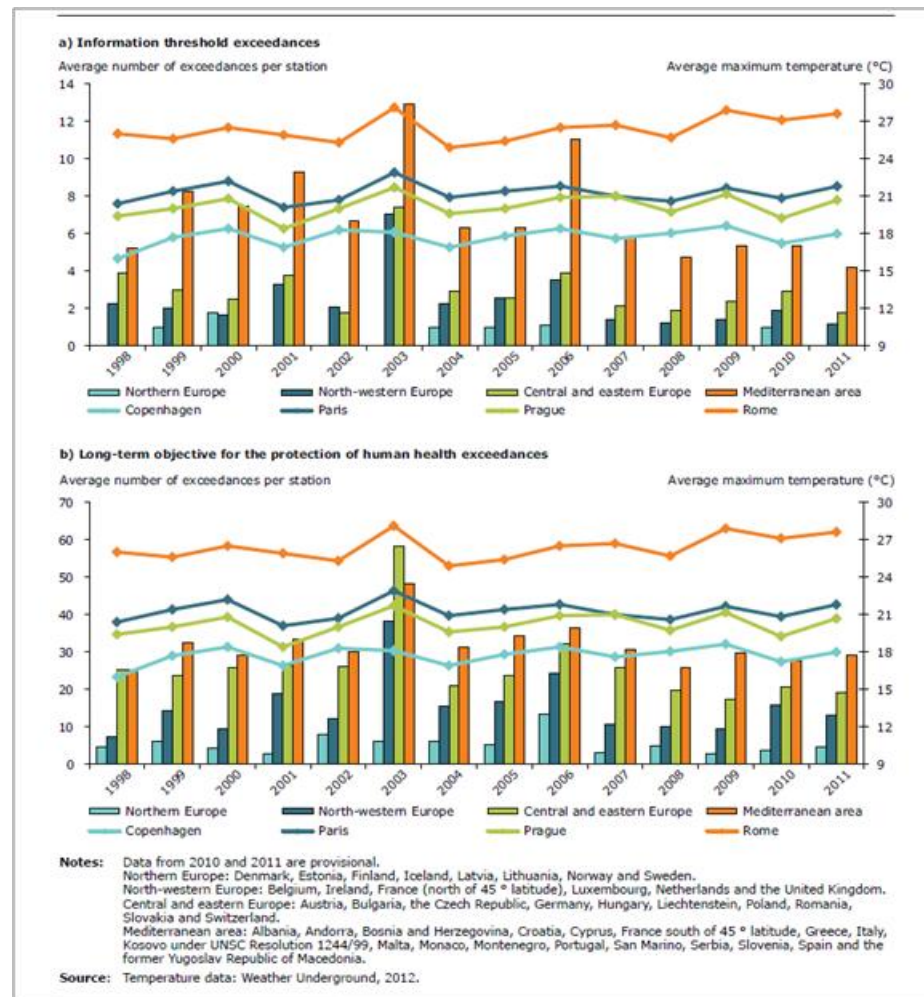
Ozone concentrations in Europe are also influenced by emissions in other northern hemispheric countries and by poorly regulated sectors such as international shipping and aviation. Thus, ozone pollution can no longer be considered a local air quality (AQ) issue — it is a hemispheric and global problem. Ozone levels become particularly high in regions where considerable ozone precursor emissions combine with stagnant meteorological conditions during the summer, when high insolation and temperatures occur.

Ozone concentrations in urban areas with high NO<sub>x</sub> emissions are generally lower than in the countryside.

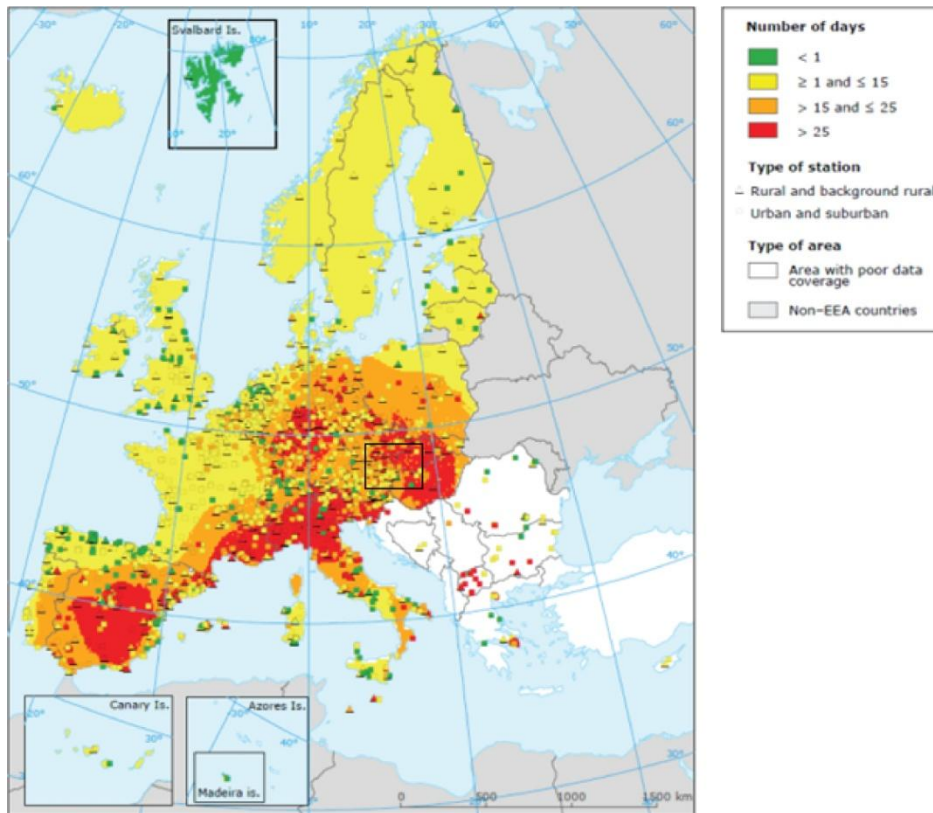
Ozone concentrations become particularly high in summertime in regions with high emissions from traffic and industry.

During the year 2008, Austria-Slovakia cross-border cooperation region was above the European average regarding the *long-term objective (LTO) for the protection of human health* (an average of 10.6 days with exceedances of LTO versus 8.5 days at European level).

In the Austria-Slovakia cross-border cooperation region the disparities of Ozone concentration exceedances are quite low, the smallest values being found in North (9.4 days in Weinviertel and Trnavsky kraj), while the highest are in the center (11.4 days - Wiener Umland / Nordteil, 12.6 days - Wien, 10.9 days - Bratislavsky kraj) and South (10.04 days - Wiener Umland / Südteil, 10.3 days - Nordburgenland). Therefore there is spatial variability, given the intensity of urbanization around Vienna and Bratislava (Vienna and Bratislava).



**Figure 2: Regional average number of exceedances during summer, per station for stations that reported at least one exceedance and average maximum daily temperature in**



**Map 12 Number of days on which ozone concentrations exceeded the long-term objective for the protection of human health**

The spatial distribution of ozone exceedances throughout Europe is generally similar from year to year.

At the current level of precursor emissions, the year-to-year differences in the occurrence of ozone threshold exceedances are induced substantially by meteorological variations.

For ozone (O<sub>3</sub>) there was considerable variation over the years. During most years, 20-25% of the urban population was exposed to concentrations above the target value. In 2003, a year with extremely high ozone concentrations due to specific meteorological

conditions, the exposure to high concentrations increased to about 60%.

Despite the progress made in controlling local air pollution, urban areas show increasing signs of environmental stress and air quality is one of the major concerns. PM<sub>10</sub>, ozone NO<sub>2</sub> and SO<sub>2</sub> all remain very significant health concerns for many urban residents in Europe. (...) Any actual reductions of emissions have resulted from implementing different policies targeted at specific point sources (e.g. industries), changing fuel types, or regulations for best technologies. However, emissions from transport are still increasing.

## ESPON ARTS – Territorial Impact of Directive

ESPON ARTS aims to develop a tool by which to analyse the impact of EU legislation that takes the sensitivity of regions into account.

### Methodology

The standardised TIA<sup>3</sup> quick check is done in nine steps using expert knowledge and a set of standardised indicators and types of regions.

1. The conceptual model - it is necessary to detect the potential effects of a policy on territorial development by translating the text into a conceptual model and drawing out the cause/effect relationships (the intervention logic).
2. Branching - different cause/effect chains can be analysed separately
3. Regional exposure - exposed regions are selected using typologies (e.g. rural/urban, central/peripheral, advanced/lagging, high/low presence of certain sectors).
4. Exposure matrix - the conceptual model is translated into a set of indicators that describe the intensity of policy exposure. This is done using a predefined set of thematic fields. To do this, the project produced a Directive-Exposure Matrix (DEM) Excel tool which allows data to be entered according to each field. For each field, the level of exposure is defined by expert judgement.
5. Territorial Impact Matrix, TIM - the impact values are calculated using predefined sensitivity adjustments. These are determined for each field and called the Regional Sensitivity Matrix. The Territorial Impact Matrix (TIM) calculates the impact for each thematic exposure field and for each NUTS 2 region (= 42 fields x 287 NUTS 2 regions) and sorts the results into 9 classes.
6. Plausibility and quality check - the results calculated in the territorial impact matrix should then be checked for plausibility.
7. Mapping the results - this can be followed by another plausibility check.
8. Adaptive capacity discussion – what are the policy implications
9. Write-up - a short report can be drawn up to serve as the first “quick check” of territorial impact.

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<sup>3</sup> TIA – Territorial Impact Assessment

## Directives on the promotion of clean and energy-efficient road transport vehicles

This directive aims at the introduction of specific measures in the transport sector to address energy use and greenhouse gas emissions with the ultimate goal of better integration of transport and energy policies. Specifically, this directive aims to stimulate the market for clean and energy-efficient road transport vehicles, namely standardised vehicles produced in large quantities such as passenger cars, coaches and trucks. Special attention is paid to the procurement of public-transport services. To this end, the directive includes a list of criteria to be met by vehicles purchased in accordance to public procurement rules. These criteria pertain to pollutants and lifetime energy and environmental impacts.

The directive impacts are expected to follow two distinctive routes. On the one hand, impacts are channelled on the demand-side through incentives for purchasing cleaner and more efficient vehicles. This is expected to lead to positive impacts on the natural environment in terms of lower emissions and pollutants in the air as well as reduced fossil-fuel consumption (*branch a*).

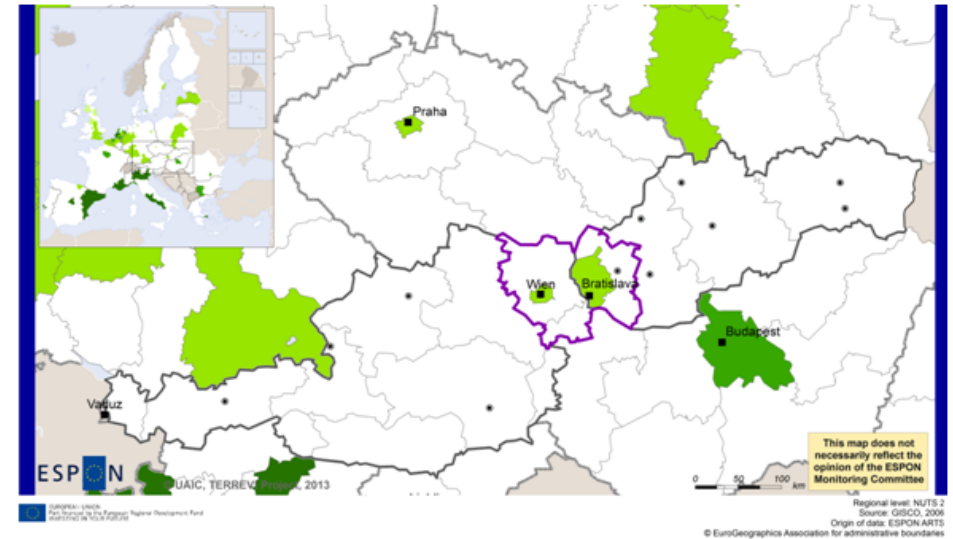
On the other hand, impacts are channelled on the supply side through investment in and production of cleaner and more efficient vehicles. This is expected to influence employment and GDP and stimulate innovation in cleaner and green technologies (*branch b*). (p. 134)

Various environmental exposure fields are hit in branch a of this directive, namely reduction of CO2 emissions and the level of pollutants in air (PM10). This is linked to a moderate reduction on the dependency of fossil-fuel consumption. The impact is expected to be moderate since the directive does not aim at full substitution of the vehicle fleet, but addresses fleet renewal. Also vehicles can be considered as a substantial although not exhaustive component of CO2 emissions.

We expect that the regions most affected by this directive are agglomerated regions in the first case, and regions with a considerable share of employment in vehicle production (identified as those regions falling in the top 25 percentile of the distribution of employment in vehicles production over total employment in

manufacturing) in the second case. The rationale behind this expectation is as follows. In the first case, benefits from the directive will be particularly high in regions that are more congested and polluted, typically agglomerated ones. These regions cover mainly capital cities and highly densely populated regions in central Europe.

Conversely, benefits stemming from the implementation of this directive will mainly affect regions that are highly specialised in vehicle production. These may experience an increase in production and employment. These regions are also concentrated in central Europe, with some hotspots in Italy (namely Piemonte, Abruzzo, Molise and Basilicata), Spain (Galicia, Pais Vasco, Aragón, Castilla y León, Cataluña), France (Basse-Normandie, Nord-Pas-de-Calais, Franche-Comté) and British and Swedish regions in northern Europe. Also several Eastern Europe regions look potentially affected by this directive especially in Slovakia, Poland, the Czech Republic and Hungary. The following map depicts the affected regions.



**Regions affected by Directive on clean and energy – efficient road transport vehicles  
Branch a Fossil fuel consumption**

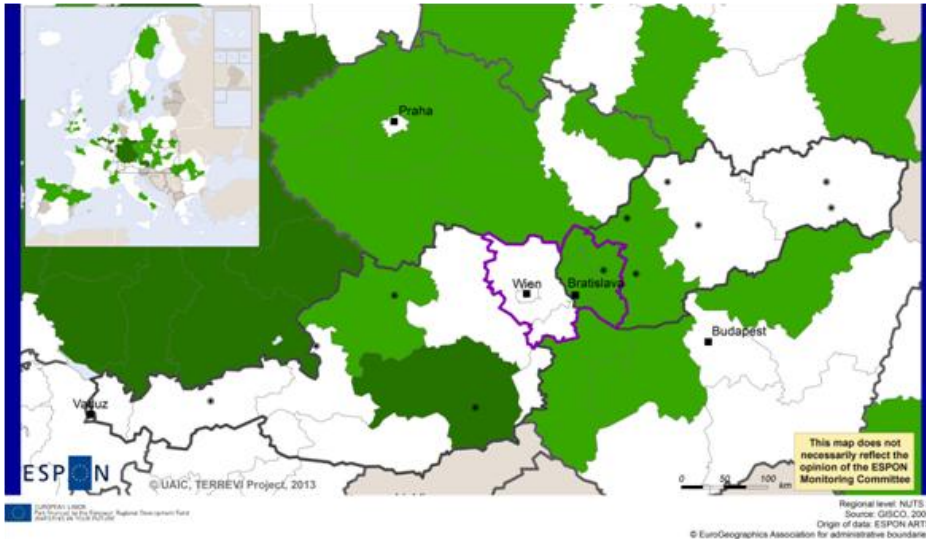
**Positive impact**

- Minor impact (< 0,80)
- Moderate impact (< 0,81 - 0,90)
- High impact (0,91 - 1,00)
- Very high impact (> 1,00)
- Not affected
- No data

- Important Cities (Urban Audit 2004)
- Capital
- Boundaries
- NUTS3 Regions
- CBC Programme Area

Types of regions affected: agglomerated.

**Map 13 Regions affected by Directive on clean and energy – efficient road transport vehicles branch a Fossil fuel consumption**



**Map 12 Regions affected by Directive on clean and energy – efficient road transport vehicles  
Branch b Innovation**



**Map 14 Regions affected by Directive on clean and energy – efficient road transport vehicles branch b Innovation**

Lastly, impact on fossil fuel consumption (F34) will be again positive and minor but a larger number of regions seem to be moderately hit in Italy (Liguria, Lombardia, Veneto, Lazio, Campania), Spain (Aragón, Comunidad de Madrid, Cataluña, Comunidad Valenciana), and other Mediterranean regions (Provence-Alpes-Côte d'Azur, Attiki, Malta, Lisboa), as shown

In Molise region the effects of the Directive on clean and energy-efficient road transport vehicles branch on fossil fuel consumption are not visible.

These maps were produced for the ESPON ARTS project.



## Combined adaptive capacity to climate change

Adaptive capacity (adaptability) to climate change indicates the ability or potential of a system to respond successfully to climate change and variability, and includes adjustments in behaviour, resources and technologies.

The adaptive capacity in regard to climate change takes into account the economic, socio-cultural, institutional and technological ability of a region to adapt to the impacts of a changing regional climate. This could mean preventing or moderating potential damages, but also taking advantage of new opportunities opened up by climatic changes. A total of 15 indicators were developed and then aggregated to reflect on the five adaptation dimensions of knowledge and awareness, technology, infrastructure, institutions and economic resources. The overall adaptive capacity was again determined by weighting and then combining these dimensions.

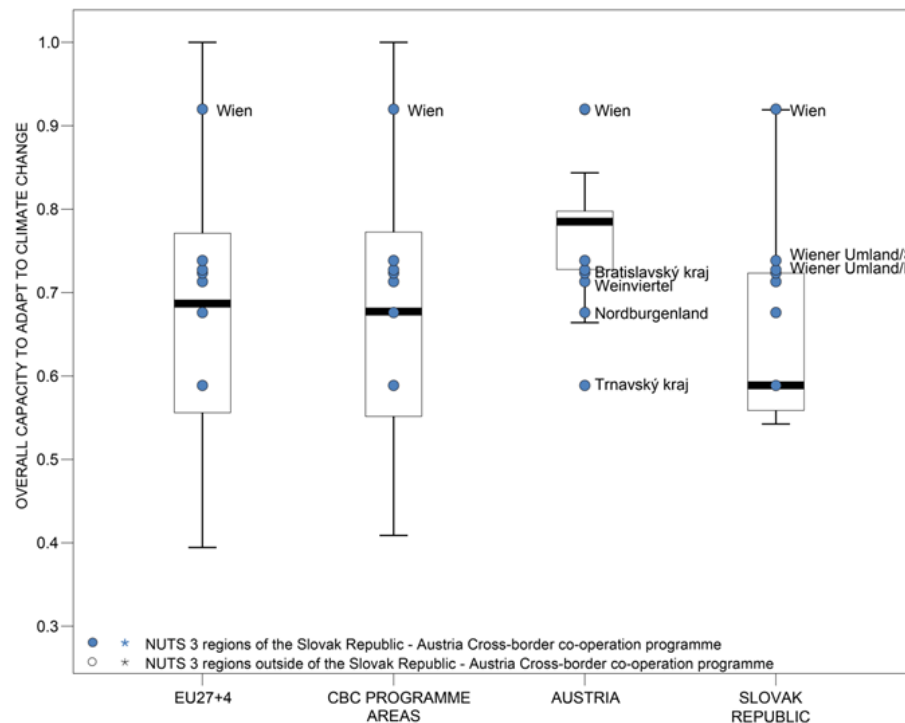
### How to read the box-plots?

*The box-plot is a statistical and mathematical tool used to visualize numerical data sets and to compare its statistical distribution.*

*Because it is used in exploratory analysis of databases, this representation is sensitive to the quality of the central value selected to explain the symmetry, shape and distribution variability. In the case of a box-plot, the most used central value is the median, because it has the quality of sectioning the data string into two halves, so that 50% of the cases will be above the central value and the other half will be below it. Since the purpose of the representation is to highlight outliers' behaviour, it uses a box that encompasses half of the cases, i.e. values that are in the range defined by the percentile of 25% and 75%. If a region has a value in this box then it can be considered that it has, according to the variable in question, a situation close to the average behaviour of all regions analyzed.*

*When a region consistently deviates from the average profile of the analyzed territorial context, this behaviour will be noted in the chart only when certain thresholds of statistical tolerances are exceeded, this being pointed in the diagram with segments perpendicular to the middle box, segments called the "whiskers".*

## BOX-PLOT 1 – Combined adaptive capacity to climate change (ESPON CLIMATE project)



## Potential vulnerability to climate change

The IPCC defines vulnerability as “the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC 2007c).

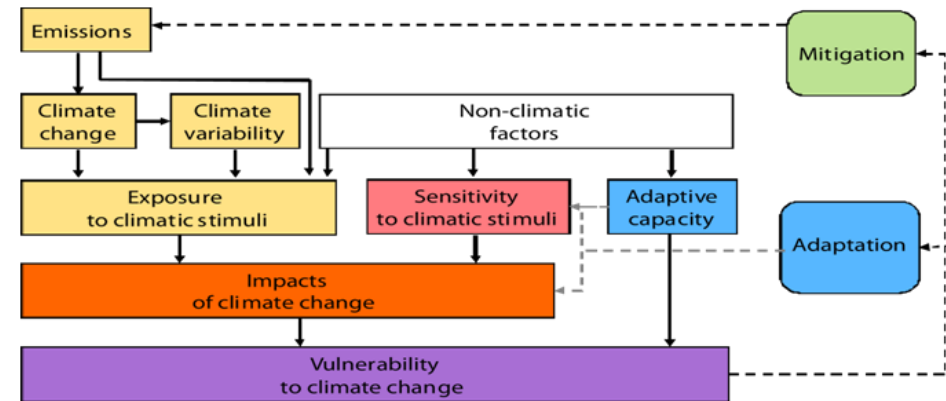
### Methodology

The methodology consisted of the following main components. The *exposure* analysis focused on the climatic changes. It made use of existing projections on climate change and climate variability from the CCLM climate model. Using the IPCC climate scenario A1B (Nakicenovic et al. 2000) the ESPON Climate project aggregated data for two time periods (1961-1990 and 2071-2100) for eight climate stimuli. River flooding and sea level rise were added as two immediate ‘triggered effects’ of these climate stimuli.

Each region was then assessed in regard to its climate change *sensitivity*. For each sensitivity dimension (physical, environmental, social, economic and cultural) several sensitivity indicators were developed. Exposure and sensitivity were then combined to determine the *potential impacts* of climate change. For determining impacts each sensitivity indicator was related to one or more specific exposure indicator(s). After determining the individual impacts, all impacts of one dimension were aggregated. The impact values of the five sensitivity dimensions were finally combined to one overall sensitivity value. This combination was calculated on the basis of relative weights, which were determined through a Delphi survey among the members of the ESPON Monitoring Committee.

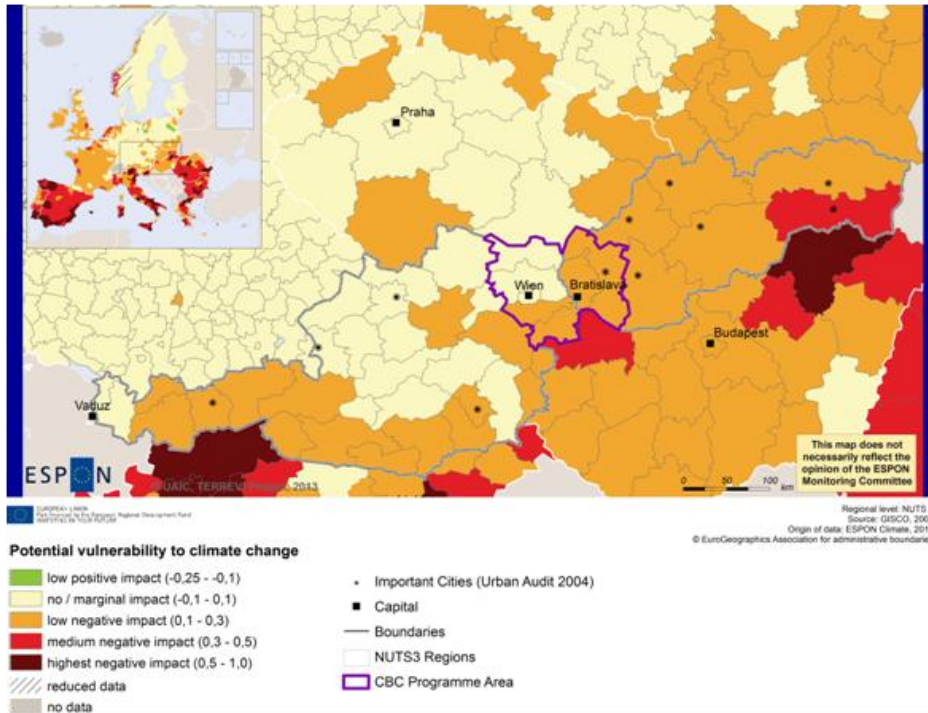
A third major component of the methodology is the assessment of *adaptive capacity* in regard to climate change. Several indicators were developed for each of the five major determinants of adaptive capacity. The individual indicators were subsequently combined for each determined and finally aggregated to an overall adaptive capacity. This aggregation was again conducted on the basis of the Delphi survey results.

To determine the overall *vulnerability* of regions to climate change the impacts and the adaptive capacity to climate change were combined for each region.



**Figure 3: ESPON Climate Change research framework**

The potential vulnerability of Europe’s regions to climate change looks slightly different compared with the map on aggregate impact: the south-north gradient which was already visible on the aggregate impact map is now much more obvious. This is due to the considerable adaptive capacity of Scandinavia and Western European countries which lowers the potential impact projected for these regions. However, this is somehow astonishing: particularly those countries which may expect a medium to high increase in impact seem to be less able to adapt than others for which the severity of the problem is less visible. In consequence, a medium to high increase of vulnerability may expect in the Mediterranean region, but also in South-East Europe.



**Map 15 Potential vulnerability to climate change**

This scenario for the future runs counter to territorial cohesion. Climate change would trigger a deepening of the existing socio-economic imbalances between the core of Europe and its Southern and South-eastern periphery. Particularly the East of Europe is also affected by demographic changes (in particular outmigration and ageing; see the following section), which may lead to an additional increase in sensitivity and therefore impact.

Austria - Slovakia area is characterized by low increase as the surrounding regions.



## Coverage rate of municipal waste collection

Coverage rate of municipal waste collection refers to the population served by municipal waste collection.

The aim of the indicator is to measure the effectiveness of the municipal waste collection systems.

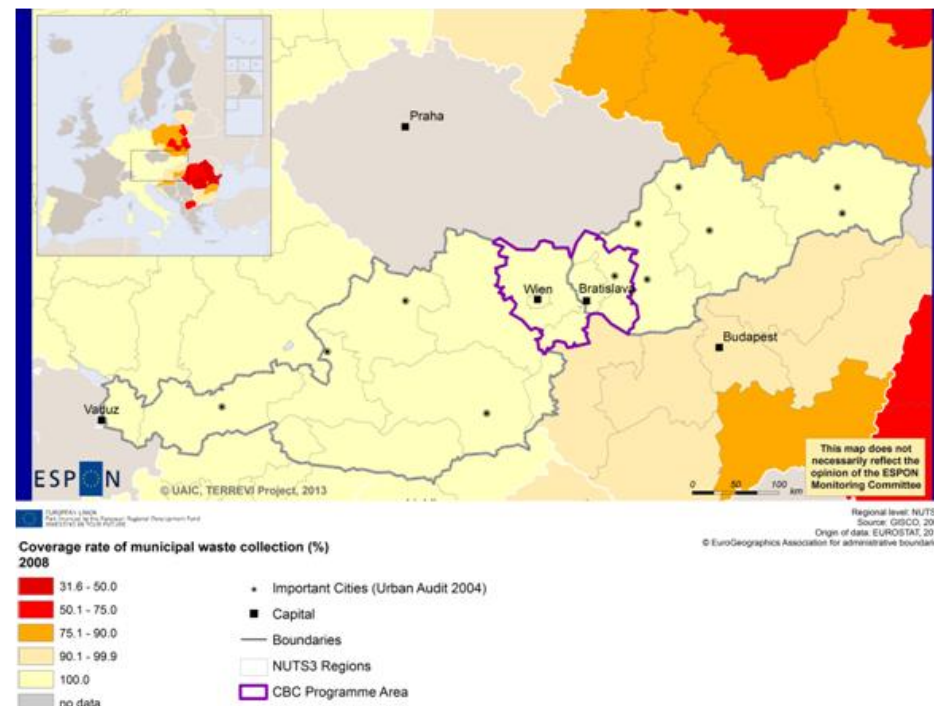
In accordance with Article 3(9) of the WFD, waste collection is an integral part of waste management (the proper recovery and disposal of MSW can only be achieved by appropriate collection of waste.), i.e. Member States are required to comply with the EU provisions and to provide for the establishment of appropriate waste collection infrastructure.

In this context, the collection coverage is a crucial indicator to evaluate whether the waste collection infrastructure in place is adequate. In some Member States not the entire population has access to sufficient waste collection services. In particular, this concerns rural and remote areas which are not provided with such services. If waste is not collected properly, and no 100 % collection coverage is reached, such waste will most likely be disposed of without environmental controls, illegally buried, dumped, burned or stored. Deficits in collection of waste result in uncontrolled abandoning of waste, unused resources and severe impacts on the environment.

In Austria-Slovakia cross-border cooperation region the waste collecting is at 100%. There is, therefore, a main condition for waste management in accordance with the waste hierarchy: the waste picking up by a collection system, in order to be prepared for re-use, recycling, disposal, or other recovery (e.g. energy recovery).

However, the European Commission report from July 2012 highlights intraregional disparities concerning the globally waste management performance.

This map was produced for the ESPON TerrEvi project.



**Map 16 Coverage rate of municipal waste collection**

Austria is above average performing as regards the majority of key elements essential for good waste management, while Slovakia is one of the Member States with the largest implementation gaps.

The screening showed three groups differing in performance as follows:

A first group includes the ten Member States that are performing above average achieving between 31 and 39 points. The group includes AT, BE, DK, DE, FI, FR, LU, NL, SE and UK. The Member States are above average performing as regards the majority of key elements essential for good waste management – especially with regard to waste treatment, status and development of recycling of municipal waste, existence of restrictions or bans and total typical charges for land filling municipal waste. All of these countries provide for complete collection coverage, sufficient treatment

capacity and fulfilment of the targets related to biodegradable waste going to landfills. Further improvements in these Member States could include the extended use of pay-as-you-throw systems which for most only reach regional coverage. Minor deficits were identified with regard to the planning of future capacities and the compliance with technical requirements. This group of MS especially faces problems with decoupling waste production from growing consumption. Furthermore, not all MS of this group have already implemented waste prevention in environmental policies.

The second group consists of five average performing Member States achieving an overall score between 19 and 25 points, consisting of ES, HU, IE, PT and SI. This group of Member States shows fairly deficits: not all households are connected to waste collection, planning of future treatment capacity is not sufficient and waste prevention yet is not on the political agenda. Furthermore, these MS show below average performance in the increase of recycling of municipal waste, treatment of municipal waste in accordance with the waste hierarchy, and the MS do not make sufficient use of economic and legal instruments to move waste up the hierarchy. Two MS of this group still need to achieve full compliance of their non-hazardous waste landfills, including fulfilment of the targets related to biodegradable waste going to landfills. The deficits in waste management are reflected by ongoing infringement procedures and court cases for almost all MS of this group.

The third group includes the twelve Member States with the largest implementation gaps achieving an overall score between 3 and 18, including BG, CY, CZ, EE, GR, IT, LT, LV, MT, PL, RO and SK. This group of Member States shows severe deficits within all criteria including waste prevention policies (only PL has included a WPP chapter in the current WMP); the below average performance is also reflected in the lack of applying economic and regulatory instruments to divert waste from landfill and insufficient adaptation of existing infrastructure to EU requirements. These Member States are highly depending on land filling, other treatment options are rarely in place. Land filling is generally not restricted or banned for municipal waste and therefore still a large amount of biodegradable waste is disposed of in landfills. In half of these MS not all households are served by municipal waste collection. Four MS have

not increased at all the recycling of municipal waste, and another four could achieve only a moderate increase in recycling from 2007 to 2010. Furthermore, undercapacity of treatment is most likely in half of these MS. None of these MS has included a forecast on waste treatment and capacity in their WMP. If a forecast is included, it is limited to estimations of waste generation.

## Results and feedback from the workshop

The indicators provided by ESPON projects for the section Sustainable Growth gave a similar picture as in the Smart Growth section. Needs analysis, thematic priority and the usefulness of the data set for a general theoretical discussion have been identified in the workshop. Some aspects of the discussion:

- For a programme like the Slovakia-Austria CBC for the field of renewable energies a more aggregated indicator set would be useful. Picking themes like wind energy or something similar is a too specified approach and is not very useful for the programming. The thematic fields presented by ESPON in the sustainable growth section in general have been identified as relevant for the CBC programme.
- Following the discussion about the climate change indicators, it turned out that an aggregation of the vulnerability and the combined adaptive capacity would be interesting. Also some doubts regarding the usefulness of the methodology being behind the indicator "Combined adaptive capacity to climate change" have been mentioned. The workshop group would appreciate to differentiate between natural factors and other relevant issues like economic capacity etc.

Finally, for the coverage rate of municipal waste collection "a next step" would have been interesting. The standards in the programme area are high, more specific topics like recycling or waste separation data are interesting.

## Programming steps

Focussing on details concerning the five programming steps the indicators "Wind energy potential", "Ozone concentration" and "Territorial impact on fossil fuel consumption" are considered as relevant for all programming steps to some extend. In some cases more, in some cases less specification or aggregation would be needed, in general these indicators are integrated in the ongoing programming procedures.

The indicators about climate change are relevant for the needs analysis and the thematic priority as well as for the stakeholder consultation. There is no relevance given for result indicators or project selection due to the fact that the programme is not able to

measure or somehow evaluate territorial evidence for the (small) programme area.

The coverage of waste collection was excluded of these thoughts because of the already very high standards in the Slovakia – Austria programme area.

## Further Suggestions or Remarks

Natura 2000	<ul style="list-style-type: none"><li>- The workshop group was wondering why there was no indicator or coverage of "Natura 2000" in the data set for the workshop. There was a strong wish for integrating this European network into thoughts about territorial evidence in structural funds programming.</li></ul>
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### 1.3. Inclusive growth

Inclusive growth refers to fostering a high-employment economy delivering social and territorial cohesion. Within the Europe 2020 Strategy it means raising Europe's employment rate, helping people of all ages anticipate and manage change through investment in skills & training, modernising labour markets and welfare systems, and ensuring the benefits of growth reach all parts of the EU. In short the key factors are employment and avoiding risk of poverty and social exclusion.

The CBC area shows lower values of long-term unemployment than the EU27+4 and the Slovak Republic, but comparable to all the CBC areas in total. It has however higher rates than the Austrian national level. In respect to at-risk-of-poverty rate, the CBC area shows much better results than all – the EU27+4, the CBC areas in total, and the national levels of Austria and the Slovak Republic.

The same is true for the percentage of secondary or tertiary education attainment of persons aged 25-64 and 20-24, which is only lower in the CBC area compared to the Slovak national level.

	disparities in the CBC Area	median value of the CBC Area	EU-27+4	All CBC Areas	Austria	Slovak Rep.
Long-term unemployment rate (12 months and more) - 2011	high	2.3	3.0	2.7	0.8	9.0
At-risk-of-poverty rate - 2011	high	10.3	15.7	14.8	10.9	11.7
Persons aged 25-64 and 20-24 with upper secondary or tertiary education attainment (%) - 2011	low	83.2	76.4	77.7	81.9	91.7

The value in front of each traffic-light represents the median value of the EU-27+4 space, of All CBC Areas, etc.  
 Thresholds for detecting disparities using the variation coefficient: low < 15%, medium 15 - 30%, high > 30%  
 Regional level of analysis: NUTS 2  
 Origin of data: EUROSTAT 2012

For all the possible scenarios on the change in labour force until 2050 drawn in the ESPON DEMIFER project (Map 3), the situation differs between the Slovak and the Austrian sides of the CBC area. The change in labour force witnesses more negative effects on the Slovak than on the Austrian side for all the scenarios imagined. Only

in the scenario of a "limited social Europe" negative effects can be imagined fr both sides of the CBC area. Box plot 2 shows that the employment rate in Austria is far more positive than all the CBC areas together and the EU27+4, in contrast to the Slovak Republic. The Viennese area (Wiener Umland) shows the most positive figures while the Slovak region of Trnavský Kraj is below the averages of the CBC areas, the Slovak and the Austrian national levels, or the EU27+4 level.

## Change in Labour Force 2005-2050

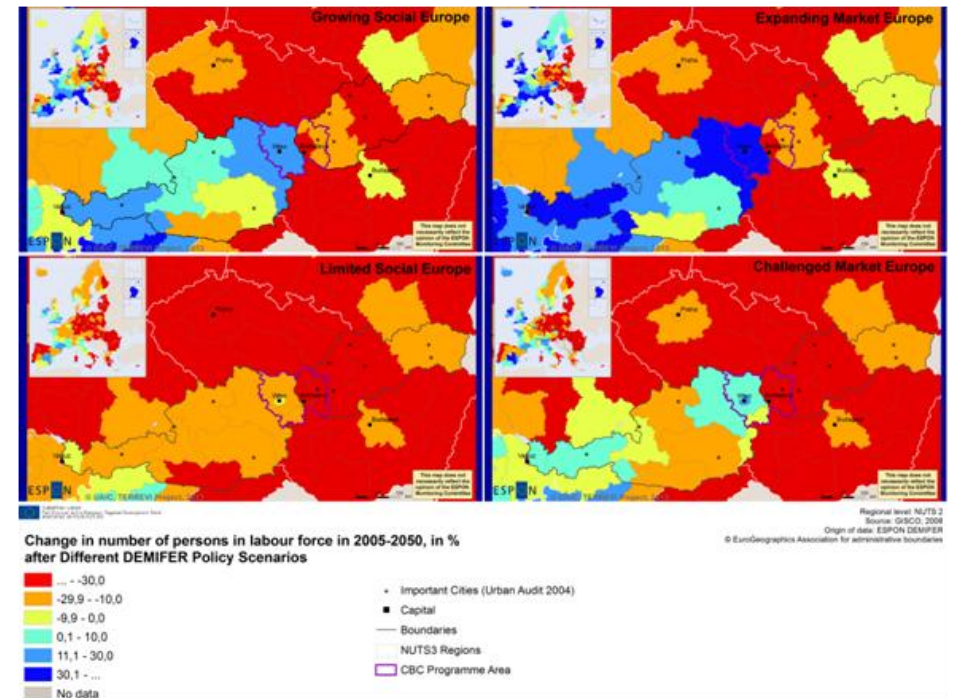
Labour force participation measures the proportion of a specific population (such as women and older workers) considered to be either working or actively searching for a job. The declining number of persons active in the labour market makes labour force participation an issue of growing significance in the EU and has been a primary concern of the European Employment Strategy"

After the "Challenged Market Europe: scenario, the East of Austria will register a growth, with values of 10% and the West of Slovakia will register a decrease (with values of over 30%).

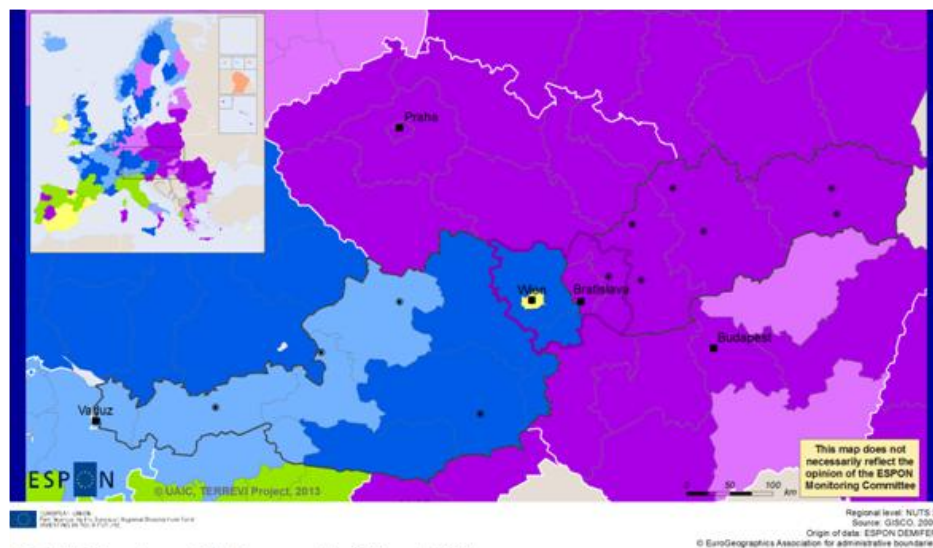
In the "Expanding Market Europe" scenario there will be increases (which will be over 30%) on the East of Austria, but in the West of Slovakia there will be decreases (up to 30%). A similar situation will appear if "Growing Social Europe" scenario will be applied.

If the "Limited Social Europe" scenario will be applied all the regions will register decreases with values situated between 20-30% in East of Austria and bigger than 30% in West of Slovakia.

These maps were produced for the ESPON DEMIFER project.



**Map 17 Change in Labour Force 2005-2050**



#### DEMIFER Typology of the Demographic Status in 2005

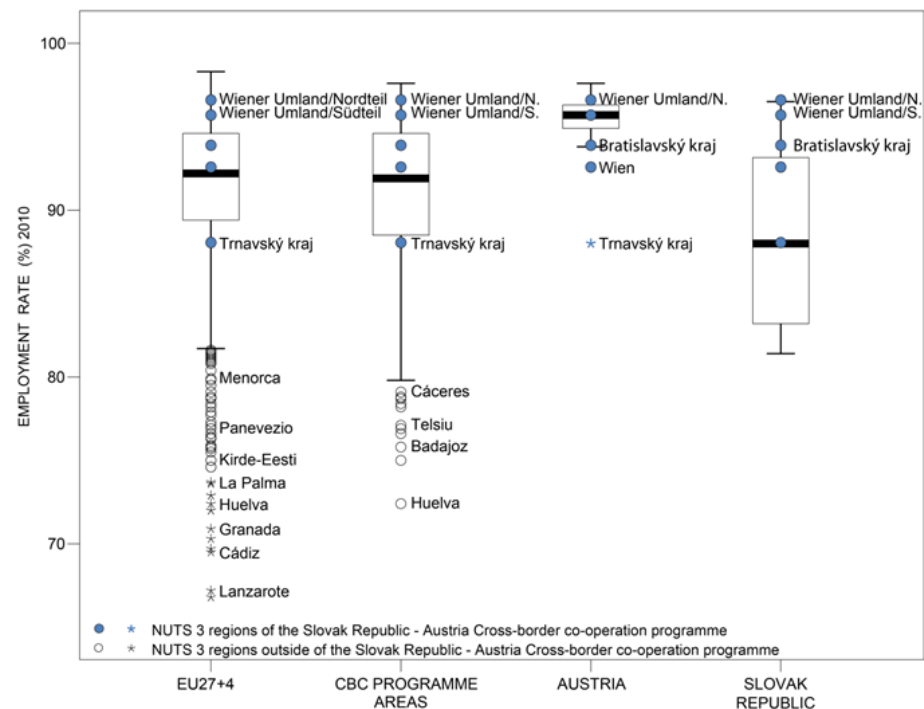
- Challenge of Ageing
  - Challenge of Decline
  - Challenge of Labour Force
  - Euro Standard
  - Family Potentials
  - Overseas
  - Young Potentials
- Important Cities (Urban Audit 2004)
  - Capital
  - Boundaries
  - NUTS3 Regions
  - CBC Programme Area

**Map 18 Labour Force Change by type 2005-2050**

## Employment rate 2010

Employment rate represent persons in employment as a percentage of the population of working age (15-64 years).

Employment can be measured in terms of the number of persons or jobs, in full-time equivalents or in hours worked. All the estimates presented use the number of persons; the information presented for employment rates is also built on estimates for the number of persons. Employment statistics are frequently reported as employment rates to discount the changing size of countries' populations over time and to facilitate comparisons between countries of different sizes. These rates are typically published for the working age population, which is generally considered to be those aged between 15 and 64 years, although the age range of 16 to 64 is used in Spain, Sweden (only until 2001) and the United Kingdom, as well as in Iceland; this age group (15 to 64 years) is also a standard used by other international statistical organisations.



**BOX-PLOT 2 – Employment rate 2010**

(see "How to read the box-plots?" on page 38)

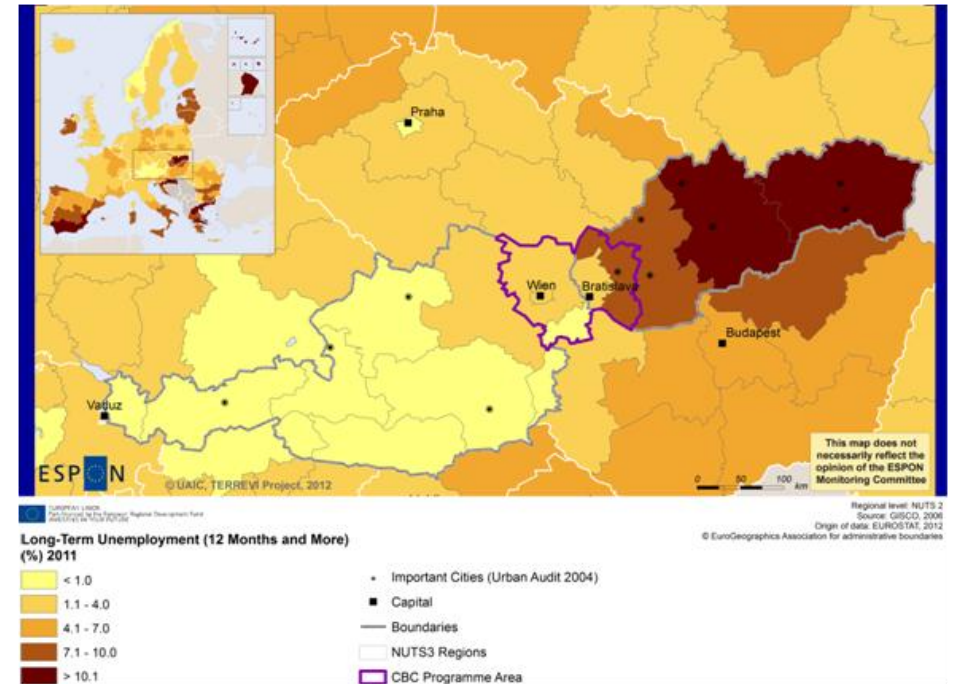


## Long term unemployment rate

Long-term unemployment refers to the number of people who are out of work and have been actively seeking unemployment for at least a year.

An unemployed person is defined as being aged 15 to 74 (or aged 16 to 74 in Spain, the United Kingdom, Iceland and Norway) who was without work during the reference week, was currently available for work and was either actively seeking work in the last four weeks or had already found a job to start within the next three months. The unemployment period is defined as the duration of a job search or as the length of time since the last job was held (if shorter than the time spent on a job search).

This map was produced for the ESPON TerrEvi project.

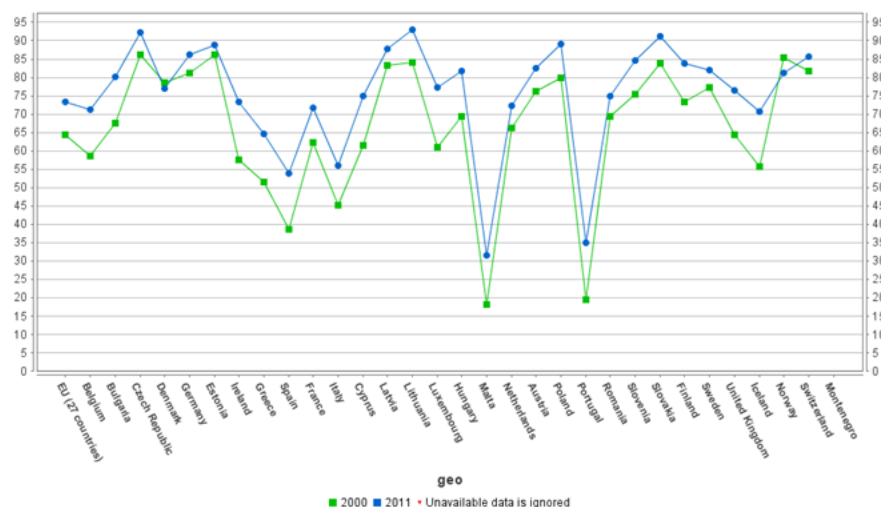


Map 19 Long-term unemployment rate



## Persons aged 25-64 and 20-24 with upper secondary and tertiary education attainment

*Total population having completed at least upper secondary education* - Population aged 25 to 64 (%): The indicator shows the percentage of the adult population (25-64 years old) that has completed upper secondary education. The indicator aims to measure the share of the population that is likely to have the minimum necessary qualifications to actively participate in social and economic life. It should be noted that completion of upper secondary education can be achieved in European countries after varying lengths of study, according to different national educational systems.



**Figure 4: Total population having completed at least upper secondary education - Population aged 25 to 64 (%)**

*Tertiary educational attainment* : the proportion of the population aged 25 to 64 who had successfully completed a university or similar (tertiary level) education; the demographic profile of a region has some influence on this measure, as younger generations tend to report higher levels of attainment than older persons. In 2010, an average of 25.9 % of the EU-27 working age population (25 to 64 years) had attained a tertiary level of education.

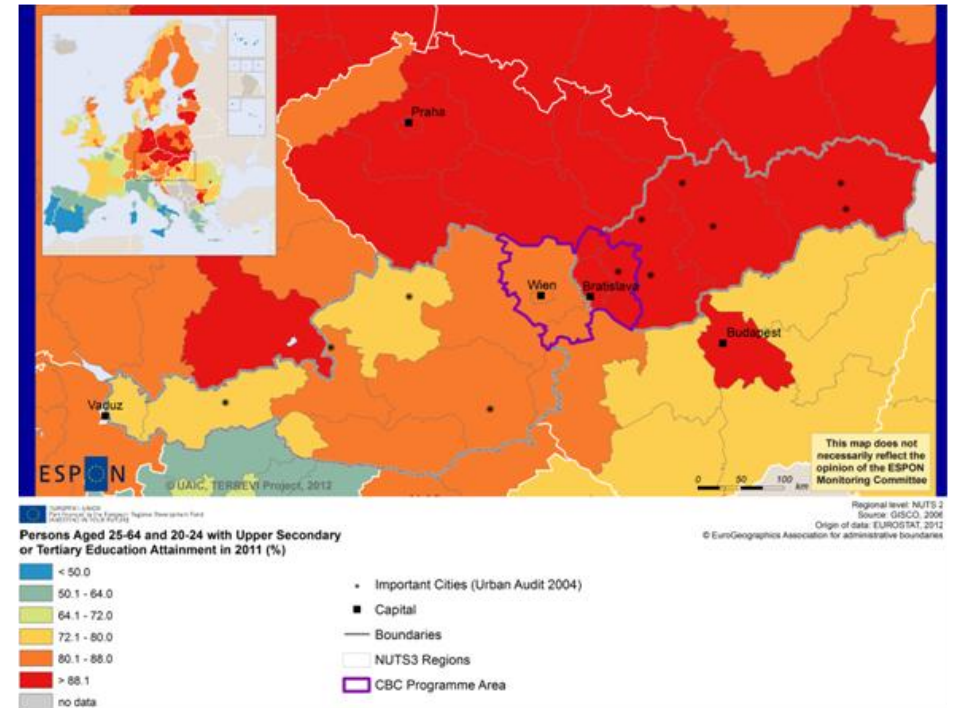
There were 14 NUTS level 2 regions (out of a total of 266 regions) in the EU where more than 40 % of the population aged 25 to 64 had completed a tertiary level education. Five of these regions were in the United Kingdom (four located in or around London and the fifth in North Eastern Scotland which provides support for North Sea oil and gas extraction), three were in Belgium (in and around the Belgian capital), while the others were the capital city regions of Denmark, Sweden, Finland and Spain, as well as the País Vasco (Spain) and Utrecht (the Netherlands). Outside of the EU Member States, Oslo (Norway) and Zürich (Switzerland) also reported in excess of 40 % of their residents between the ages of 25 and 64 possessed a tertiary level of education.

At the bottom end of the ranking there were 36 regions that reported that 15 % or less of their population aged 25 to 64 had attained a tertiary level education. Among these there were 12 regions from Italy (just over half of all the Italian regions), seven from Romania (all except the capital city region of Bucuresti – Ilfov), six from Portugal (all except the capital city region of Lisboa), four regions from the Czech Republic, two regions each from Greece and Slovakia, and one region each from Hungary and Austria; Malta (which is just one NUTS level 2 region) also had a ratio below 15 %. Looking within each country, the regions which had the lowest proportion of working age residents with a tertiary education were often concentrated in rural or remote regions — for example, the island region of the Açores (Portugal), or Valle d’osta/Vallée d’Aoste (Italy).

For statistics on this issue employment rates are based on the age group 25 to 64 rather than 15 to 64. The importance of this indicator stems from the fact that it has been shown that employment rates vary considerably according to levels of educational attainment. The employment rate of those who had completed a tertiary education was 83.7 % across the EU-27 in 2011 (see Table 3), much higher than the rate (53.5 %) for those who had attained a primary or lower secondary education. The EU-27 employment rate of persons with an upper secondary or post-secondary non-tertiary education was 73.2 %. The largest falls in employment rates since the beginning of the financial and economic crisis (comparing 2008 with 2011) were witnessed for persons with a primary or lower secondary education.

The five regions that belong to the Slovak Republic – Austria CBC Programme have one of the best values of this indicator at EU level. Even so, in the case of Austria we can notice major discrepancies between the Vienna and Burgenland regions, the first being more attractive regarding tertiary education while the second has better values for the secondary education. Even if the two regions from Slovakia (Bratislava and Western Slovakia - Západoslovensko) have relatively close values (but superior to the Austrian regions) we can notice better values for capital cities.

This map was produced for the ESPON SIESTA project.



**Map 20 Persons aged 25-64 and 20-24 with upper secondary or tertiary education attainment**

## Participation of adults (aged 25 to 64) in education and training

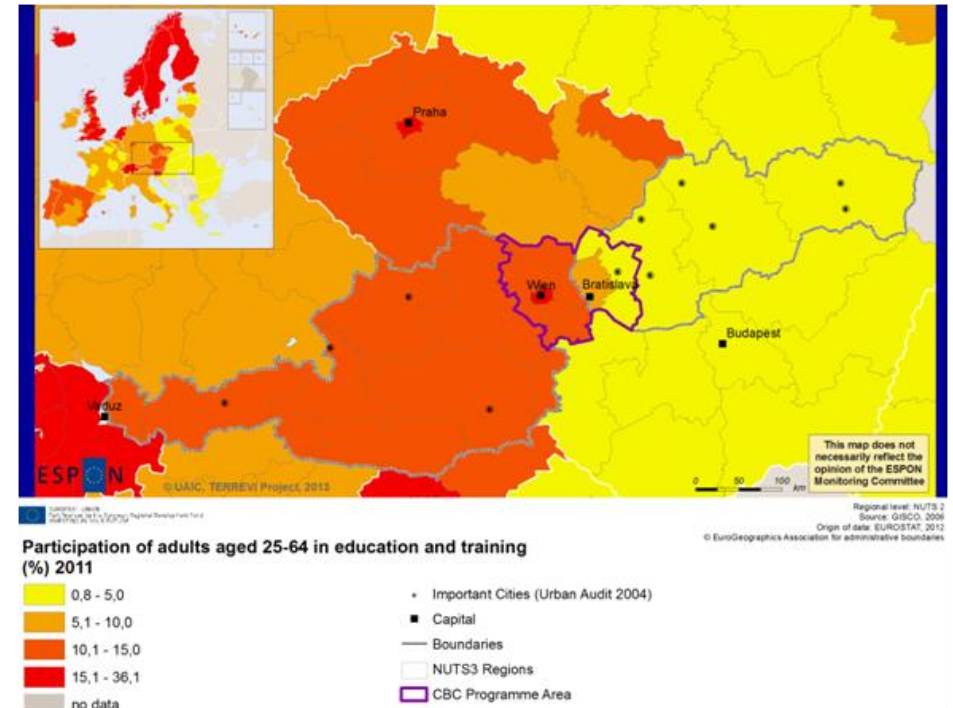
Lifelong learning is as an important element of the knowledge-based economy requiring constantly changing skill needs. Lifelong learning encompasses all purposeful learning activity, whether formal, non-formal or informal, undertaken on an ongoing basis with the aim of improving knowledge, skills and competence. The intention or aim to learn is the critical point that distinguishes these activities from non-learning activities, such as cultural activities or sports activities.

The numerator of the LFS-Life-long learning indicator denotes the percentage of persons aged 25 to 64 (excluding the ones who did not answer the question 'participation to education and training') who received education or training in the four weeks preceding the survey. Both the numerators and the denominators come from the European Union Labour Force Survey (LFS). Life-long learning is computed on the basis of the variable 'participation in education and training in the last four weeks' from the EU LFS. From 2004 onwards, this variable is derived from two variables, i.e. 'participation in regular education' and 'participation in other taught activities'. Self-learning activities are no longer covered.

The strategic framework for European cooperation in education and training adopted in May 2009 sets a number of benchmarks to be achieved by 2020, including one for lifelong learning, namely that an average of at least 15 % of adults aged 25 to 64 years old should participate in lifelong learning.

In 2011, the proportion of persons aged 25 to 64 in the EU-27 receiving some form of education or training in the four weeks preceding the labour force survey was 8.9. Denmark, Sweden and Finland stood out as they reported considerably higher proportions of their respective populations participating in lifelong learning, ranging between one fifth and one third; the Netherlands, Slovenia and the United Kingdom were the only other Member States where the participation rate in 2011 already exceeded the 15 % target. In contrast, Bulgaria, Romania, Greece and Hungary reported lifelong learning participation rates of less than 3%.

This map was produced for the ESPON SIESTA project.



**Map 21 Participation of adults (aged 25 to 64) in education and training, 2009**

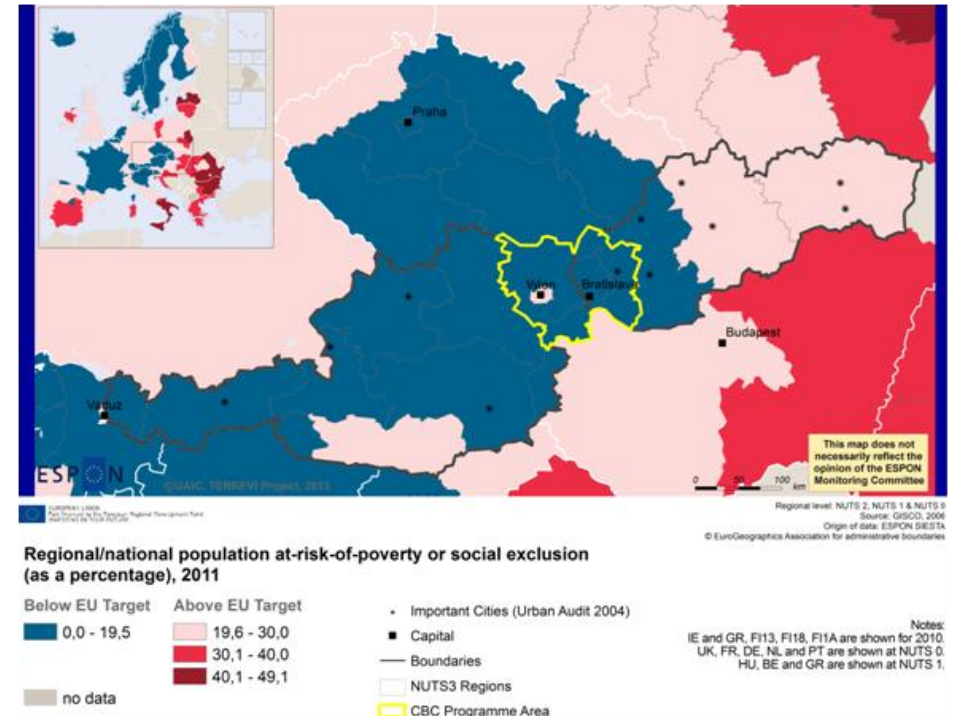
In the area of Austria – Slovakia CBC we can easily notice major discrepancies between the regions of the two member countries. The indicator value for the Austrian regions is superior to the one in Slovakia, Vienna (17.1%) being on the top already exceeding the target for year 2020. In the last 10 years the Austrian regions had doubled the value for this indicator. In the case of Slovakia, Bratislava (7.2%) has a double value of those that participate in training and education activities compared to the Western Slovakia – Západné Slovensko region (3.4%).

### At-risk-of poverty rate

The Europe 2020 objective is to lift 20 million people out of being at risk of poverty and exclusion. The indicator chosen covers the number of people who are at risk of poverty and/or severely materially deprived and/or living in households with very low work intensity. At risk of poverty - a widely used measure of relative poverty - is defined as having equivalent disposable income (i.e. adjusted for household size and composition) of less than 60% of the national median household income. It is a great tool to show regional disparities within countries. However it has several weaknesses if used in EU-wide comparisons. For example, housing costs are not included, yet access to affordable and decent housing is one of the main determinants of people's well-being.

Mapping the distance from 2020 target reveals the characteristics of accumulation in the two countries analysed. If for Austria internal differences are dimmed, all regions having less than 2% of the population at risk of poverty and social exclusion, in Slovakia it is remarkable the very deep gradient between the capital region and east of the country, signalling effects of selective migration, the effects of capital borrowing and the role the proximity plays in absorbing the social risks.

This map was produced for the ESPON SIESTA project.



**Map 22 Population at Risk of Poverty or Social Exclusion, 2010**

## Results and feedback from the workshop

The indicators provided by ESPON projects for the section Inclusive Growth gave a clear picture regarding the relevance for the programme. Needs analysis, thematic priority and stakeholder consultation have been in the focus of the workshop debate. Some aspects of the discussion:

- The change in labour force indicator led to an intense discussion. This issue was named as an issue of main importance of a highly developed programme area as the Slovakia – Austria CBC. But the participants raised two specific topics they would like to modify in this field: First, there should be differentiated between geographical and economic issues in the scenarios. Second, there should be a scenario from 2005 – 2020 and one from 2020 – 2050.
- The Operational Programme for the CBC is elaborated at the moment and the indicators “Persons aged 25-66 and 20-24 with upper secondary or tertiary education” and “Participation of adults in education and training” are main issues in the programme document at this stage.

Finally, the employment rate and the long-term unemployment rate for sure were considered as relevant for the ongoing programming but the participants highlighted that the rate from 2010 is too old and that in this field labour market dynamics should be integrated. Nevertheless the importance of an indicator like this was pointed out.

## Programming steps

Focussing on details concerning the five programming steps the indicators all six indicators in this section have been considered as very relevant for the needs analysis, the thematic priority and the stakeholder consultation. Result indicators and project selection have not been identified as programming steps to consider in the inclusive growth section.

## Further Suggestions or Remarks

Economy	<ul style="list-style-type: none"><li>- The participants were missing economic topics in the inclusive growth section. Also fields like GDP, demographic change and dynamic economic issues are not only relevant as context information. They would be useful and are integrated in the ongoing programming process.</li></ul>
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## 2 Territorial factors of interest for the programme area

Territorial cooperation programmes can make a difference for the future development of cross-border and transnational territories in Europe. Some of the factors can be analysed by European wide data sets and using some studies having specific maps, figures and tables concerning the areas of the cooperation region.

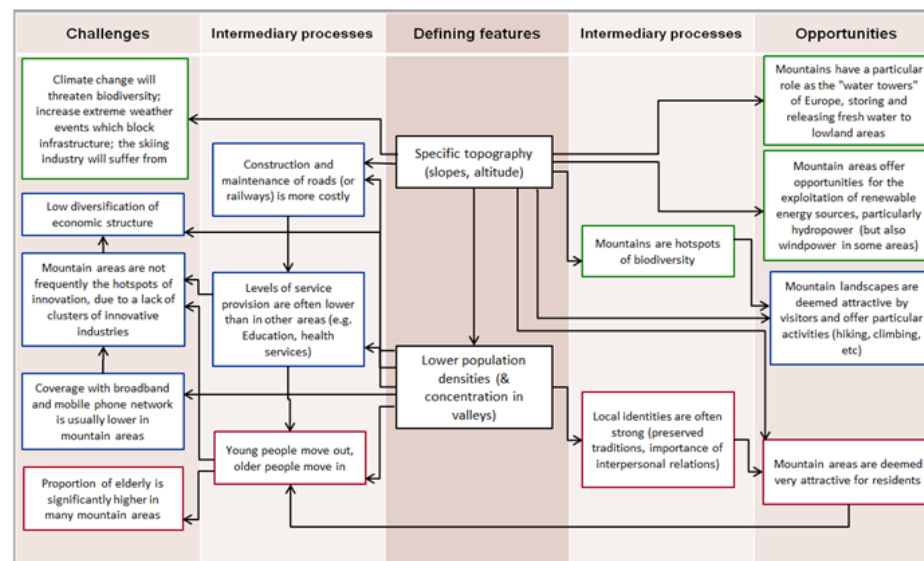
In a European perspective the programme area comprises mainly urban regions neighboured by some rural areas close to a city. Vienna and Bratislava belong to the main European metropolitan growth areas (MEGAs) and are important drivers and hubs in the European urban system, both as regards transportation and international business. The close proximity to Vienna and Bratislava can be a particular advantage for the rural areas and secondary cities in the programme area.

This concerns both the access to services and infrastructure. In a European perspective the programme area is characterised by good multimodal accessibility, well above the European average. Furthermore, the locations in Vienna and Bratislava offer good opportunities for one-day business trips to many other cities in Europe.

The rural parts of the programme area can probably profit from the close proximity to major European centres. At the same time the urban centres can profit from the qualities of the rural areas in close proximity.

In European perspective the area is characterised with some degree of mountainousness, where mountainous municipalities cover up to 25% of the total area. ESPON GEOSPECS has developed a nexus model for mountainous regions linking defining features via intermediary process to development challenges and opportunities (see figure). This model can be of interest for further developing the discussion about the challenges and opportunities in the programme area.

ESPON GEOSPECS PROJECT – FINAL REPORT, PAGE 102: Nexus model for mountain areas



## Urban-rural typology

The *Rural-Urban* meta-narrative draws together various story lines relating to migration, rural-urban relationships, access to SGI, agglomeration (or its absence), and highlights the cumulative causation process which drives the differentiation of, and disparities between, accessible and remote/sparsely populated rural regions.

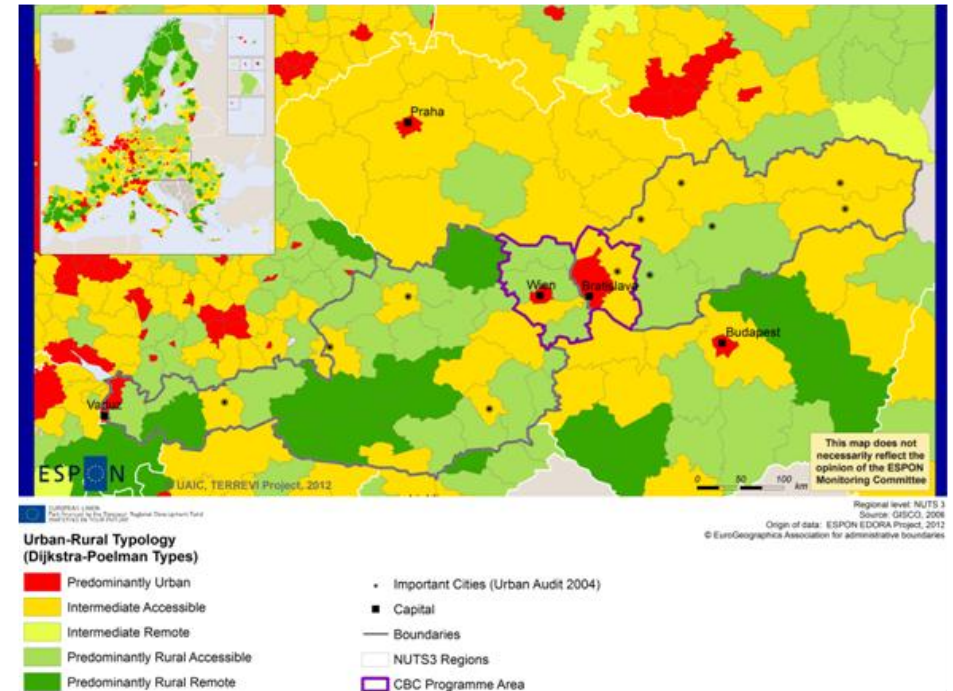
*Rurality/accessibility.* This typology relates to the Rural-Urban meta-narrative, and was developed (by Dijkstra and Poelman [2008] at DG Regio) from the OECD typology. Four types of (non-urban) regions are distinguished; Intermediate Accessible, Intermediate Remote, Predominantly Rural Accessible, and Predominantly Rural Remote.

### *Rural-Urban Relationships*

This theme is touched upon in a wide variety of contexts and that there is a wealth of relevant material, both conceptual and empirical. At the same time, however that material is very disparate and the task of drawing it together into a coherent “narrative” which could form the basis for perspectives of the future or a policy approach are exceptionally challenging. The difficulty is increased by a number of issues relating to the characteristics of rural and urban areas, and the relationships between them: Urban areas and rural hinterlands are not two discrete spaces, they overlap and interlink in a complex system of economic and social interactions, (commuting, service provision patterns, leisure and recreation linkages etc).

In the current, increasingly globalised, context, many rural areas have as many links to distant regions across Europe or the rest of the world as they do to adjacent urban areas. Indeed one of the key conclusions from the business networks literature is that such linkages are the key to the successful development of NRE activities.

Administrative boundaries have variable relationships to urban and rural areas, creating complex issues in terms of policy design, and often providing no separate institutional advocacy relating to rural needs and potential. Where regions contain both an urban core and outlying rural areas the needs of the former will generally have far more political weight than those of the latter.



**Map 23 Urban-rural typology of NUTS3 regions**

In the current policy context (exacerbated by the “project state”) urban and rural areas, or more specifically their associated governance structures, are more likely to see themselves as competing for scarce resources than cooperating for the benefit of rural areas.

### *The Rural-Urban Meta-Narrative*

Urbanisation, counter-urbanisation and commuting are key drivers of the Rural-Urban metanarrative.

As a result of these flows, many accessible rural areas experience “accumulation” of resources and development assets, and acquire an economic structure increasingly similar to that of nearby urban regions. By contrast other rural regions, especially in the more remote parts of the EU are still being “depleted” of population and economic activity through cumulative, self-perpetuating, cycles of decline.



The Rural-Urban meta-narrative also draws on the concept of peripherality; which “incorporates two main causal elements; distance from sources of goods and services, and an absence of agglomerative economies. Associated with these are ‘contingent’ disadvantages, such as the high cost of service provision, low rates of entrepreneurship, and a range of associated problems, such as slow adjustment of sectoral structure, poor local infrastructure, and so on” (Copus 2001). Peripherality is thus viewed as a “...consequence of the location of a region in relation to all other regions, and their economic size/importance. Quite simply, a region which is close to centres of economic activity will have a range of advantages over one which is located further away, and *vice versa*.”

#### *Methodology*

The full methodology for the D-P typology is described in Dijkstra and Poelman (2008). The first step is to classify all “local units”<sup>6</sup> within each NUTS 3 region as urban or rural, using a criteria of population density of 150 inhabitants per square kilometre. Predominantly Urban (PU) regions are those in which less than 15% live in local units which are rural. Intermediate regions are defined as those in which between 15% and 50% live in rural local units. Predominantly Rural (PR) regions have more than 50% of their population living in rural local units. Each of these three categories are further divided into accessible and remote groups. A region is placed in the accessible group “if more than half of its residents can drive to the centre of a city of at least 50 000 inhabitants within 45 minutes. Conversely, if less than half its population can reach a city within 45 minutes, it is considered remote.” (Ibid p3)

It can be noticed that there are major differences between Austria and Slovakia in terms of urban – rural types. Austria is dominated by predominantly rural close to a city regions, while Slovakia is defined by intermediate close to a city and predominantly urban regions. In comparison, Slovakia is an exception considering the surrounding regions.

This map was originally proposed for the ESPON EDORA project and re-produced for the ESPON TerrEvi project.

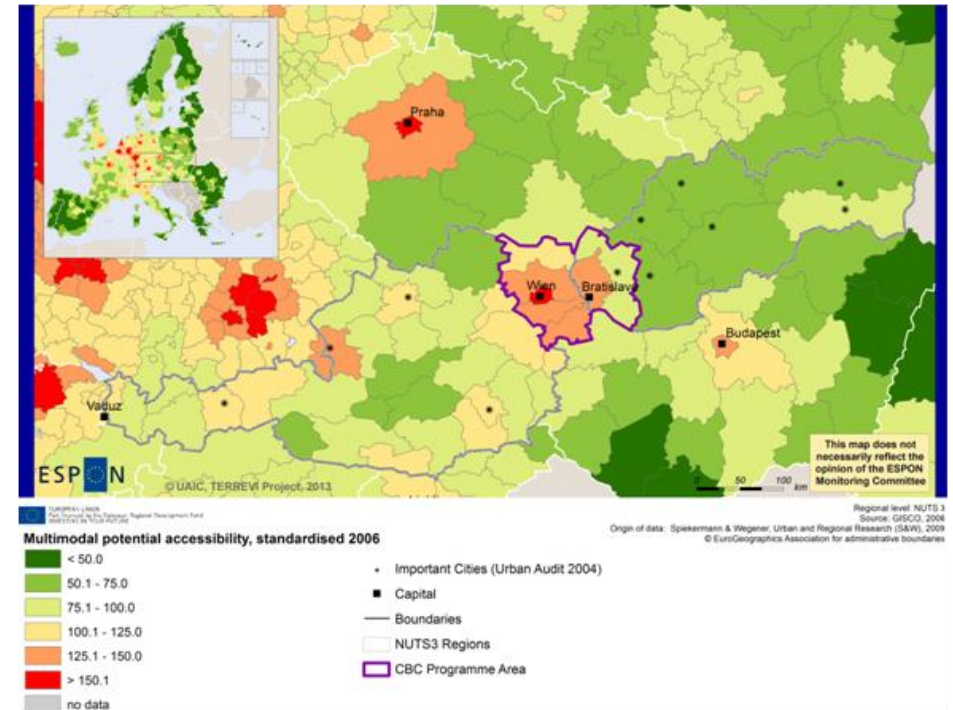
## Multimodal accessibility

With the purpose of providing an overview of the degree of connection between European regions, potential multimodal accessibility synthesizes indicators specific for each travel mode in part (road, rail and air). At European Union level, potential multimodal accessibility captures a spatial architecture articulated according to core - periphery model.

Through the specific manner of trading travel costs (strongly dependent on the physical distances on the ground and on the limits of travel speed), road and rail networks are the main responsible for concentrating high values of potential accessibility in the central part of the European Union, while in the peripheral areas of EU space, multimodal accessibility is declined primarily based on air accessibility, the only one able to provide fast connections for such regions.

Drawn on both sides of the former Iron Curtain, CBC Region Austria-Slovakia is structured by the presence of two major poles: Vienna to the west and Bratislava to east. The consequences for multimodal potential accessibility are visible: the urban couple manages to provide the regions in the CBC Programme higher accessibility compared to European average, despite the peri-central position vis-à-vis the European Pentagon. It is however noted that there are differences east-west, arising from the different importance of the two cities in the global transport system. Austrian regions have, on average, higher values to those from Slovakia, and the region of Trnava (Slovakia) is the only one with a potential multimodal accessibility below the European average.

This map was originally proposed in the ESPON TRACC project and re-produced for the ESPON TerrEvi project.



**Map 24 Multimodal potential accessibility**

### 3 Recommended ESPON reading

ESPON provides an essential underpinning for translating into practice the calls for integrated and place-based approaches to economic development, when analysing a programme area or deciding about future programme priorities. ESPON has published a wide range of exciting reports providing valuable territorial evidence for future territorial cooperation initiatives.

The table below shows examples of relevant projects for the Cooperation Region. However, you have to study other ESPON reports as well in order to capitalise fully on the European information available for the cross-border programming.

ESPON study	Topic	Content
EDORA	Rural areas	It provides evidence on the development opportunities of diverse types of European rural areas and reveals competitiveness options (see maps in Appendix 1).
CLIMATE	Climate change	It analyses how and to which degree climate change will impact on the competitiveness and cohesion of European regions and Europe as a whole (see from map 1 to 23).
TIPTAP	Territorial impact assessment	It provides a tool for the ex-ante assessment of territorial impacts of policies to deliver evidence on the territorial impact of policies (see from map 2.3.1 to 2.3.9).
CAEE	Agglomeration economies	It aims at a better understanding of the economic costs and benefits of large urban agglomerations (see figure 1).
TRANSMEC	European cooperation	It develops a method providing guidance on how ESPON results can add value to support territorial cooperation programmes (see map 27 and from map 36 to 39 on potential accessibility indicators).
SEMIGRA	Rural migration	It identifies the main reasons and consequences of selective migration in rural regions in order to develop strategies for territorial development (see map 1, 4 and 5).
KIT	Innovation	It describes patterns of knowledge and innovation economy (see from map 3.1.1 to 4.4.1). It analyses the economic activities of Slovakian side (chapter C of Volume 2 of the Draft Scientific Report, (chapter C and D of Volume 3 of the Draft Scientific Report);
SGPTD	Growth poles	It provides evidence about performance and roles of European secondary cities (see from figure 2 to 2.12).
POLYCE	Metropolitan regions	It explores polycentric systems characteristics at regional and metropolitan level and provides qualitative and quantitative information on the metropolitan regions of Vienna and Bratislava (see the figures 2, 6, 9, 12, 20).

Furthermore, some of overall ESPON products of particular interest for territorial cooperation are:

- **ESPON Synthesis report** “new evidence on smart, sustainable and inclusive territories” provides an easy to read overview on ESPON results available.
- **ESPON Territorial Observations** is a publication series, which on a few pages presents policy relevant findings deriving from latest ESPON research.
- **ESPON 2013 Database** provides regional information provided by ESPON projects and EUROSTAT.
- **ESPON Hyperaltas** allows comparing and analysing a region’s relative position at European, national and local scale for a wide range of criteria.
- **ESPON MapFinder** provides access to the most relevant ESPON maps resulting from ESPON projects and reports.
- **ESPON Typologies** provides nine regional typologies for additional analysis of regional data to be considered in the European context.

All ESPON reports and tools are freely available at

[www.espon.eu](http://www.espon.eu)

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The ESPON 2013 Programme is part-financed by the European Regional Development Fund, the EU Member States and the Partner States Iceland, Liechtenstein, Norway and Switzerland. It shall support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory.