ESPON

ESPON
Evidence Report
Alpine Space
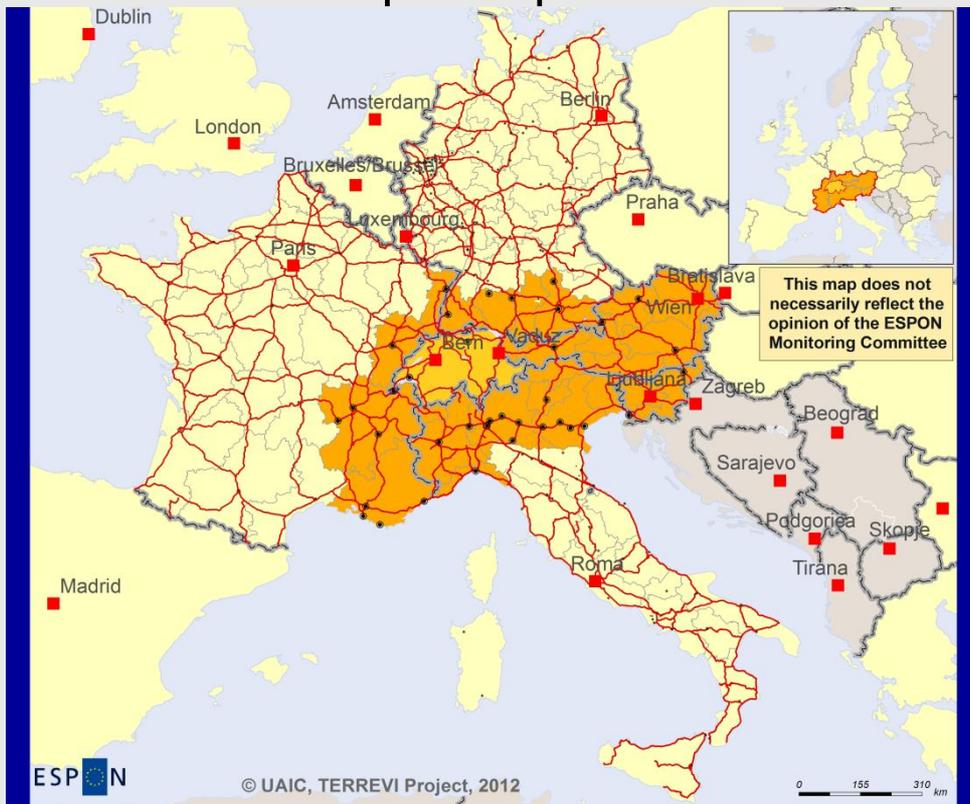
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Regional level: NUTS 2
Source: GISCO, 2010
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Legend

- ⊛ Important Cities (Urban Audit 2004)
- ■ Capital
- — Main road network
- ▭ Boundaries
- ▮ EU NUTS2 Regions of the TNC Programme Area
- ▮ Other NUTS2 Regions of the TNC Programme Area
- ▭ NUTS2 Regions

ESPON Project TerrEvi

August 2013

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 factsheet has been complemented by the results of the discussions at the March 2013 workshop. The present report assesses the situation of the Alpine Space region in view of developing a future programme and achieving the three objectives of the Europe 2020 Strategy, namely smart, sustainable and inclusive growth.

Context information

The Alpine Space is one of the most developed transnational regions in economic terms with GDP / inhabitant values well above the European average for most of its NUTS 3 regions. Thanks to the relatively stable economic situations despite the economic crisis, the gender gap in unemployment is low and even positive for some regions in Austria, Slovenia and Germany. While the French and Italian regions experience positive population changes (tourism, counter-urbanisation) the Austrian, German and Slovene regions experience a negative population change (migration to growth poles). Similarly, the share of older people varies between the regions mainly due to the capacity of the demographical systems to adapt to the aging process. While the German and Italian regions witness a classical model of structural evolution of the population with a lower demographic resistance and exodynamic demographical politics, France used endogenous methods and Western Austria experienced a slower aging process due to the existence of an important rural population.

Generally, the data only provides a snapshot at a given point of time and there is no possibility to observe any developments or trends, so they only have a limited relevance for the programming. More ASP-specific indicators as suggested in the workshops were included in the report but no information is provided on the availability of respective concrete data.

More timing of the TerrEvi project overlaps with the programming process, thus limiting the possibilities for the programme to benefit from the project results.

Europe 2020: Smart Growth – Main findings

- The Alpine Space TNC area performs similarly to the EU 27+4 with regards to the levels of employment in knowledge-intensive services and the number of persons using regularly the internet. Regional variations with regards to employment in knowledge-intensive sectors are related to economic specialisation, industrial traditions and investments in human capital. Therefore, appropriate measures should be implemented into those areas to ensure the modernisation of the labour market towards future-oriented markets.

- The share of R&D expenditure in the TNC area is higher than in the EU27+4 but there are significant disparities across the regions (lower shares in Northern Italy and eastern Austria with the exception of Vienna). Measures should be implemented to ensure that R&D is embedded into human capital, entrepreneurial and creative attitudes. Especially the gap between research and the overall economic sector or production system have to be filled.

- The TNC area is also diversified and scattered with regards to innovation patterns (more innovative in the northern Austrian, German and Swiss areas; somewhat less innovative in the southern and eastern regions). As a result, labour mobility and research networks should be encouraged while ensuring that the internal and external knowledge is efficiently translated into new specific commercial applications. This should be embedded in a Smart Specialisation Strategy. Moreover, the less innovative regions must develop an original and unique knowledge domain based on its productive vocations and discover research and innovation areas in which they can excel.

As concerns the implementation of the Digital Agenda of the EU, the regions in the TNC Alpine Space have generally a high level of high-speed internet connection (except for Northern Italy). There is however a gap between the northern and southern states of the region with regards to the share of people regularly suing the internet which is not likely to be filled in the near future but the trend is promising.

The indicators were only partly viewed as useful by the workshop participants (Managing authorities and Joint Technical Secretariat of the Alpine Space programme). Two further indicators were suggested, namely 'clustering' and 'internet for tourism'.

Europe 2020: Sustainable Growth – Main findings

- The wind energy potential of the TNC area is lower than the potential of the EU27+4 and shows a high level of diversity within the area. Lower accessibility of mountainous areas and limited roads result in less favourable conditions for wind farms. Other alternative energy sources should therefore be identified.

- The Alpine Space has lower ozone concentration values than the EU27+4; however the disparities within the region are high. Particularly Northern Italy is considered to be a high risk area for ozone pollution in the Alpine Space region, although ozone pollution in general can no longer be considered a local air quality issue – it is a hemispheric and global problem.

- Also, the area seems to be as vulnerable to climate change as the EU27+4 with high disparities across the region (the west being dominated by low increase of vulnerability, the southern area being marked by a medium to high increase and a low or no increase of vulnerability in the east). Potential future CBC that focuses on climate change adaptation and mitigation concepts could enhance climate change adaptation capacities.

- The north of Italy and the eastern regions of the Alpine Space are less capable of adapting to climate change than the other regions. Therefore, policy measures should be introduced to support the region and its inhabitants to adapt to climate change.

- The north of Italy and the south of France seem to experience moderate positive impacts in terms of fossil fuel consumption as a result of the Directive ion the promotion of clean and emery-efficient road transport vehicles.

- The waste collecting in the Alpine Space region is at 100% and therefore above the EU average. Nevertheless, here, too, disparities exist across the region.

The indicators were welcomed by the workshop participants. The following indicators were also suggested: 'the potential of alternative energy sources beside wind energy potential, such as water' and 'road traffic emissions', 'renewable energy potential', 'natural hazards and risk potential' and 'available, renewable, non-energetic resources in the meaning of raw material for products'.

Europe 2020: Inclusive growth – main findings

- The long-term unemployment rate in the TNC area is lower than in the EU27+4. The employment rates in the centre regions of the Alpine Space (Germany, Austria, Luxembourg) have higher employment rates than the outer regions. The at-risk-of poverty rate is lower than in the EU27+4.

- The share of persons aged 20-24 and 25-64 with upper secondary or tertiary education attainment is comparable to the EU27+4 levels. The highest values are recorded in the German, Austrian and Slovenian parts of the area; the lowest values are recorded in Northern Italy. Education and training measures should be increased and modernised in the regions which are experiencing lower levels and life-long-learning should be promoted in the whole area especially with a focus on future-oriented sectors.

- A shrinking labour force will be a problem for many European regions, including the Alpine Space. Regardless of how the trajectories of demographic and migratory development will end up for Europe overall, the north-east regions are most likely to face a negative population development by 2050, due both to low total fertility rates and negative net migration. Only in the scenarios of 'Growing social Europe' or 'Expanding market Europe' will the changes in labour force be positive for Austria and the southern regions of Germany. Measures should be implemented to mitigate the effects of negative migration especially in the context of demographic ageing.

The indicators were seen as useful and fit for the purpose by the workshop participants, but it was pointed out that the data used should not be dated or obsolete. Also, complex indicators could confuse policy-making. The indicators 'share of persons aged 20-24 and 25-64 with upper secondary or tertiary education attainment', 'participation of adults in education' as well as 'at-risk-of-poverty' have not been identified as useful.

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 of management of regional programmes. In other words, ESPON results can support work linked to achieving territorial cohesion and the implementation of the Europe 2020 strategy.

2014-2020 Thematic Objectives	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		X
Promoting social inclusion and combating poverty																					X	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.[1]

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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[1] 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 Alpine Space 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 Packs';
- 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[2] 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.

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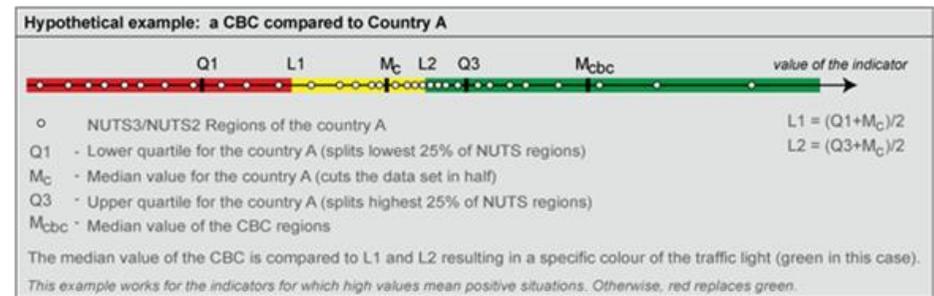
Choosing median as central value requires a special attention in analysing the traffic lights when the number of NUTS 2/NUTS 3 regions is below 7. Using percentiles implies also that the final result is highly dependent on the type of statistical distribution. This should be considered as well when establishing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

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[2] 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.

Context information

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 territorial distribution of the relative evolution of the population shows the presence of some dissimilarities between French and Italian regions, with positive evolution, and Austrian, German and Slovenian regions with negative evolution or in demographic balance.

For France, the growths are significantly over the European average, some counties being in a programme of repopulation of isolated mountain areas, the basis of this programme being the tourism and the counter-urbanisation. Frequently, the migration did not lead to a remake of demo-reproductive indicators, because of the advanced age of some migrants (elderly people, out of fertility cycle), but in short terms, the growths can be spectaculars (11.8% for Haute Savoie county).

Austria and Slovenia are still reporting a profile of the population's dynamics dictated by the repartition of regional growths poles, which have been reported the biggest demographical growths (2.3% for Vienna region), to the detriment of some isolated mountain areas, in a depopulating process (-1.3% in Carintia and values slightly negatives in almost all Slovenian regions).

This map was developed in the ESPON DEMIFER project and re-produced for the ESPON TerrEvi project.
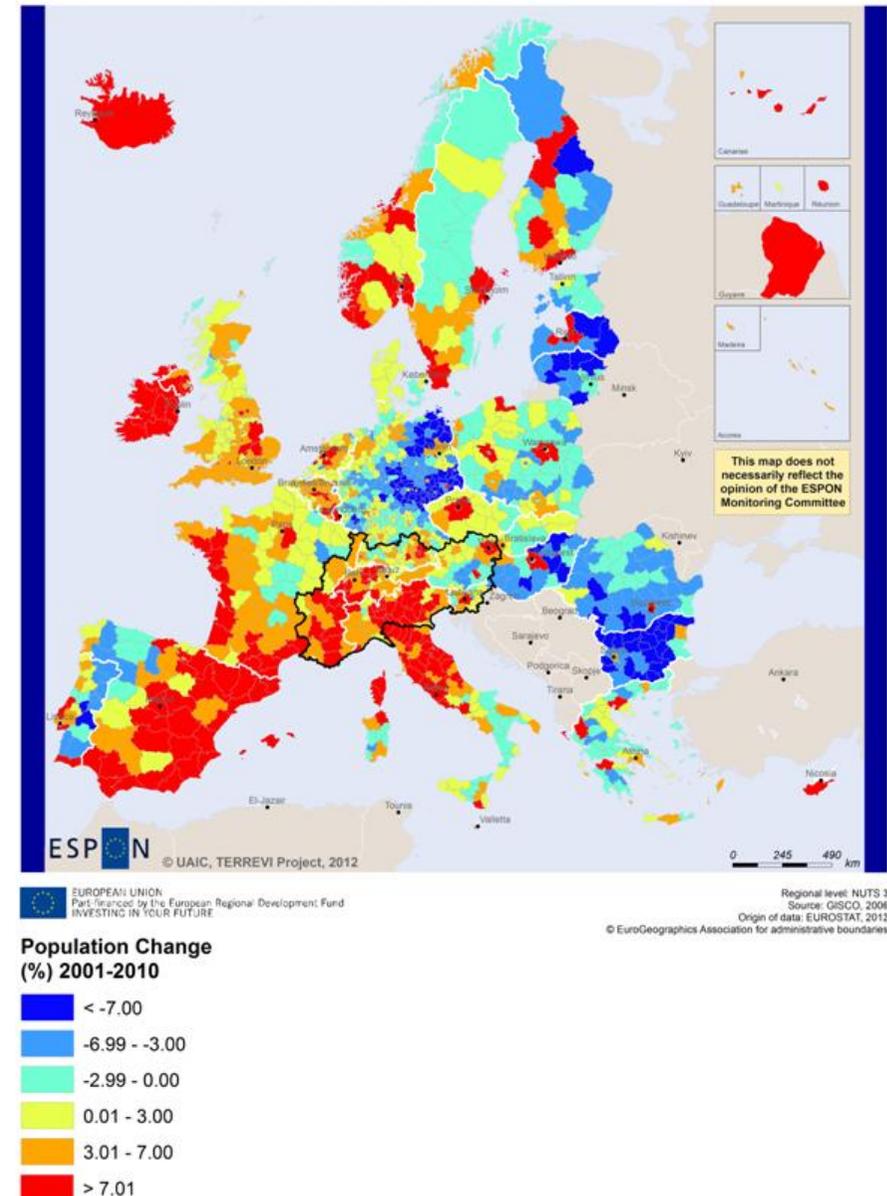
Map 1 Population change

13

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.

The differences within the borders of this TNC are explained by the capacity of the demographical systems to adapt to the aging process. The German and Italian regions knew a classical model of structural evolution of the population, but with a lower demographical resistance, being promoted some exodynamic demographical politics. France, although knew earlier the aging process, presented a more resistant demographical model, using endogenous methods.
Western Austria (Tirol and Vorarlberg), shows a particular model, where the stages of aging process where slowed down by the existence of an important rural population and without being affected by selective migration.

Share of Population Aged 65 Years and Over (%) 2010

■	< 12.0
■	12.1 - 16.0
■	16.1 - 20.0
■	20.1 - 24.0
■	> 24.0
■	no data
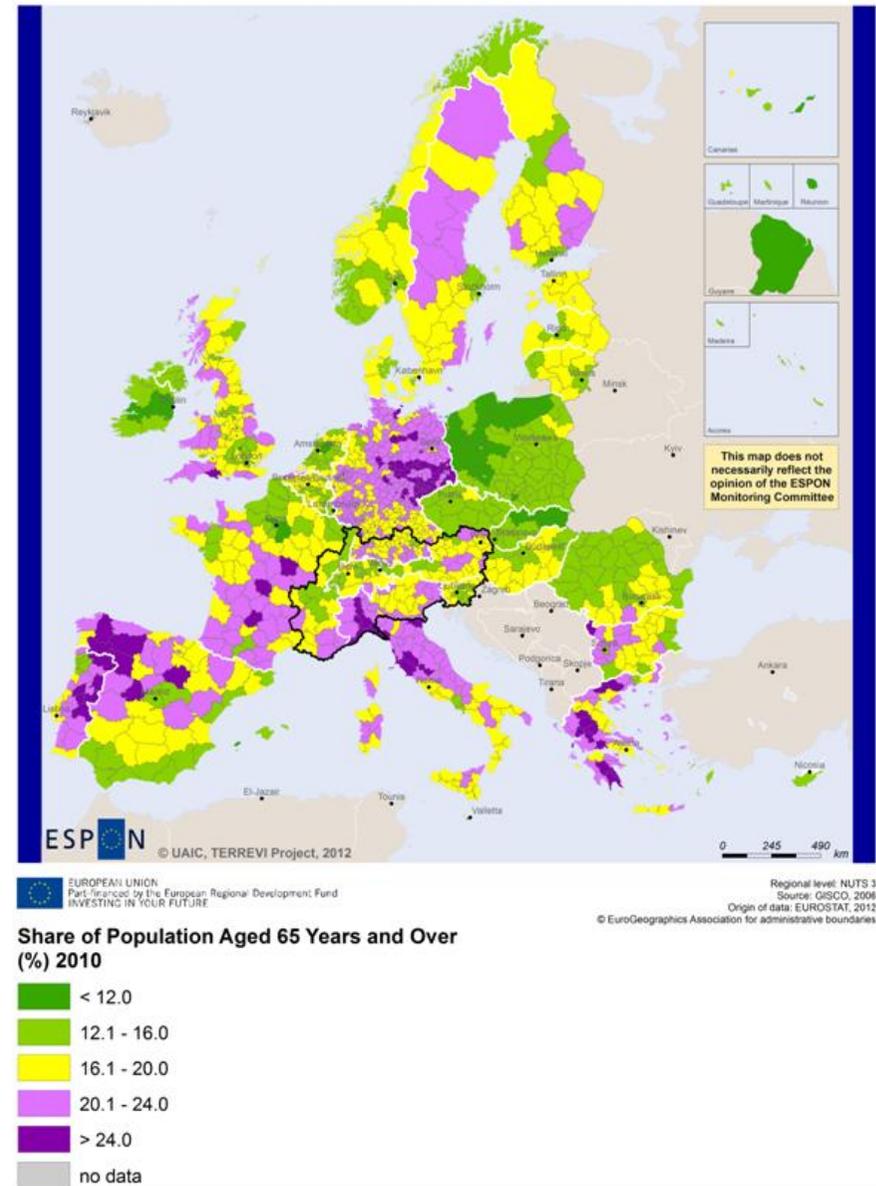
Map 2 Share of old people

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.

One of the most developed transnational regions in economic terms, Alpine Space is characterized by values of GPD / inh. well above the European average for most of its NUTS3 regions. Economic engines of the region appear to be urban centres in Germany, Austria and Italy (especially Munich, Vienna and Milan), while values above 25,000 PPS characterize the entire northern Italy, western half of Austria, most of the South Germany, Central Slovenia and departments of Rhône, Bouches-du-Rhone, Alpes-Maritimes and Savoie in France. The highest disparities are recorded along the border between Austria and Slovenia (with differences of over 3000 PPS / inh. between the regions on both sides of the border) and along the border separating France from Italy.
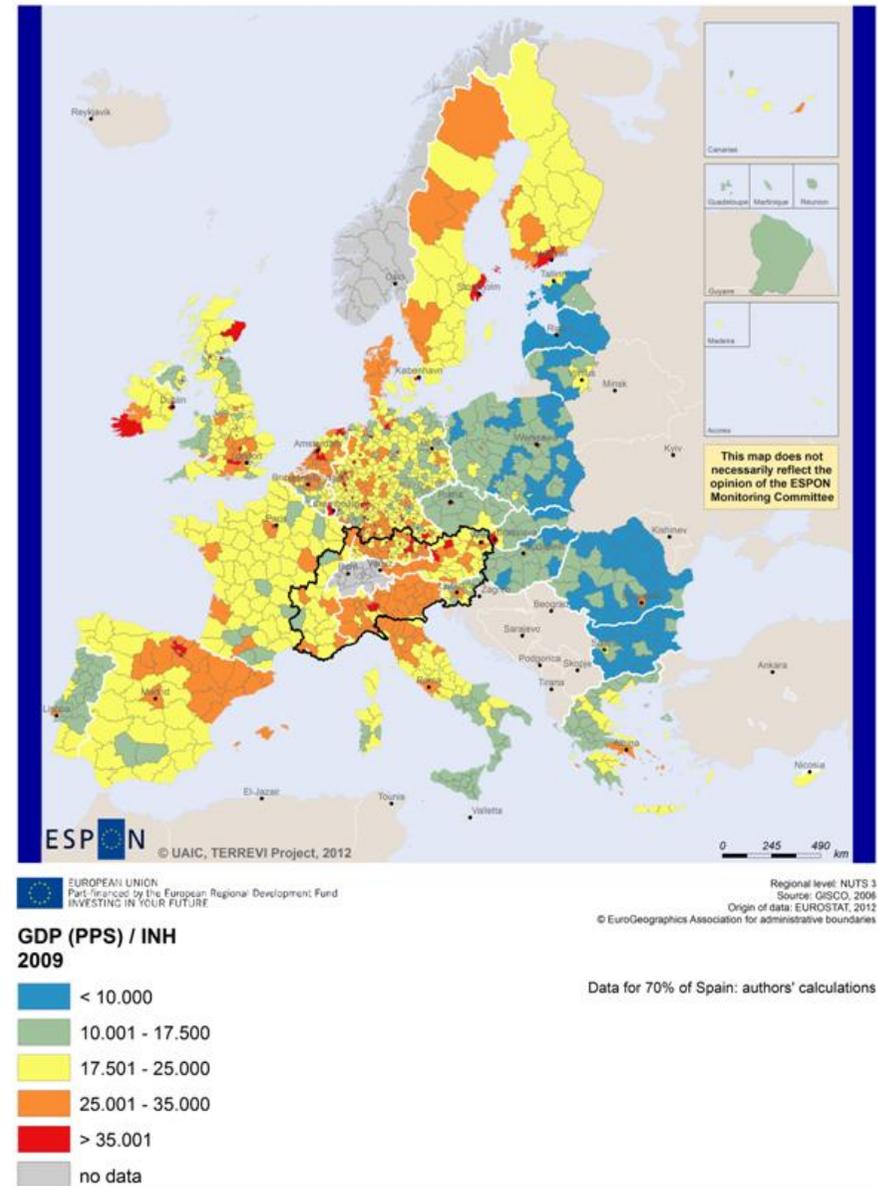
Map 3 GDP (PPS)

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 %).

(1) The figure is ranked on the average of male and female
Source: Eurostat (une_rt_a)
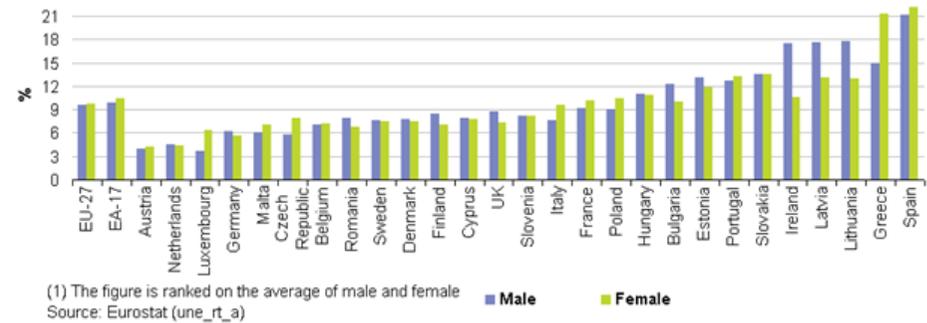
Figure 1 Unemployment rates, 2011 (%)
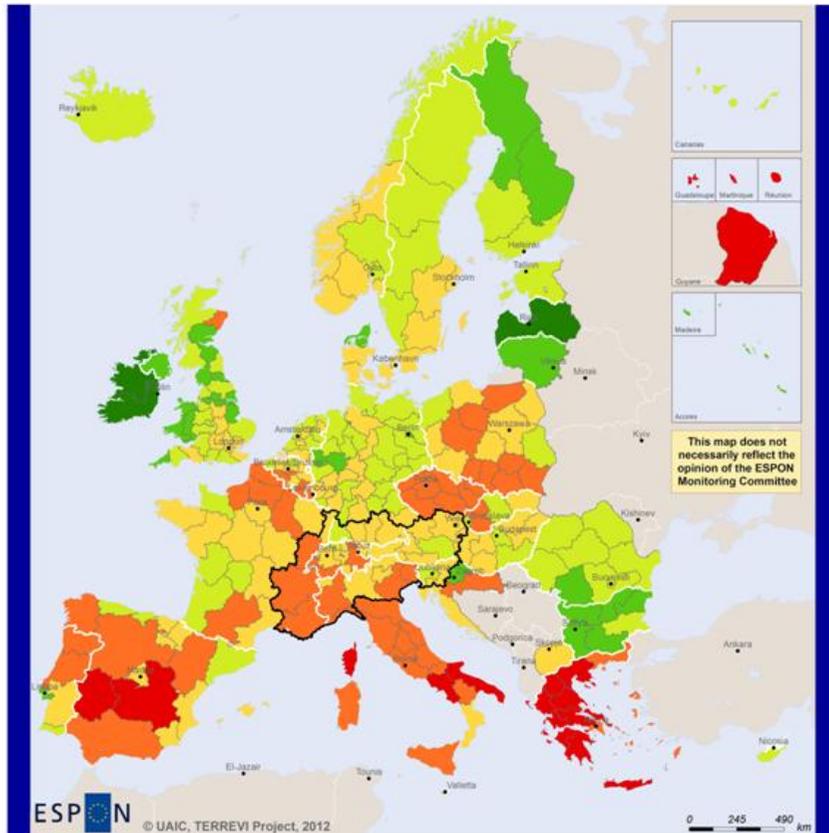
Gender Gap in Unemployment (%) 2011

▮	< -4.50
▮	-4.49 - -1.50
▮	-1.49 - 0.00
▮	0.00 - 1.50
▮	1.51 - 4.50
▮	> 4.51
▮	no data

Map 4 Gender gap in unemployment

In the Alpine Space TNC area we can notice some disparities between its component regions. All the French and Italian regions will have negative values situated from -1.2 to -2.4, while the Slovenian, German and Austrian regions the values will strive for 0. We can notice that the only regions that present positive values are Vienna (0.9) Tirol Freiburg and Zahodna from Slovenia with the highest value from this are of 1.2. This situation is due to relatively stable economies which were less affected by the economical crisis from the last years.

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 medians where green = your programme area performs better for that indicator, yellow = similar, and red = worse.

The traffic lights below were created in order to graphically represent the situation of each analysed TNC Area compared to the one of the EU-27+4 space. 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 to the one computed for EU-27+4 territory.

EU 27+4 in traffic lights means the EU Member States as well as Iceland, Liechtenstein, Norway and Switzerland – the ESPON space.

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.

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.

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.

Looking at the indicators for **smart growth**, the Alpine Space TNC area performs similarly to the EU27+4 (with regards to employment in knowledge-intensive services, and the number of persons regularly using the internet). With regards to R&D expenditure, the TNC area has positive values compared to the EU27+4 although it must be added that the disparities within the area are high.

	Total Intramural R&D Expenditure (GERD). Percentage of the GDP (2009)			Employment in knowledge-intensive services as percentage of total employment (2010)			Percentage of individuals regularly using internet (2011)		
	disparities in the TNC Area	median value of the TNC Area	median value of EU-27+4	disparities in the TNC Area	median value of the TNC Area	median value of EU-27+4	disparities in the TNC Area	median value of the TNC Area	median value of EU-27+4
SMART GROWTH	high	1.9	1.2 🟢	low	36.2	39.0 🟡	low	74.0	71.0 🟡
	Wind energy potential			Ozone concentration			Potential vulnerability to climate change		
SUSTAINABLE GROWTH	high	23948	73939 🔴	high	6.9	8.6 🟢	high	0.1	0.1 🟡
	Long-term unemployment rate (12 months and more) - 2011			At-risk-of-poverty rate - 2011			Persons aged 25-64 and 20-24 with upper secondary or tertiary education attainment (%) - 2011		
INCLUSIVE GROWTH	high	1.3	3.0 🟢	medium	10.8	15.7 🟢	medium	79.0	76.4 🟡

Regional level of analysis: NUTS 2 (except for Potential vulnerability to climate change - NUTS 3)
Thresholds for detecting disparities using the variation coefficient: low ≤ 15%, medium 15 - 30%, high ≥ 30%
Origin of data: EUROSTAT 2012, ESPON ReRisk, ESPON INTERCO & ESPON Climate Projects

Using the taxonomy of the KIT project, Map 1 shows a diversified and scattered situation in terms of patterns of innovation. In the centre of the Alpine Space area (south of Germany, Austria and Switzerland), many Nuts-2 regions of the TNC area are either rated as "applied science-" or "European science-based" areas due to a high level of science-based local knowledge and a high degree of attractiveness of knowledge coming from other regions. The other regions are mainly qualified as smart and creative diversification areas or smart technological application areas. The eastern regions of the area are qualified as somewhat less advanced innovation areas.

The indicators for **sustainable growth** vary for the Alpine Space TNC area. The wind energy potential of the TNC area is lower than the potential of the EU27+4 and has a high level of diversity within the area. In terms of ozone concentration, the Alpine Space shows more positive values than the EU27+4; however the disparities within the area are high. The TNC area seems to be as vulnerable to climate change as the EU27+4 with high disparities across its regions.

The disparities within the Alpine Space TNC area are also striking when looking at Map 3 which highlights the adaptive capacity to climate change. The north of Italy and the eastern regions of the TNC area show lower capacity to adapt to climate change than the other regions.

The TNC area is generally not affected in terms of fossil fuel consumption by the Directive on the promotion of clean and energy-efficient road transport vehicles. The exceptions are a few regions in the north of Italy and the south of France which seem to witness a moderate positive impact and a few German regions which seem to experience minor impacts.

The Alpine Space area generally shows positive results in terms of **inclusive growth**. The long-term unemployment rate in the TNC area is lower than in the EU27+4. The at-risk-of-poverty rate is lower than in the EU27+4 and the share of persons aged 25-64 and 20-24 with upper secondary or tertiary education attainment is comparable to the rate of the EU27+4. Map 5 illustrates the diversity within the region with regards to the employment rates. Again, the regions at the centre of the TNC area (Germany, Austria and Luxembourg) experience higher employment rates than the outer regions within the Alpine Space area. In all four ESPON DEMIFER scenarios (Map 4), the north-eastern regions seem to experience more negative changes in labour market forces by 2050. Only in the scenarios "Growing social Europe" and "Expanding Market Europe" the changes in labour force seem to have positive outcomes also in Austria and the southern regions of Germany.

1.1 Smart Growth

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.

Within the alpine TNC, the R&D investment registers national and infranational variations. The regions with the highest investments in R&D are agglomerated in Southern Germany, South-Eastern France, Central and Western Austria and the Western part of Slovenia, while the lowest shares are in Northern Italy (Bolzano, Vale d'Aosta) and eastern Austria (excepting Wien region)

As the share of R&D expenditures on GDP and human capital endowment are often used as indicators for knowledge and innovation creation, these regional variations can be interpreted in relation with the territorial patterns of innovation and some key findings of the ESPON-KIT project, such as:
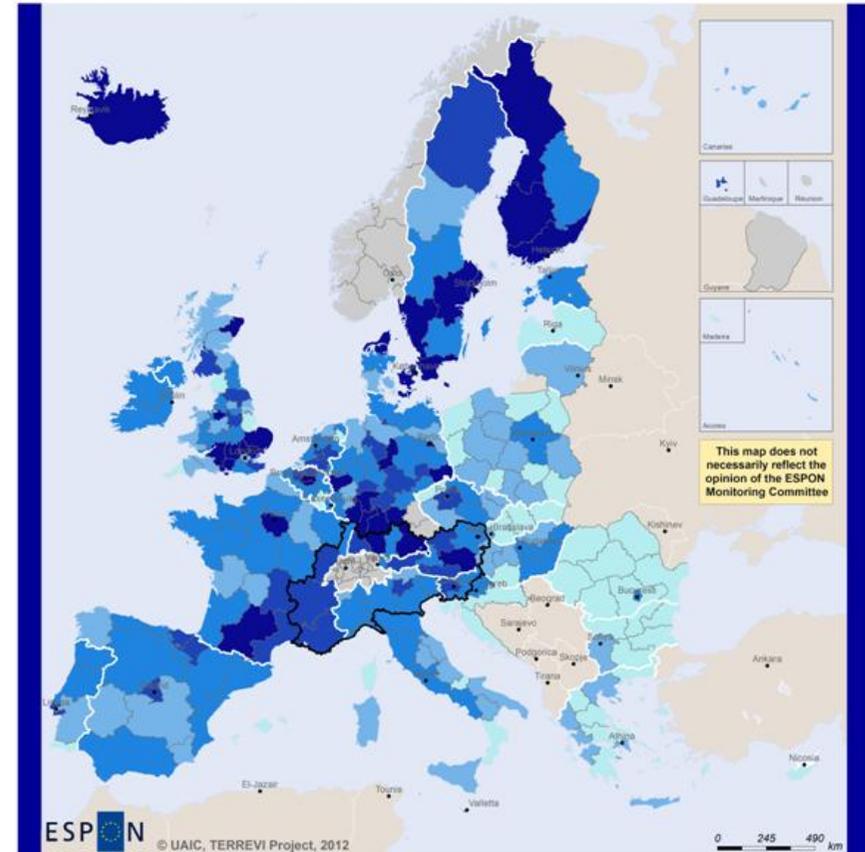
Total Intramural R&D Expenditure (GERD) Percentage of GDP (2009)

- < 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- > 3.01
- no data
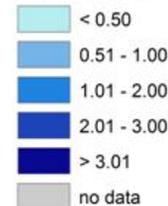
Map 5 Total Intramural R&D Expenditure (GERD)

1. R&D expenditure has different territorial impact in terms of innovation. In average, 1 percentage point increase in R&D leads to 0.18% increase in innovation. Though, 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 (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 (the Applied Science Area type).

2. 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 3 and 2 in Map 3.2., the case of German regions – Tubingen, Oberbayern). This confirms that the knowledge endowment relies upon tacit knowledge and that it is embedded into human capital, entrepreneurial and creative attitudes.

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. But this average effect hides a greater variety of behaviours across regions.

3. 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).

4. The innovation benefits stemming from additional investments in R&D and education are unevenly distributed among EU member states and specifically accrue to EU15 countries, being negligible in EU12 countries. Similarly, 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). Lastly, especially metropolitan areas seem to benefit from additional R&D and human capital to improve their innovative performance (p.173).

The AMCER ESPON project (AMCER Interim Report, p.17-23) brings some interesting partially findings regarding R&D expenditure and regional Innovation systems:

R&D-related indicators show that PACA region is relatively active and above, or at least in line with, the EU average. This region already put a relatively strong emphasis on knowledge-driven development, at least in some key sectors. PACA is relatively medium-high to high-tech oriented.

Extract, case studies, General Conclusion, p.19 -23.

PACA: RIS shows a network governance system with dirigiste features and a globalised business innovation dimension. RTDI support takes place on different levels. The regulation of competences between PACA and the national level, as well as the role of the different actors, is ensured by the state-region contract. Although in this way PACA has a certain degree of autonomy, the state level is still very active in the region in research and innovation. PACA's research competences are quite broad in nature, but R&D activities are highly influenced by the BES. The BES, however, is highly dominated by large extra-regional and often foreign enterprises, supported by a network of SMEs operating as subcontractors or suppliers. The actors are specialized in medium-

high and high-tech activities and highly spatially concentrated. Most SMEs have rather limited abilities to participate in research and innovation activities and the region generally lacks SMEs of intermediate size. Although research and innovation is largely internal and private rather than public, the public sphere as well as its infrastructure is of great importance for the overall attractiveness of the region. However, the region suffers from a persistent gap between R&D actors (public and private) and the wider business sphere. The regional authorities are aware of the weaknesses in terms of research and innovation activities of the local SMEs. Therefore, they have developed measures in order to address these problems and the resulting gap between research and the overall economic sector or production system.

Employment in knowledge – intensive services

A West-East gradient is obvious for this indicator, with mean values generally decreasing from West to East. A secondary gradient is also visible, indicating stronger shares of knowledge employment in Central Europe (represented in this case by German, French and some Austrian regions) and Southern Europe (Italian regions).

Regional variations of knowledge employment are mostly related to economic specialization, industrial traditions and investments in human capital.

This map was produced for the ESPON TerrEvi project.

Employment in Knowledge-Intensive Services as Percentage of Total Employment (2010)

- < 18.0
- 18.1 - 26.0
- 26.1 - 34.0
- 34.1 - 42.0
- 42.1 - 50.0
- > 50.1
- no data
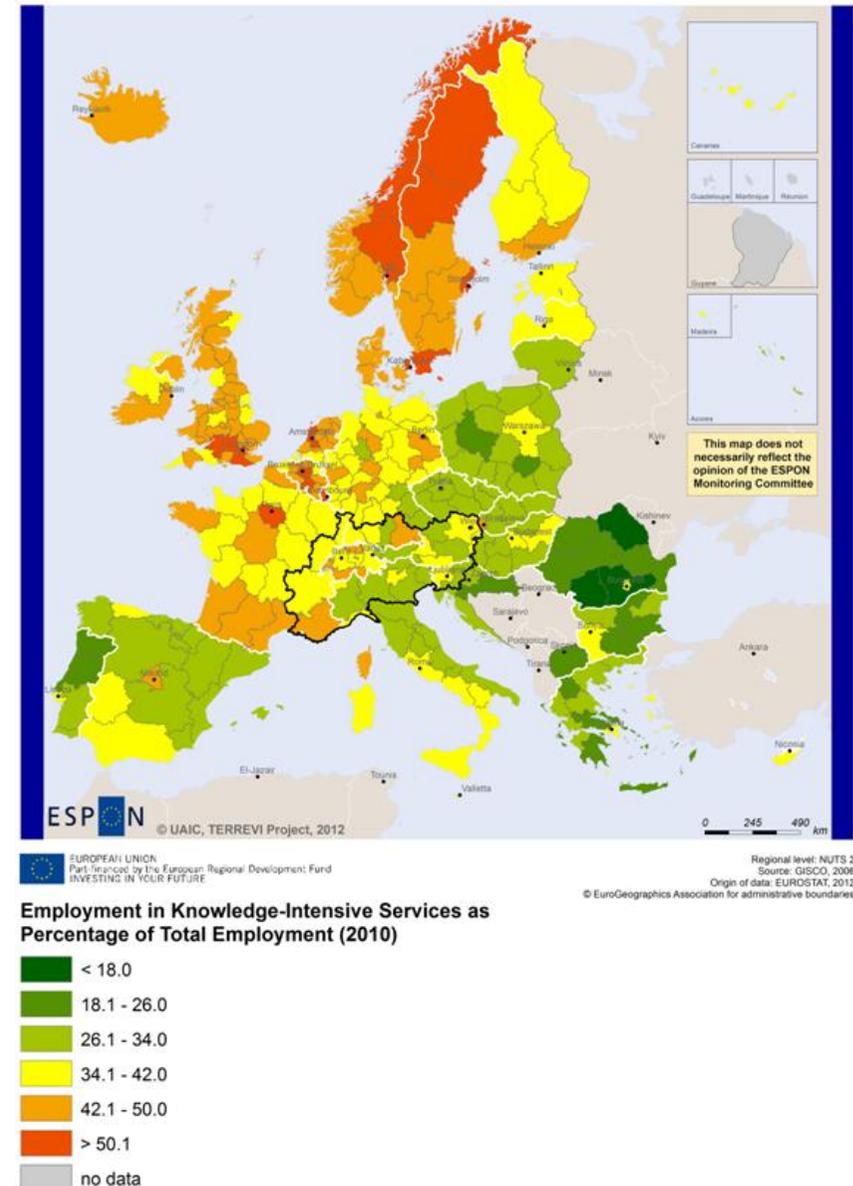
Map 6 Employment in Knowledge-Intensive Services

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 (Eurostat 2012).

The map of high speed internet connection does not represent the values for Switzerland, but only for UE NUTS 2 divisions. In this case, none of the regions of this TNC have a very high average of the high-speed internet connection. Furthermore, the disposal of the values profiles a north-south cleavage. The French, German and partially Austrian regions show a relatively homogeneous high value division, while Northern Italy present a rather consistent lag, with only moderate or even low values of high-speed internet connection average.
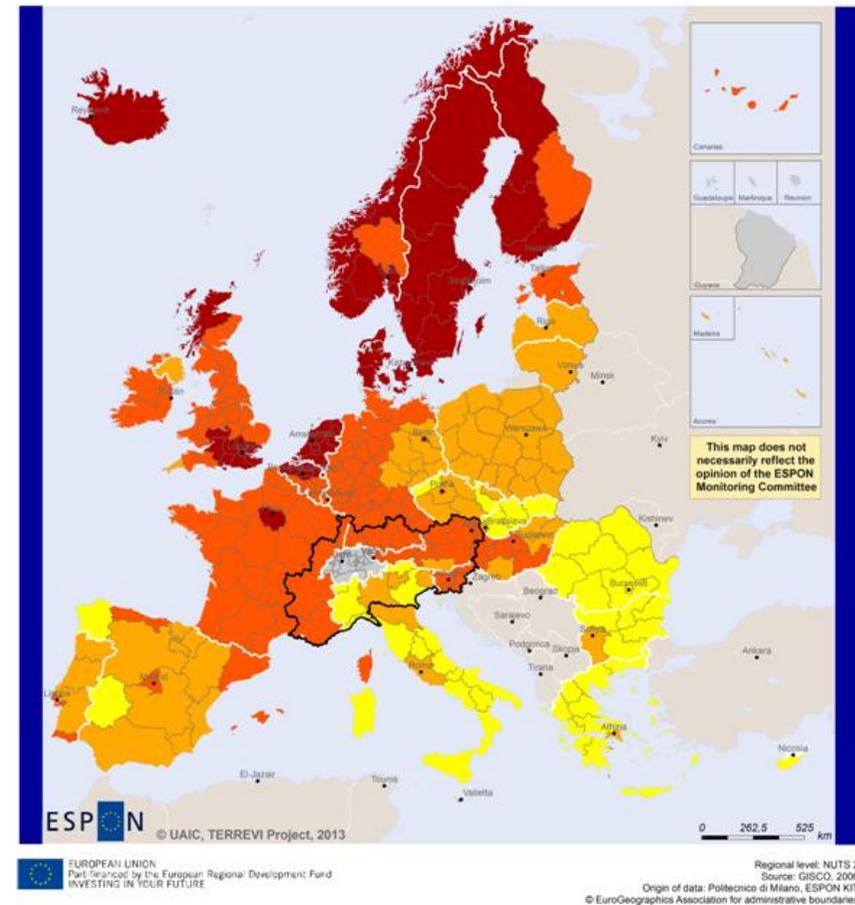
Households using a broadband connection (Average percentage over 2006-2009)

- Low (9,00 - 29,50)
- Moderate (29,51 - 42,25)
- High (42,26 - 61,00)
- Very High (61,01 - 84,00)
- no data

Map 7 Territorial Dynamics in Europe – Trends in Internet Roll-out (ESPON, territorial Observation No. 4, April 2011)

Regarding the percentage of individuals regularly using the internet, as for 2012 (Eurostat statistics), Germany, France and Austria are significantly above the EU average (DE – 78%, FR 78%, AT 76%), while Slovenia and Spain have percentages below the EU average (70%),Italy being only at 53%, only Greece, Bulgaria and Romania being below this value in the entire European Union. This gap between the northern and the southern states of the Alpine Space seems too big to be filed in the near future, but the last 10 years evolution (Italy and Slovenia doubled the percentage of individuals regularly using the internet) promises a good trend for the southern states.

Territorial pattern of innovation

ESPON-KIT project: *Different territories have different territorial patterns of innovation* (see map bellow). 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.

A north-south gradient can be observed in this TNC, with an agglomeration of clusters 4 and 5 in German and Austrian regions and clusters 3 and 2 well developed in Italian and French regions. Cluster 1 is only present in Northern Italy (Bolzano).

CLUSTER 5: EUROPEAN SCIENCE-BASED AREAS – the most knowledge and innovation intensive regions

Location: Southern Germany and Wien region.
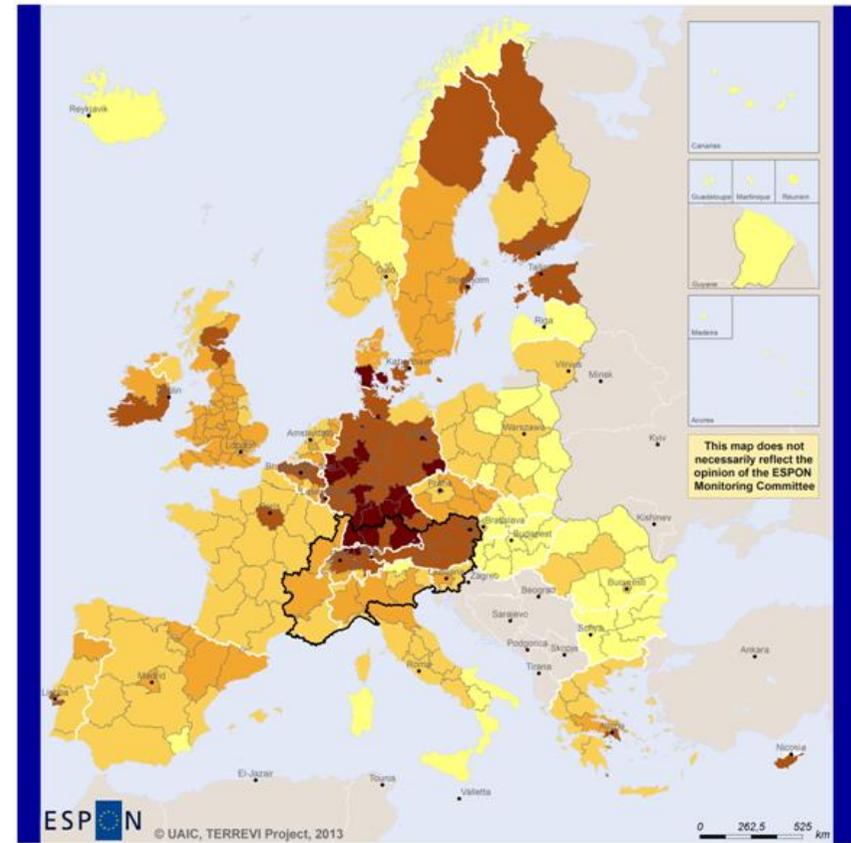
Map 8 Territorial Patterns of Innovation

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.
Location: agglomerated in Austria and Southern Germany.
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 3: A SMART TECHNOLOGICAL APPLICATION AREA

Location: Italy (Lombardia, Piemonte, Veneto), Eastern France (Alsace, Rhone-Alpes) and Western Slovenia.

Features: close to cluster 4 in terms of size of the knowledge base and its characteristics (i.e. relevance of GPTs, generality and originality), with greater endowment of embedded knowledge in human capital (i.e. capabilities) but with a different innovation profile: a *strong orientation towards product innovation*, *weaker than cluster 4 in terms of process innovation* (but above the EU average), week *performers in terms of marketing and/or organizational innovation*.

- medium regional preconditions for knowledge and innovation creation: high accessibility and collective learning; high entrepreneurship (higher than EU average)
- very good preconditions for knowledge and innovation acquisition: high creativity and attractiveness, high receptivity (above EU average).
- very good capabilities and innovation potentials (better than clusters 4 and 5).

Opportunities: these regions experience the *greatest advantage in terms of product innovation*, accompanied by a high degree of knowledge potential flows and *internal preconditions to translate external knowledge into innovation*, thanks to high creativity. These regions should be able *to efficiently translate internal and external knowledge into new specific commercial applications*. They could

achieve the level of cluster 4, by co-invention of application, as result of internal creativity and external basic knowledge.

Policy recommendations: Normative interventions should strengthen these peculiarities and push this group of area to become the '*smart technological application*".

CLUSTER 2: A SMART AND CREATIVE DIVERSIFICATION AREA

Location: France (Provence Alpes Cote d'Azur), Northern Italy and Eastern Slovenia.

Features: not significant knowledge potential, but capabilities and innovation potentials well above the EU average.

- the highest capabilities. 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
- knowledge and innovation variables under the EU average
- strong creativity and attractiveness (above EU average) that help to absorb and to adopt innovations developed elsewhere.

Opportunities: 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 clusters 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.

CLUSTER 1: A CREATIVE IMITATION AREA

Location: only in Provincia Autonoma Bolzano.

Features: a rather narrow knowledge and innovation profile (the weakest performers)

- key assets: strong entrepreneurship, creativity, the highest attractiveness, capabilities and innovation potentials above the EU average values.

Opportunities: Their strengths can be enhanced and supported to creatively embrace *new adoption, imitation and innovation strategies.* For this reason, these regions can form a "*creative imitation area*" in Europe. These assets have a high potential to turn this area into a smart and creative diversification area.

The efficiency of this imitative innovation pattern can be high, giving rise to strong positive feedback loops from growth to innovation through higher financial resources to invest in the innovation process. The high rate of growth can produce higher living standards and higher quality of life in these countries. The ways through which innovation is attracted from outside the region may evolve in a second stage towards other channels like mobility of inventors that find their determinants in economic growth potentials, in expected high wages and in high quality of life potential.

Policy orientations: normative intervention should help exploiting creativity and entrepreneurship for increasing indigenous innovation activities, and not only for imitative innovation.

Regions can be creative and fast in the imitation phase, by deepening and improving productivity in existing uses, by adapting existing uses to the specific local needs, by adjusting products to local market interests, by forging innovation processes on local productive needs.

In the case of more passive regions that imitate innovation from outside as conceived elsewhere, policy actions have to be devoted to achieve the maximum return to imitation, and this aim is achieved through a *creative adaptation of already existing innovation, i.e. through adoption processes driven by creative ideas on the way already existing innovation can be adopted to reply to local needs.*

For further documentation on the Alpine Space TNC: see the case study: *The automotive sector in Piedmont (*ESPON-KIT project, vol.2, case studies, p.17).

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 just partly viewed as useful by the workshop participants comprising members from the Managing Authority and the Joint Technical Secretariat of the Alpine Space Programme. Anyhow the participants started a fruitful discussion focusing on how at least some of these indicators can be used at the level of programming and implementation. Some aspects of the discussion:

- Dated or obsolete data. Relatively old data sets are difficult to explain the baseline context especially now that planning for the new programming period takes place. Although it is clear that data collection and harmonisation needs considerable time some indicators date back to more than five years and this is definitely not ESPON's problem.
- In general the set of indicators proposed for ESPON was discussed as interesting and well prepared but in some particular areas not the most obvious ones for the Alpine Space.

Finally, an absence of indicators was noticed in terms of knowledge intensive services and two inputs were proposed in this field.

Programming steps

Focussing on details concerning the five programming steps, some of the reviewed indicators are relevant for the needs analysis and the stakeholder consultation. The indicator "Territorial pattern of innovation" has been chosen as very useful in needs analysis and stakeholder consultation for the Alpine Space TNC programme.

In case of "Employment in knowledge intensive services" all five steps have been identified as "something to discuss". The participants named this indicator as a relevant one for all five but on the other hand not exactly fitting into the programme needs.

Regarding the R&D indicator and the high-speed internet connection no special use for the programme has been identified.

Further Suggestions or Remarks

Clustering	- For the indicator "Employment in Knowledge intensive services" the participants of the workshop were missing something aiming at cluster-building
Internet for tourism	- High-speed internet connections have been identified as not any more relevant for the Alpine Space. What was mentioned is, that something specifically tackling internet products in the field of tourism

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.

Wind power 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.
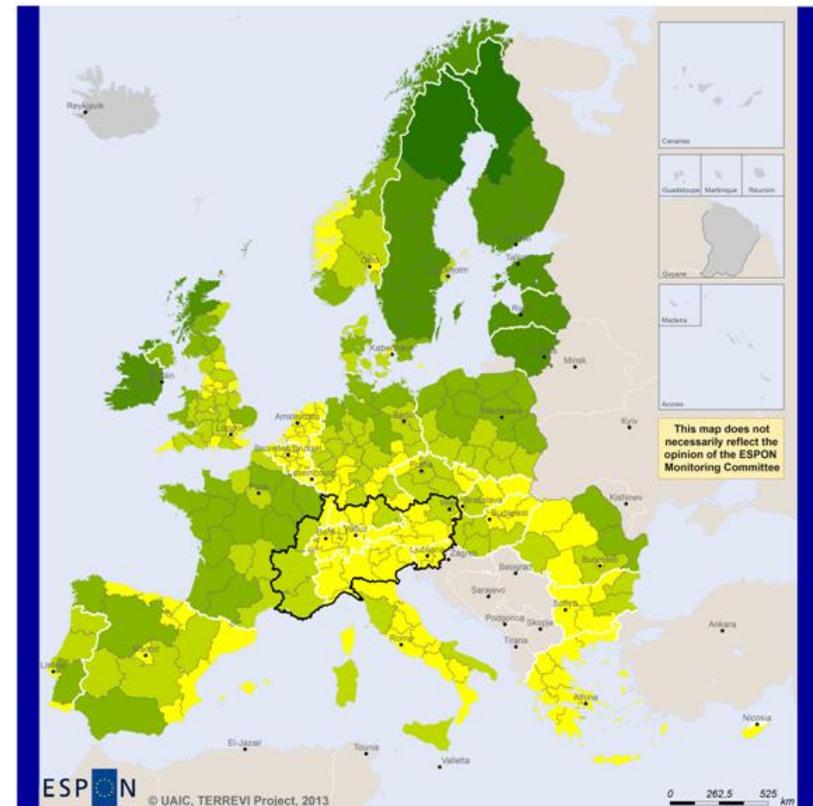
Map 9 Wind Energy Potential

Wind power potential is measured in m/s, but the ReRisk indicator also accounts for the area size of the regions (km2).

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_2 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. 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.

In case of the Alpine Space area, wind power potential map highlights the regions with the greatest wind power potential, with high wind speeds and large area size. Most of Alpine Space has relatively low wind power potential, when one considers the European average. It can be noticed that the areas situated in North have higher wind power potential than the ones located in South and Alpine Space.

Wind energy potential in mountainous areas
Only a limited number of wind farms are installed in mountainous areas. In mid-2004, for instance, 1.5 % of turbine capacity was installed in mountainous countries in Austria, France, Italy, Slovenia and Switzerland (Winkelmeier and Geistlinger, 2004).

Lower accessibility of mountainous areas and the limited roads and grid connections result in less favorable conditions for wind farms. However, there are wind turbines at high altitudes. For instance, the highest large-scale wind park was situated at 2330 m in Switzerland in 2004.

Because of the limited wind farms at high altitudes there is not much extended research on the impact of the lower accessibility. Only one EU research project has been identified that considered the impact of wind farms in alpine area: Alpine Windharvest (see Winkelmeier and Geistlinger, 2004).

This map was produced for the ESPON ReRisk project.

Ozone concentration

In the **INTERCO** project *the Ozone concentration* is proposed as territorial cohesion indicators. 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.

The highest number of exceedances occurs frequently in the Mediterranean region, the lowest in northern Europe (Map 10)

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.
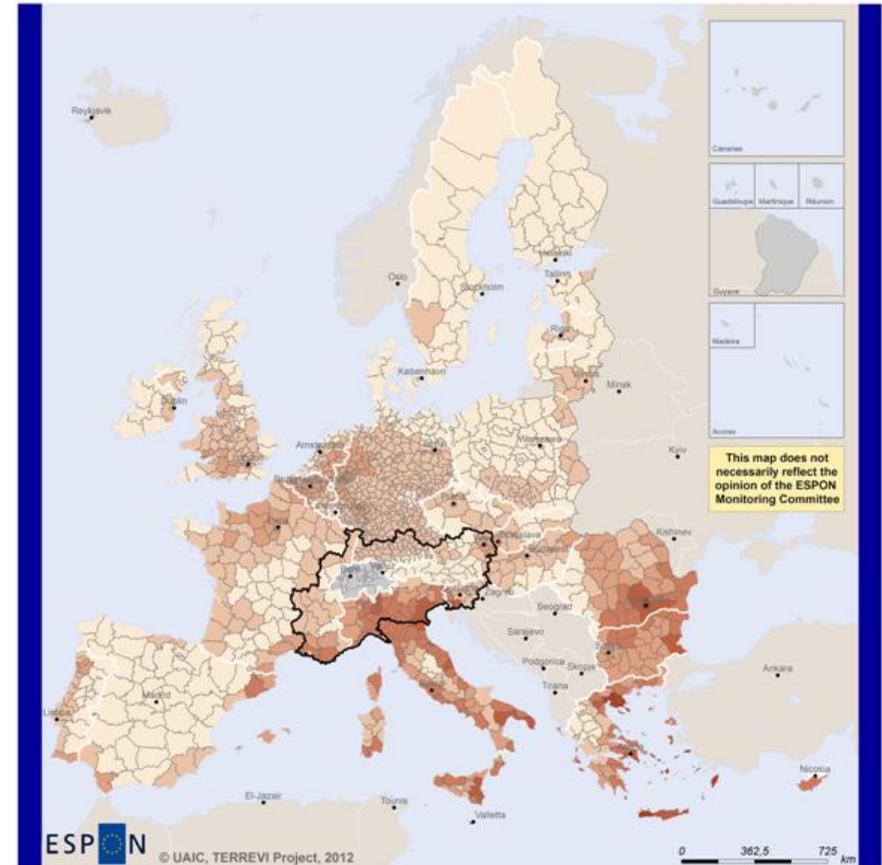
Days with Ozone concentration exceedances

- 0 - 5
- 6 - 10
- 11 - 20
- 21 - 40
- 41 - 60
- 61 - 115
- no data
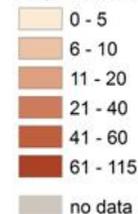
**Map 10 Ozone concentration exceedances**

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_X emissions are generally lower than in the countryside.

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

In The Alpine Space region there is a north-south gradient for the ozone concentration (Map 10), according to climate vulnerability. The highest values are in northern Italy, the widest area in terms of significant exceedances. The regionalization of Europe established by EEA according to the impact of climatic conditions on ozone concentrations) also highlights this variability. Besides the influence of climatic factors (mainly temperature), the distribution of ozone is nuanced by the localization of urban areas - the main sources of ozone precursors through transportation and industrial activities.

In 2008, The Alpine Space region was above the European average in terms of long-term objective (LTO) for the protection of human health (12.3 days with exceedances of LTO on average, compared to 8.5 days exceeding the LTO across Europe). The situation is due to considerable values in northern Italy (between 21 and 115 days with exceedances of LTO, in contrast to southern Germany, Austria, Slovenia or eastern France which, in general, have up to 10 days with exceedances of LTO). The distribution of values that exceeded the information threshold (IT) – shows also northern Italy as a high risk area for ozone pollution in The Alpine Space region.
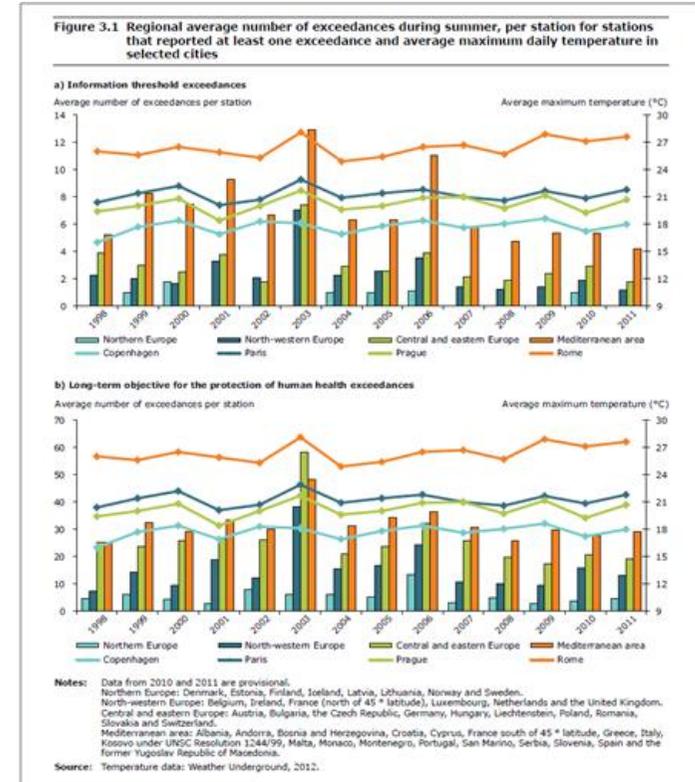
Figure 2 Regional average number of exceedances during summer, per station for stations that reported at least one exceedance and average maximum daily temperature in selected cities

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[3] quick check is done in nine steps using expert knowledge and a set of standardised indicators and types of regions.

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[3] TIA – Territorial Impact Assessment

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.

Territorial Impact of the 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 standardized 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 channeled 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 channeled 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**).

Various environmental exposure fields are hit in branch of this directive, namely reduction of CO_2 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 CO_2 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 specialized 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, and 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.
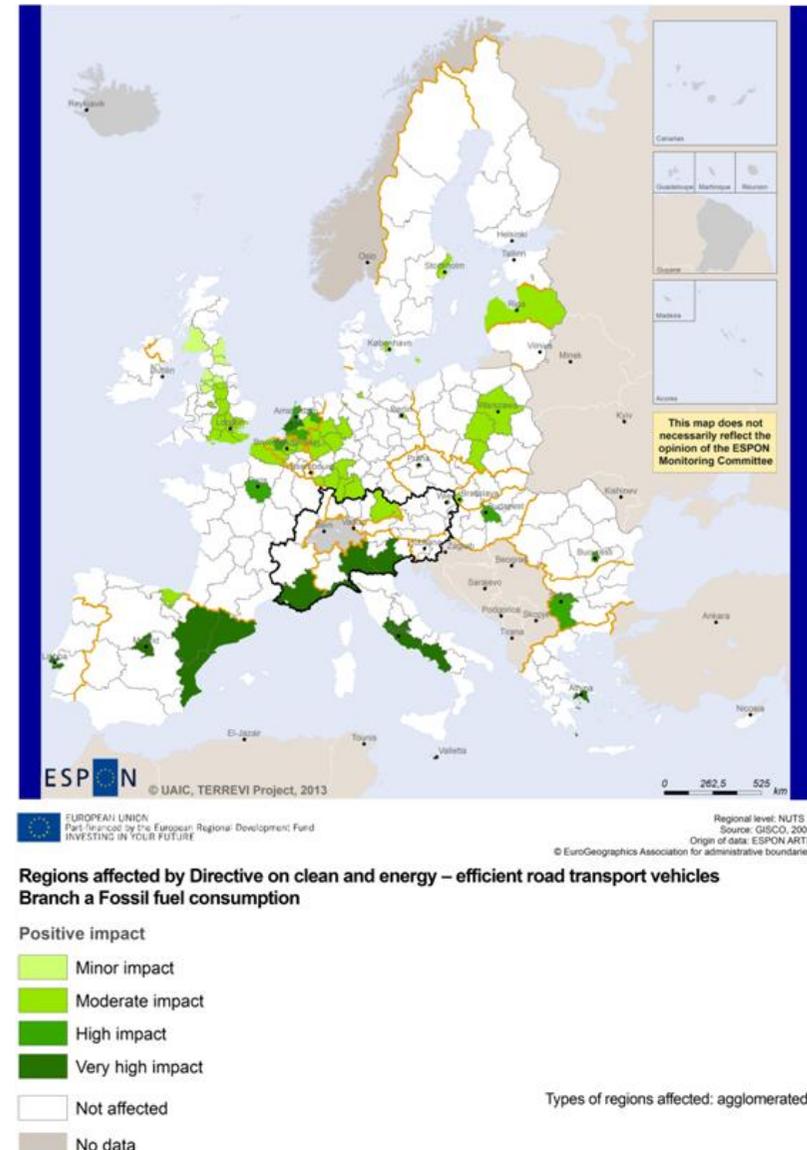
Map 11 Regions affected by Directive on clean and energy – efficient road transport vehicles branch a Fossil fuel consumption

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

Positive impact

Minor impact

Moderate impact

High impact

Very high impact

Not affected

No data

Types of regions affected: highest share of employement in automotive
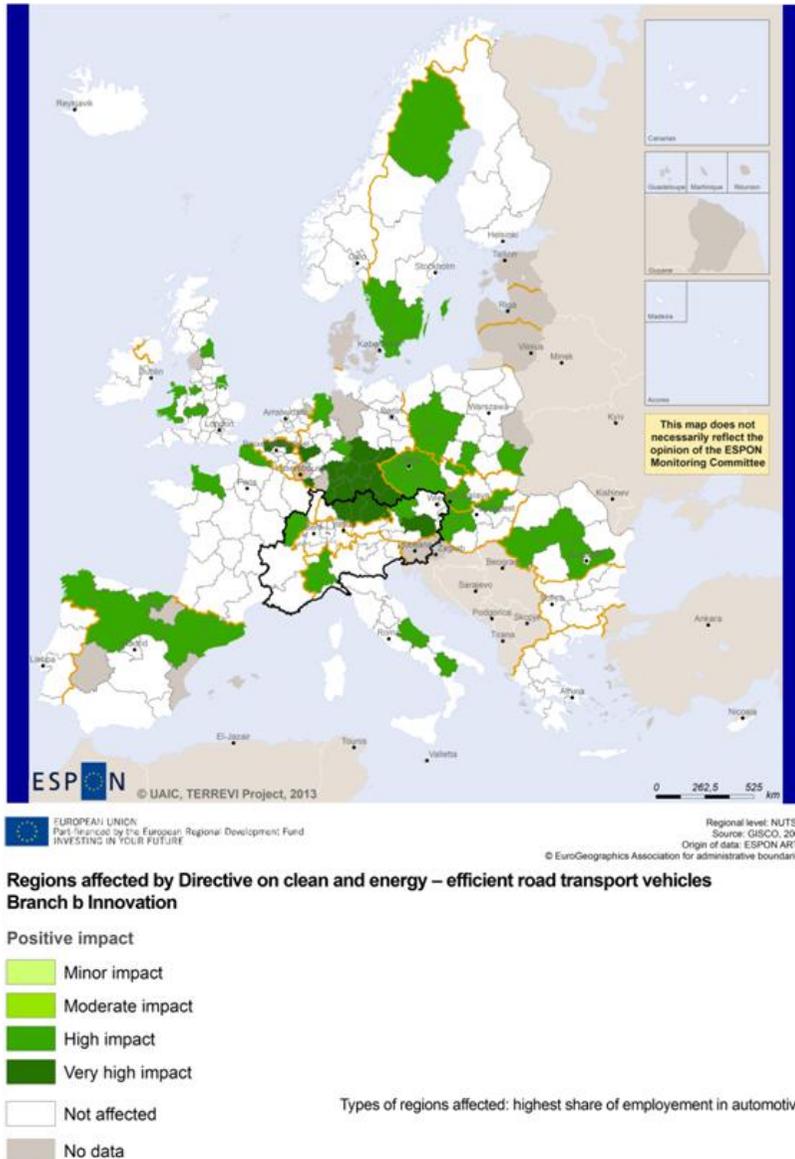
**Map 12 Regions affected by Directive on clean and energy –
efficient road transport vehicles branch b Innovation**

Lastly, impact on fossil fuel consumption 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).

In the Alpine Space region, the effects of *the Directive on clean and energy–efficient road transport vehicles branch a* on the consumption of fossil fuels are visible only in southern France, northern Italy and southern Germany, where the positive impact is moderate, respectively minor in the last case.

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.

The map of adaptive capacity shows the adaptive capacity that European regions possess across the continent. Overall, there are variations in adaptive capacity between countries and within countries. At the European level, there are several trends that can be seen from the map. Firstly, in analysing the maps, a difference in adaptive capacity can be distinguished between Northern Europe and Southern Europe. Overall, the Nordic countries have higher capacity than most of the Southern European countries. Most of Western and Central Europe have a relatively high capacity when one considers the European average. In comparison, Eastern European countries, on the whole, have lower capacity than Western or Northern European countries. Overall, the countries around the Mediterranean appear to have lower capacity than the countries around the Baltic Sea region. Similar trends can also be identified at the country and regional level throughout Europe. Firstly, it can be noted that in all countries, capital city regions, overall, have higher capacity than most regions within that country. This is also true, even in cases where the country itself as a whole has lower capacity.

This map was originally proposed by the ESPON CLIMATE project and has been re-produced in the ESPON TerrEvi project.
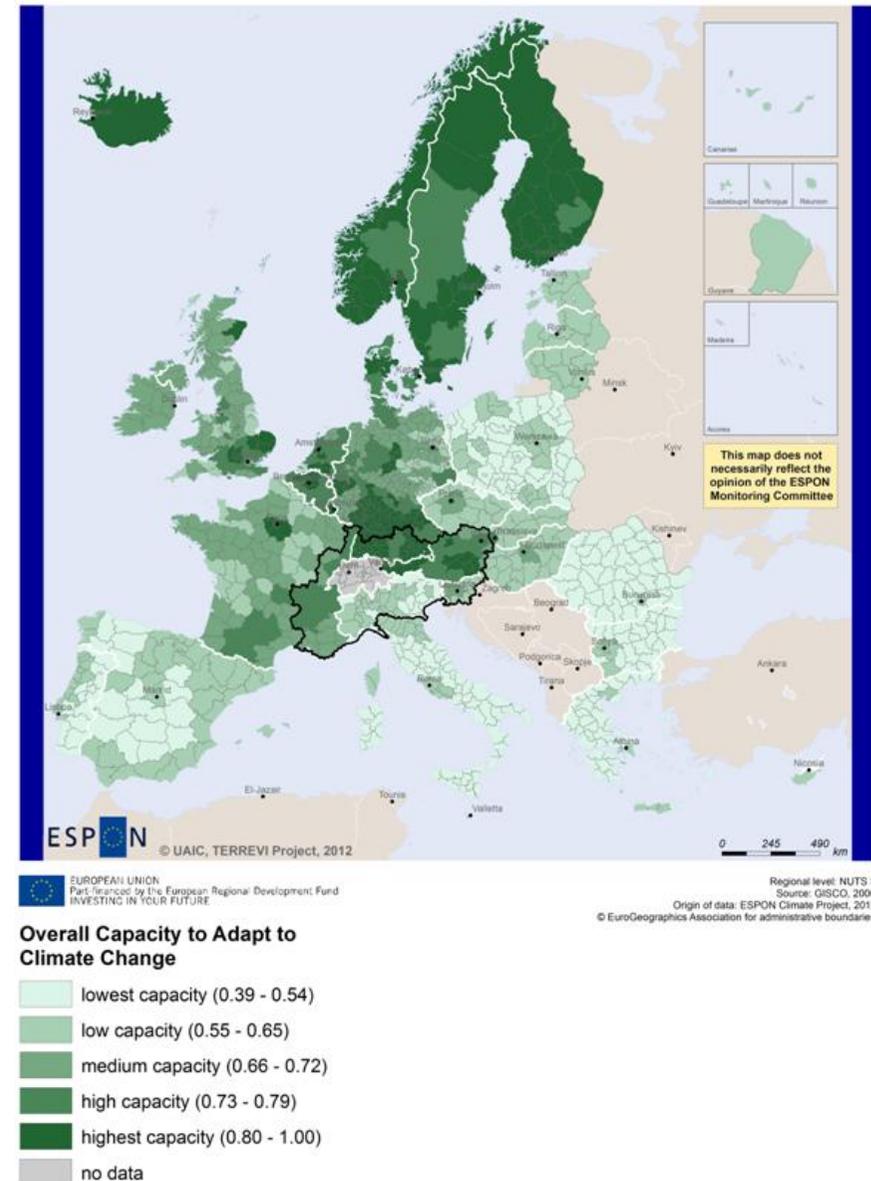
Map 13 Combined adaptive capacity to climate change

The regional variation within countries also shows how within some countries, existing regional patterns are reflected in the way that adaptive capacity is spread across the countries. North-South or East-West divisions can be seen in the maps in that they reflect the overall development patterns. Those regions, which are less developed, can also be seen to have less adaptive capacity.

It is also possible to analyse the adaptive capacity of European regions in terms of the dimensions of adaptive capacity, hence focusing on awareness, ability and action. For Eastern Europe, all three dimensions are lower than in other parts of Europe and for significant differences exist between the three different dimensions. Although indicators used for measuring action are the consistently low across the regions within Eastern Europe. The Mediterranean region overall has lower capacity than the more Northern regions in Europe.

Capital cities also emerge as having high adaptive capacity from the aggregated map.

Potential vulnerability to climate change

In order to determine the overall vulnerability of regions to climate change the impacts and the adaptive capacity to climate change were combined for each region. The underlying rationale is that a region with a high climate change impact may only be moderately vulnerable if it is well adapted to the anticipated climatic changes. On the other hand, high impacts would result in high vulnerability to climate change if a region also has a low adaptive capacity.

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.
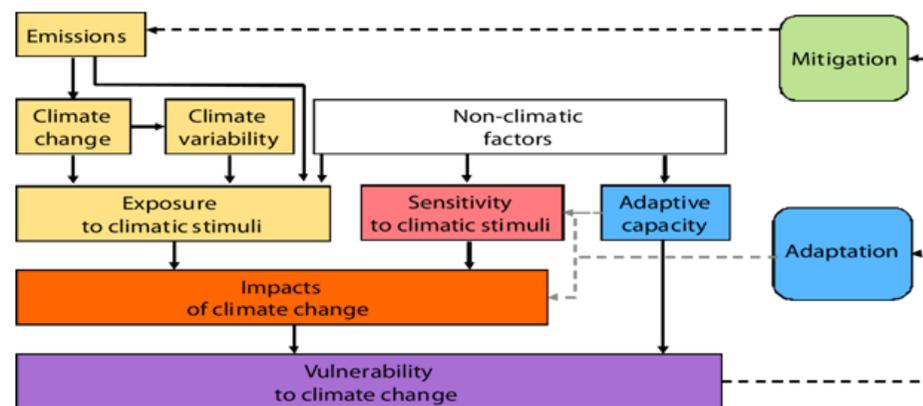
**Figure 3: ESPON Climate Change research framework**
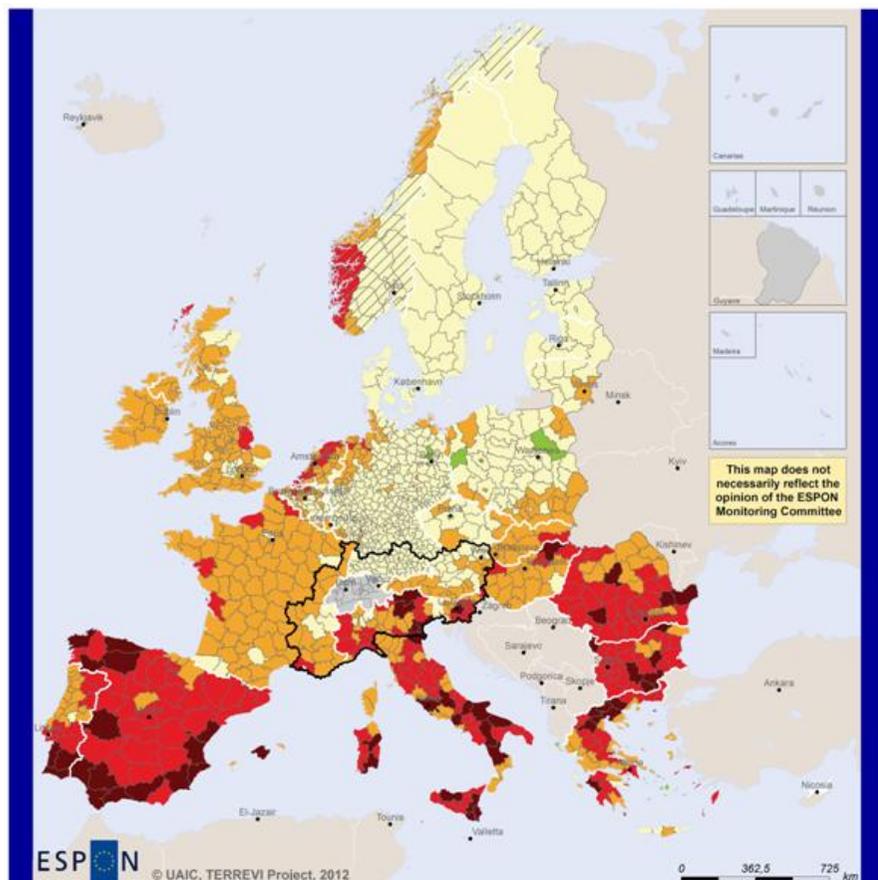
Map 14 Potential vulnerability to climate change

Potential vulnerability to climate change

- low positive impact (-0,25 - -0,1)
- no / marginal impact (-0,1 - 0,1)
- low negative impact (0,1 - 0,3)
- medium negative impact (0,3 - 0,5)
- highest negative impact (0,5 - 1,0)
- reduced data
- no data

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. 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. Climate vulnerability is distributed unevenly across the Alpin Space region. The West side is dominated by low increase, while the Southern area is marked by medium and high increase. In the East the increase of climate vulnerability is low or is absent.

Potential future cross border cooperation (INTERREG IVA) could enhance climate change adaptation capacities. These could especially focus on close cooperation on climate change adaptation and mitigation concepts. Especially in climate change adaptation competition or contradicting adaptation in cross border areas can be avoided by such cooperations. Regarding the adaptation policy (*Massey, Bergsma,* 2008) for the Alpine Area, landscape and water management are the most important aims, followed by biodiversity, management and food security.

For more details on the Alpin Space potential vulnerability to climate change see ESPON Climate Project – Final Report -Annex 1.

Study case on Alpine Space Operational Programme

Climate change issues identified by current operational programmes	Climate change stimuli and impacts affecting sectors (identified from ESPON Climate project)s	Relevant area of intervention, current and proposed.	Climate related criteria for further operational programme area development
• Alpine hazards • Floods	• Floods • Flash floods • Changes in precipitation / evaporation patterns	• Climate change is affecting the Alps earlier and rather more severely than the rest of Europe. Coping with effects of climate change in all aspects (from changing river systems to changing cultural landscapes) will be a major challenge for the cooperation area (…) • *Holistic approaches to identify impacts of climate and global change (including demographic changes), with a special focus on future development scenarios, including tourism, agriculture, urban expansion and infrastructure.*	• Diversification of tourism, also interlinked with water scarcity • Integration of sustainable cross-border adaptation and mitigation concepts • Options of enhancing synergies to avoid conflicts (especially on adaptation measures) • Over regional and transnational water management approaches, especially focusing on the Alps as a "water tower".

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 Alpine Space 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).

This map was produced for the ESPON TerrEvi project.
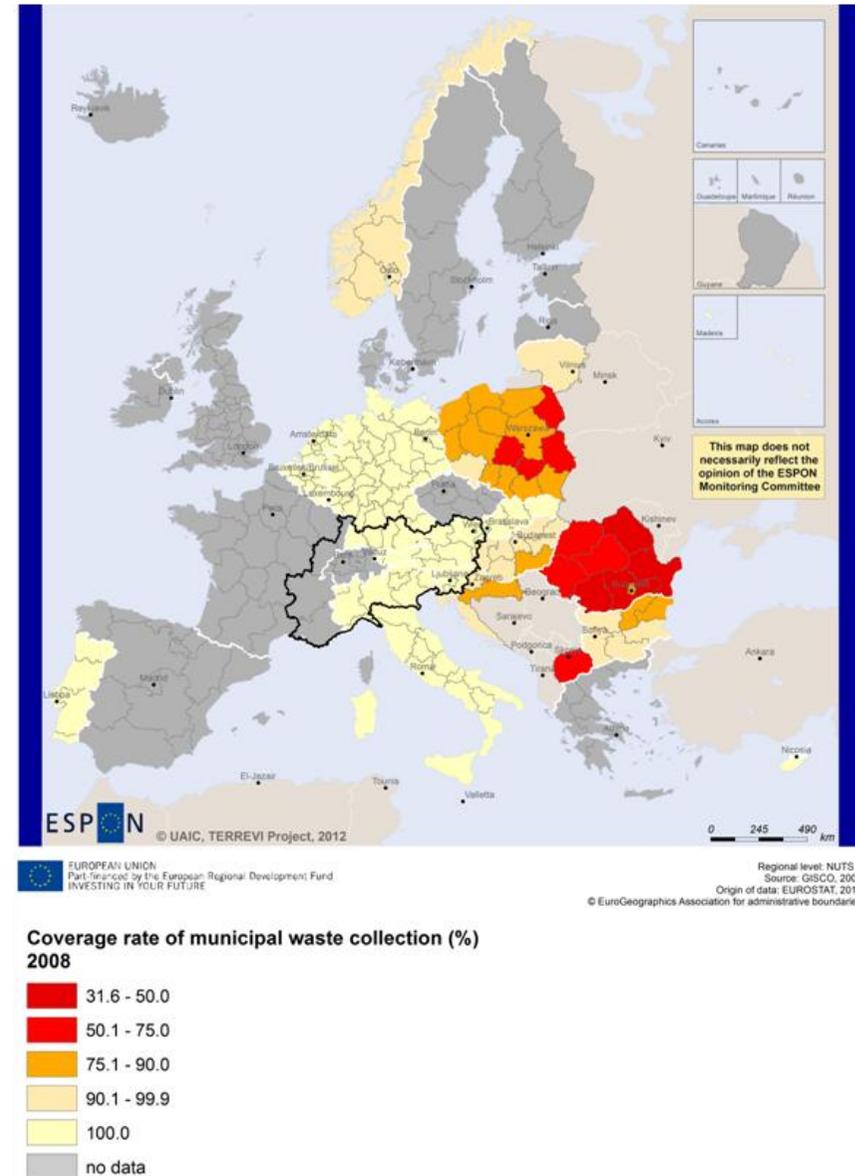
Map 15 Coverage rate of municipal waste collection

The situation is significantly different when waste management performance is evaluated globally, like it appears from European Commission report from July 2012: Germany, France, Austria are included in the group of the Member States that are above average performing as regards the majority of key elements essential for good waste management, while Slovenia is an average performing Member States and Italy is included in the group of states with the largest implementation gaps.

Results and feedback from the workshop

In general the indicators under the sustainable growth section were considered as more relevant for the Alpine Space programme than in the other two sections of this evidence pack. Besides the fields' ozone concentration and waste collection, all other issues led to fruitful discussions and relevant aspects for the Alpine Space.

- Especially looking at the topic climate change and vulnerability to climate change certain suitable aspects have been discussed. Also wind power potential and territorial impact of fuel consumption created relevant inputs for the participants of the workshop.

Finally the discussion on sustainable growth indicators led the group to propose a couple of specific aspects which could be useful in this section from their perspective.

Programming steps

Concerning the programming steps, the reviewed indicators are in principle relevant for all five stages. For wind power potential and fuel consumption certain modifications would be necessary, in general the relevance of the indicators in all five programming steps is given.

Regarding climate change and vulnerability to climate change obvious matching has been identified for needs analysis, the discussion of thematic priority and stakeholder consultation. Relevance for result indicators and project selection have been discussed, under certain circumstances also in these two stages the climate indicators could be useful.

Further Suggestions or Remarks

Wind power potential	- Alternative energy potential is an issue for the Alpine Space but more indicators about different options apart from wind energy would be interesting for the programme (e.g.: water)
Territorial impact on fossil fuel consumption of Directive on the promotion of clean and energy-efficient road transport vehicles	- Additional to the proposed indicators the workshop group named certain topics of interest and possible further indicators about: road traffic emissions, renewable energy potential, natural hazards and risk potential, available, renewable, non-energetic resources in the meaning of raw material for products

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.

Change in Labour Force 2005-2050 (ESPON DEMIFER project)

„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"

According the scenario "Challenged Market Europe", during 2005-2050, growth will occur in south-eastern France, northern Italy and western Austria (with values up to 30%), while regions will experience decreases, up to more than 30%.

For the scenario "Expanding Market Europe", there will be recorded increases in most regions (with values even higher than 30%), except for southwestern Germany, southeastern Austria and Slovenia (where reductions will be higher than 30%). A similar situation will occur in the case of the "Growing Social Europe" scenario.

In the case of "Limited Social Europe" scenario, some modest growth will be recorded in south-eastern France and northern Italy (up to 10%), whilst other regions will experience decreases (with even more than 30% compared to 2005).
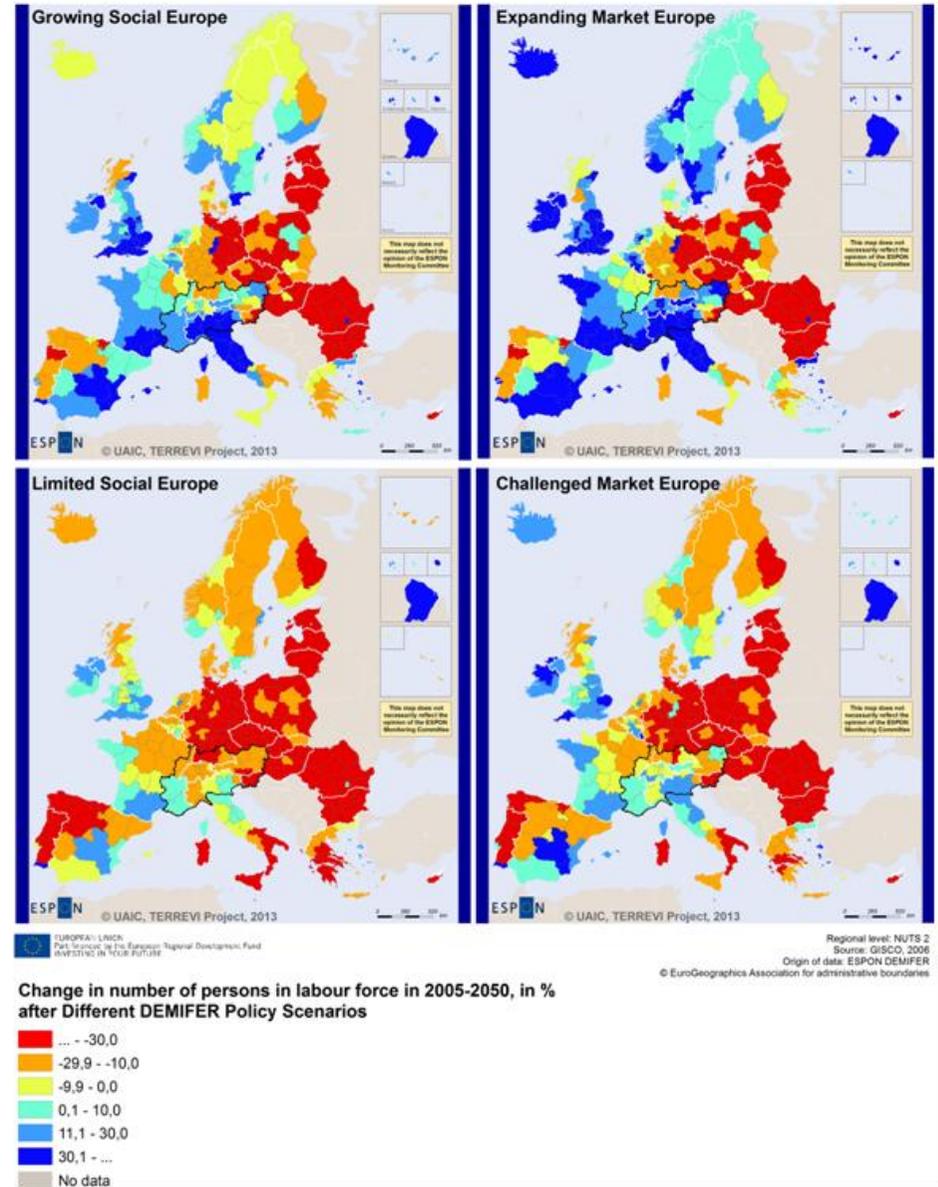
Map 16 Change in Labour Force 2005-2050 (ESPON DEMIFER project)
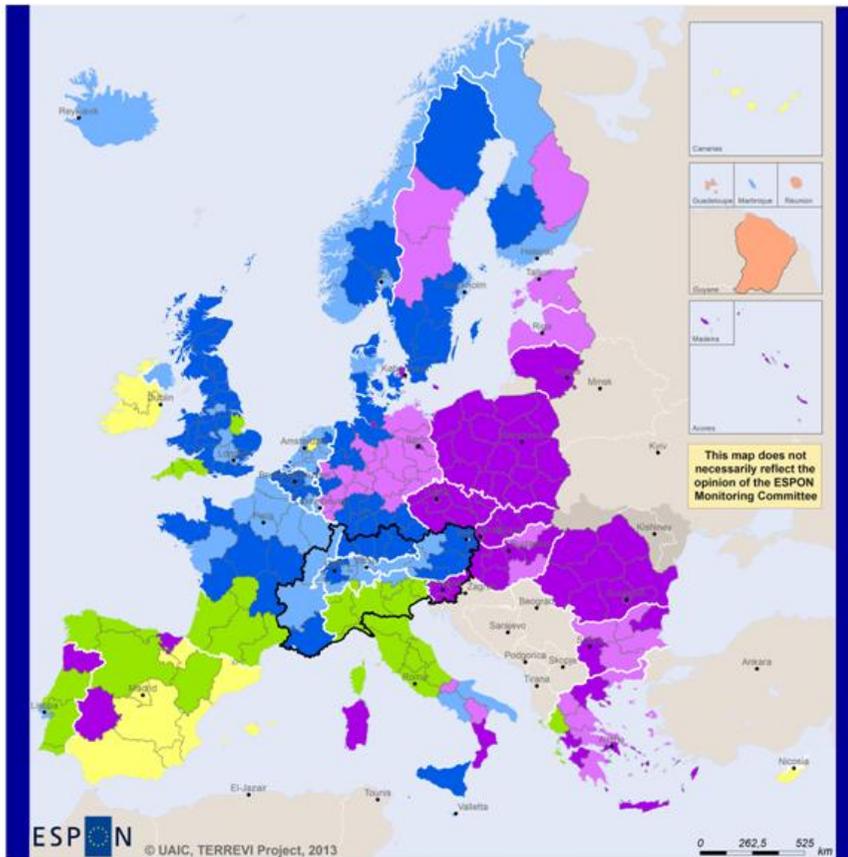
DEMIFER Typology of the Demographic Status in 2005

- Challenge of Ageing
- Challenge of Decline
- Challenge of Labour Force
- Euro Standard
- Family Potentials
- Overseas
- Young Potentials

Map 17 Labour Force Change by type 2005-2050

For all scenarios, southern Germany, eastern Austria and south-eastern France fall within the type of "Euro Standard". Western Austria and eastern France belong to the type of "Family Potentials". Northern Italy belongs to the type of "Challenge of Ageing". Slovenia belong to the type of "Challenge of Labour Force".

These maps were produced for the ESPON DEMIFER project.

Employment rate 2011

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.

This map was produced for the ESPON TerrEvi project.

Employment Rate (2011)
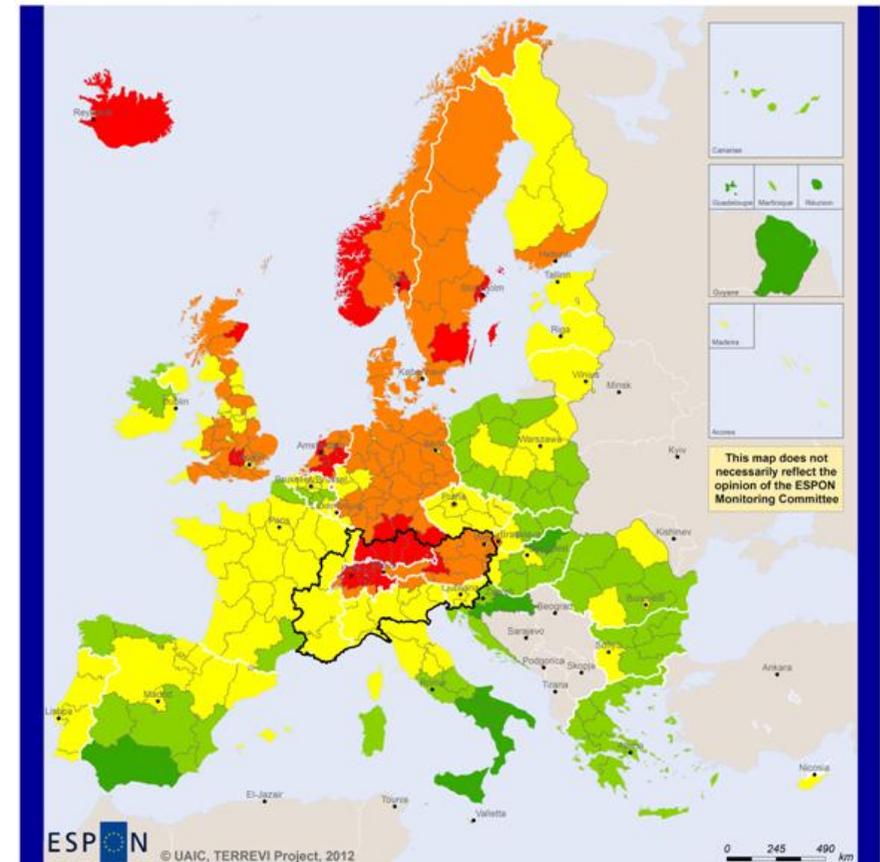
|	
🟩	< 50
🟢	50.1 - 60
🟨	60.1 - 70
🟧	70.1 - 75
🟥	> 75.1

Map 18 Employment Rate 2011

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.
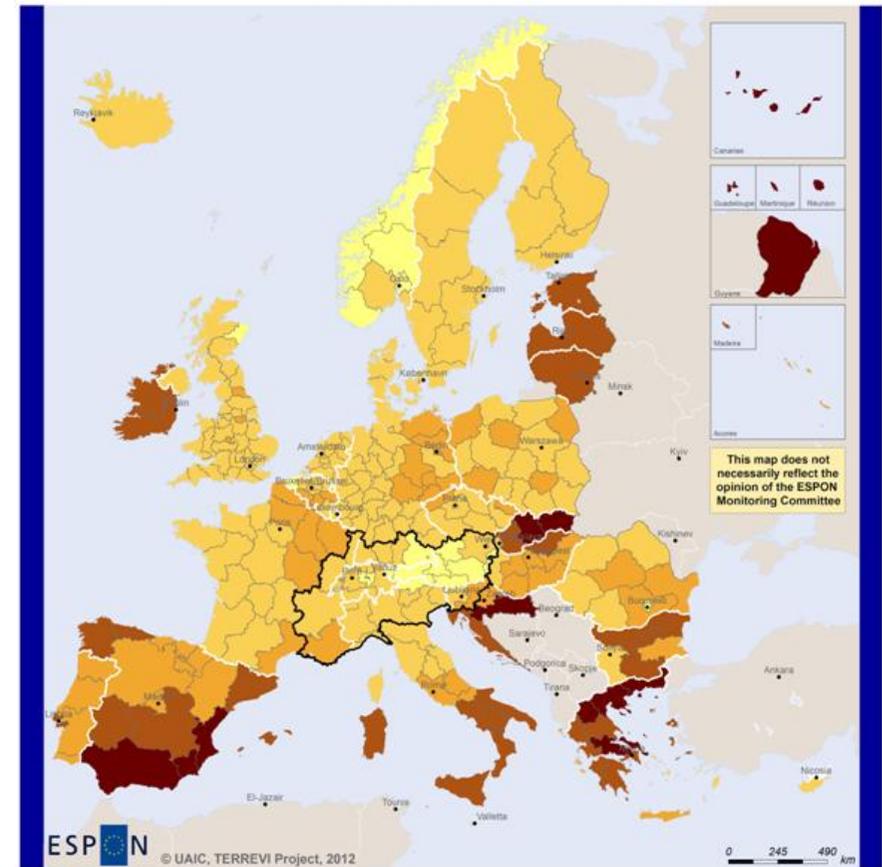
Long-Term Unemployment (12 Months and More) (%) 2011

	< 1.0
	1.1 - 4.0
	4.1 - 7.0
	7.1 - 10.0
	> 10.1
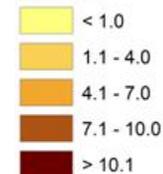
Map 19 Long term unemployment rate within Alpine Space TNC

Persons aged 25-66 and 20-24 with Upper Secondary or tertiary education

Education plays a key role in providing individuals with the knowledge, skills and competences needed to participate effectively in society and in the economy. In addition, education may improve people's lives in such areas as health, civic participation, political interest and happiness. Studies show that educated individuals live longer, participate more actively in politics and in the community where they live, commit fewer crimes and rely less on social assistance. Most concretely, having a good education greatly improves the likelihood of finding a job and earning enough money. Highly-educated individuals are less affected by unemployment trends, typically because educational attainment makes an individual more attractive in the workforce. Across OECD countries, men with university-level degrees are 18% more likely to find jobs than those with only a secondary school diploma, and women are 32% more likely. Lifetime earnings also increase with each level of education attained.

### 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.

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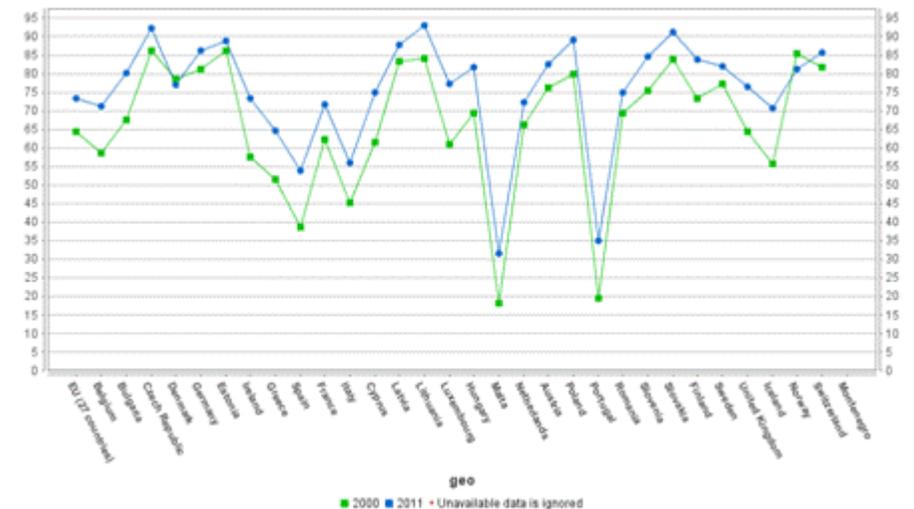
Figure 4. Total population having completed at least upper secondary education - Population aged 25 to 64 (%)

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.

Persons Aged 25-64 and 20-24 with Upper Secondary or Tertiary Education Attainment in 2011 (%)

- █ < 50.0
- █ 50.1 - 64.0
- █ 64.1 - 72.0
- █ 72.1 - 80.0
- █ 80.1 - 88.0
- █ > 88.1
- █ no data
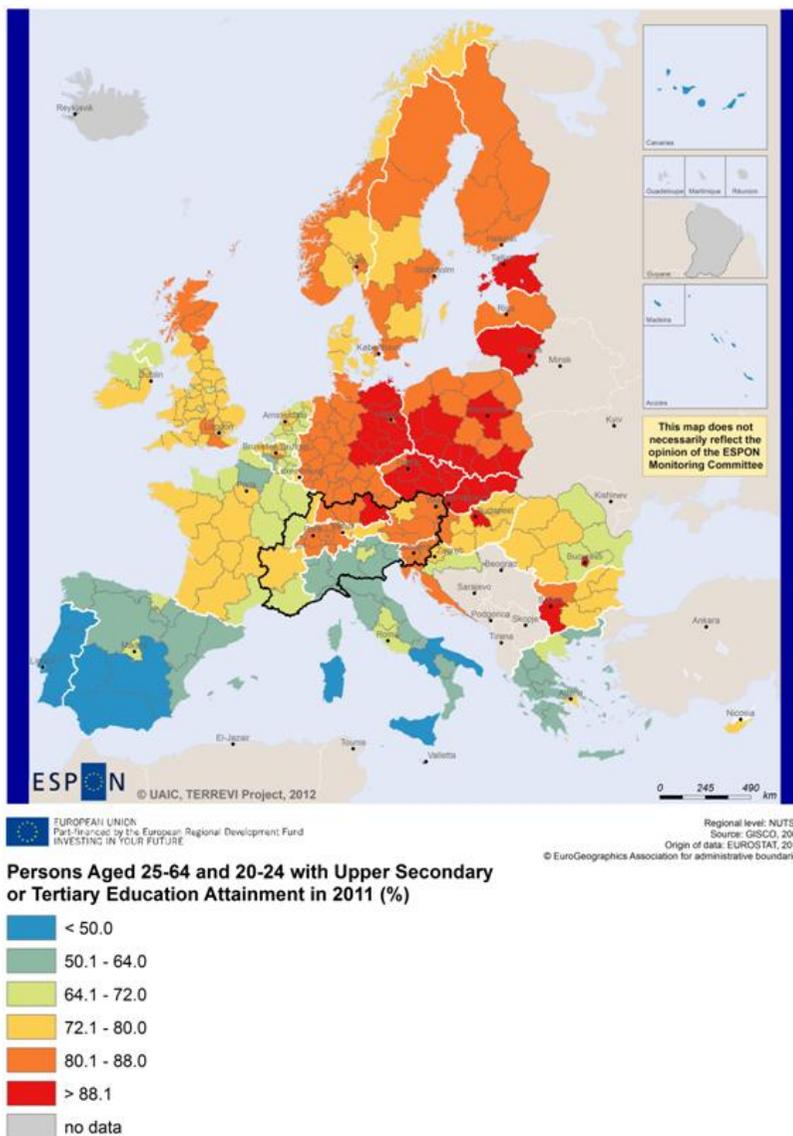
Map 20 Persons aged 25-66 and 20-24 with upper secondary or tertiary education

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.

In the case of Alpine Space TNC Programme we can notice important differences between it's component regions. The highest values of the indicator will be present in Germany (the highest value appears in the Oberbayern region – 89.30%), Austria or Slovenia, while the opposite situation will appear in the regions from Northern Italy (the lowest value will appear in the Valle d'Aosta region – 51.80%, followed closely by other Italian regions with values situated between 56.50 and 65.90% - Trentino-Alto Adige).

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.

This map was produced for the ESPON SIESTA project.
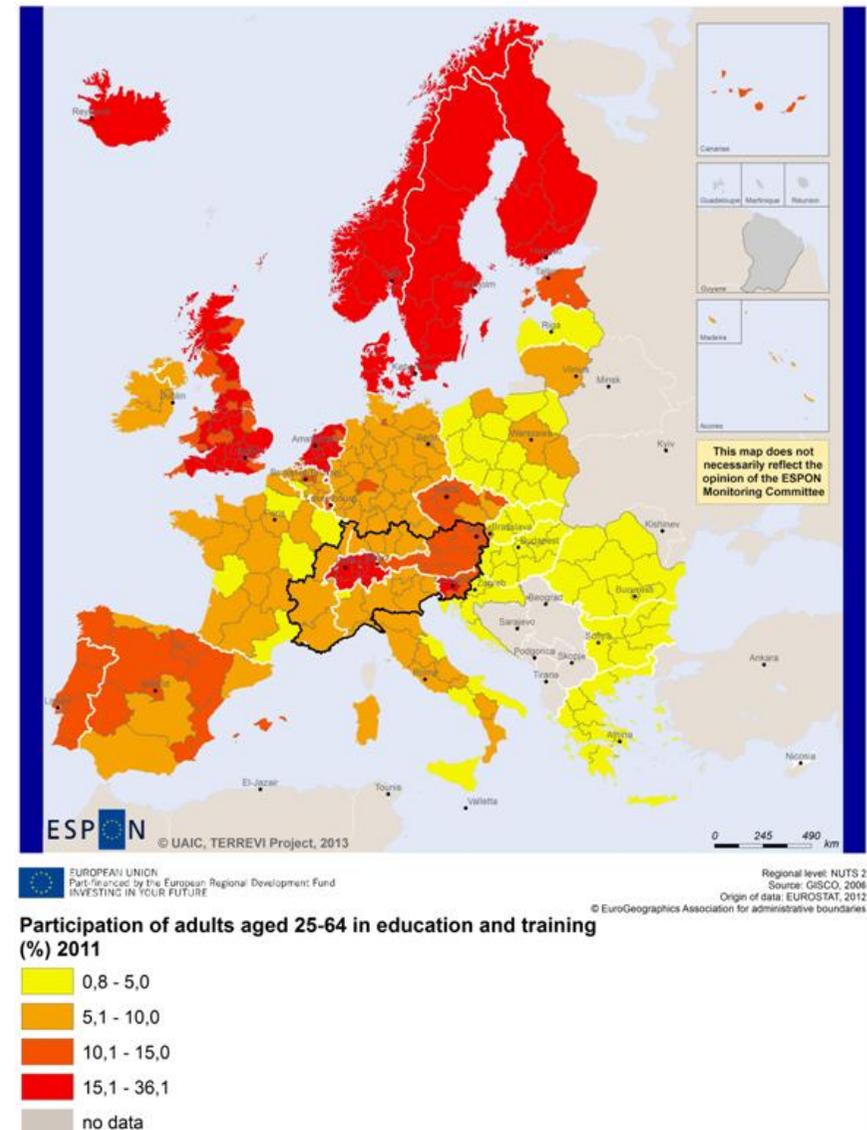
Map 21 Participation of adults (aged 25 to 64) in education and training, 2011

In contrast, Bulgaria, Romania, Greece and Hungary reported lifelong learning participation rates of less than 3 %.

In the TNC Alpine Space area the values of the France, German and Italian regions are relatively close but only on the middle of the target set for year 2020. The only regions that come close to the 15% target are the Austrian and Slovenian ones.

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.

This map was produced for the ESPON SIESTA project.
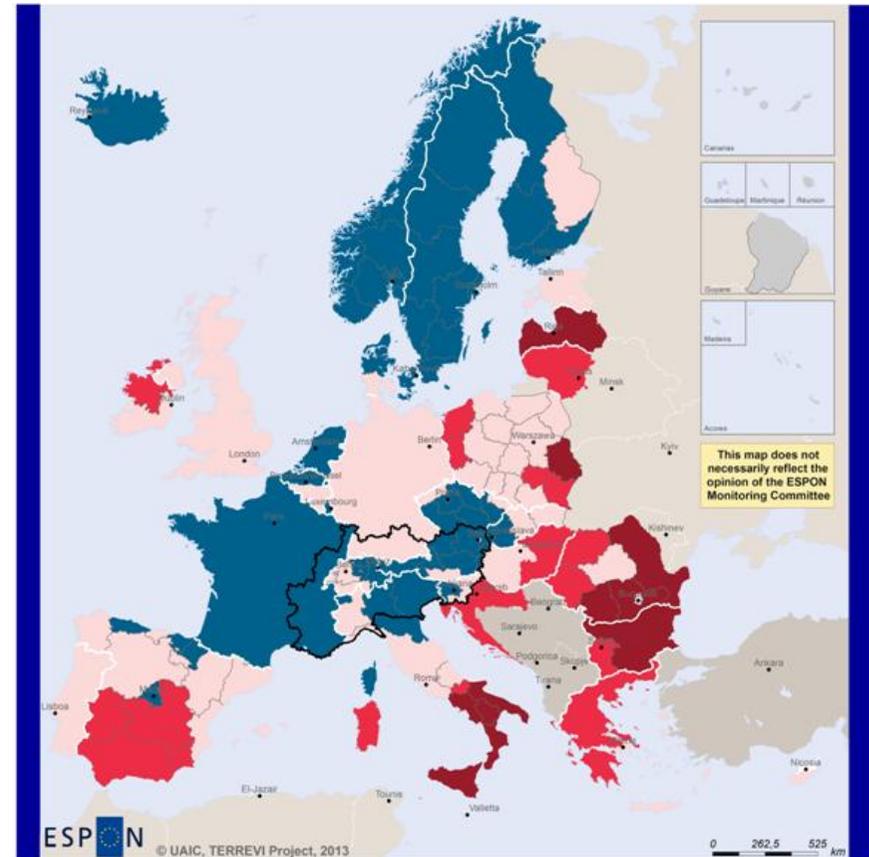
Map 22 Population at Risk of Poverty or Social Exclusion, 2010

Results and feedback from the workshop

The indicators of inclusive growth provided by ESPON projects and presented within the evidence package are considered as partly useful and fit for the purpose. Labour market issues and employment have been identified as relevant in two programming stages; education and risk of poverty indicators are not matching the programme core themes. Suggestions for improvement are:

- Dated or obsolete data. Relatively old data sets are difficult to explain the baseline context especially now that planning for the new programming period takes place.

- Complexity. Although composite indicators can provide interesting insights into a specific policy theme, they can confuse policy making.

Programming steps

Focussing on the details concerning the five programming steps, the reviewed indicators about change in labour force, employment rate and long-term unemployment rate are deemed appropriate for needs analysis and thematic priority. For result indicators, project selection and stakeholder consultation no further relevance for the Alpine Space is given.

Persons aged 25-66 and 20-24 with upper secondary / tertiary education, participation of adults in education and training as well as at-risk-of poverty rate have not been identified as indicators useful for the TNC programme.

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.

Besides a wide range of standard indicators frequently used in the context of European regional policies, ESPON has established various indicators which focus more on the territorial dimension. These indicators provide among others information on the development preconditions of an area. Two standard indicators in this field are rural-urban settings and accessibility.

The Alpine Space programme area comprises a number of the main metropolitan areas in Europe, which even play an important role in a worldwide perspective. Besides Milan, Munich, Vienna, Zurich, there are also Geneva, Torino, Genoa, Ljubljana, Bern, Lyon, Nice and Marseille. The map confirms the presence of both larger metropolitan areas and a number of smaller growth poles such as Grenoble, Salzburg, Maribor, Innsbruck, Trento, Bolzano and Klagenfurt.

However, urban areas are a minor part of the programme area, which is in a European perspective rather dominated by intermediate and rural areas and areas in close proximity to a city. Furthermore, there are a number of remote regions. The map illustrates also territorial differences within the programme area, basically showing a divide between urban centres and the less accessible parts of the Alpine Space.

Although the programme area is largely characterised by good accessibility, both in terms of multimodal accessibility and possibilities for one-day business trips, this is mainly limited to the metropolitan areas. Good accessibility is centred towards large urban agglomerations and major international airports or major train stations whereas other parts of the programme area have accessibility values below European average. Many remote regions of the programme area have considerably less favourable accessibility.

With regard to geographic specificities, the programme areas comprises in a European perspective, mainly the mountainous areas

as well as the few areas which are considered as sparsely populated in a European perspective.

The mountainous character comes with advantages and challenges. Although it does not come with a specific economic structure, it appears that a significant proportion of mountain areas have high residential attractiveness. This is because of their environmental assets, and often also because of their social and cultural capital, including both history and the closely-knit communities found in small communities. Many mountain areas are also characterised by relatively high levels of biodiversity and protected areas. Furthermore, mountains are the water towers of Europe.

Urban-rural typology

The Rural-Urban meta-narrative draws together various story lines relating to migration, ruralurban 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.

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*.
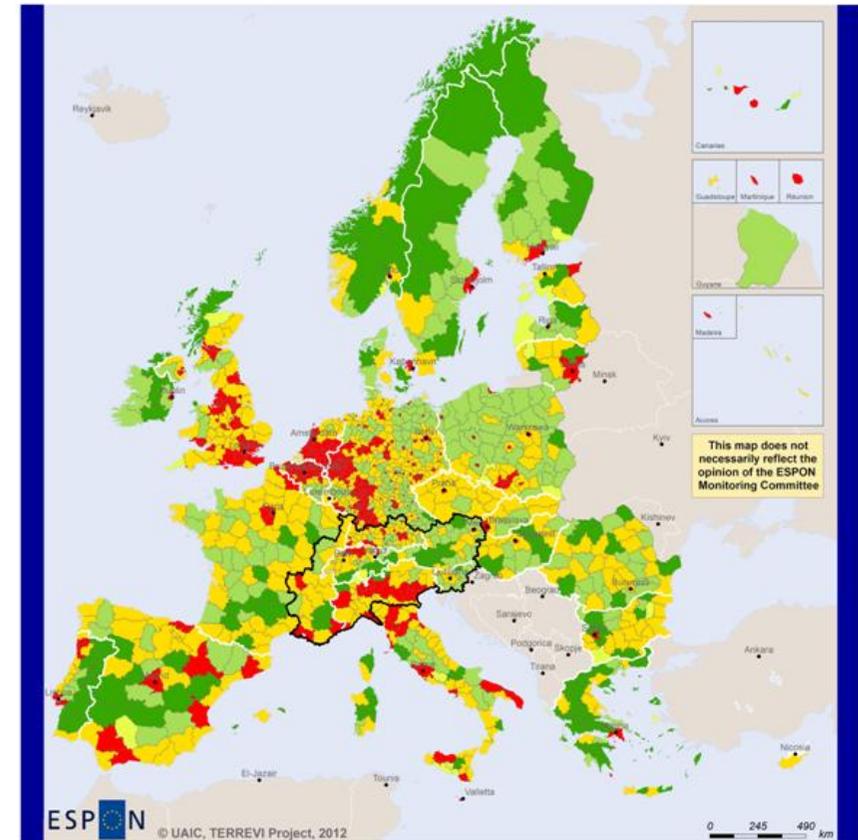
**Map 23 Urban-rural typology of NUTS3 regions including remoteness**

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"6 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)

There are variations in terms of urban – rural types between countries of Alpine space region. Firstly, it can be noticed the discrepancy between the Italian part of the Alpine Space and other countries. The Italian part is defined by intermediate close to a city and predominantly urban regions. In comparison, other countries included in the region appear to be dominated by intermediate close to a city regions and predominantly remote regions.

Multimodal potential accessibilty

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.
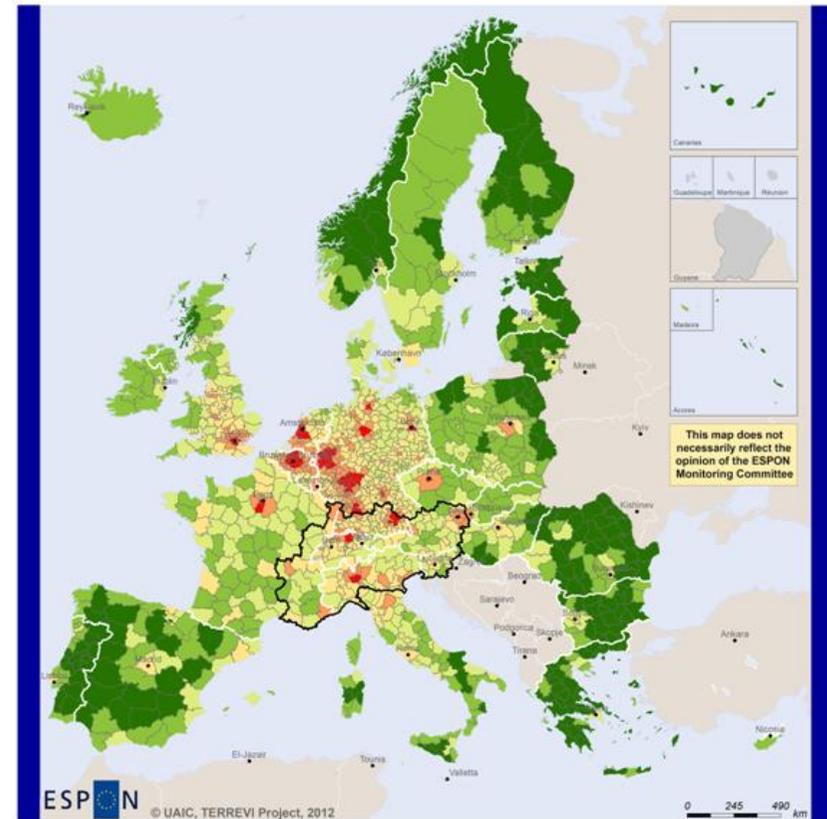
Map 24 Multimodal potential accessibility

Despite the favourable geographical position, defined by laying in close proximity to demographic and economic centre of Europe, Alpine Space shows accessibilities exceeding the European average only in the highly urbanized extra-alpine areas (southern Germany, Vienna Basin, Po Plain etc.), in the proximity of urban centres from the mountains, around the main corridors crossing the Alps (particularly in Switzerland and Austria) or around urban centres located in a peripheral position (Ljubljana, Marseille, Monaco, Lyon and so on). The main challenge for the programme is to respond to natural barriers that hinder the mobility of goods and people. This can be done by strengthening trans-alpine connections, so important in channelling north-south economic flows and for the process of increasing territorial cohesion in Europe.

These maps were originally proposed in the ESPON EDORA and the ESPON TRACC project and re-produced for the ESPON TerrEvi project.

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 transnational programming.

ESPON study	Topic	Content
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. This study analysis Alpine space as a case study (see Annex 1 of the Final Report), including a survey on the adaptive capacity in the Alps.
SGPTD	Growth poles	It provides evidence on European secondary cities, their performance and functional roles in different parts of Europe, and the potential policy intervention affecting their performance (see from figure 2 to 2.12).The case studies include Munich and Turin (annex of the Scientific Report).
ATTREG	Attractiveness	It provides a better understanding of the contribution of European regions' and cities' attractiveness to economic performance and it identifies the key ingredients of attractiveness in different types of territories. The case studies include the region of Trento (see Annex 4/8) and Slovenia (see Annex 4/7).
GEOSPECS	Specific types of territories	It provides evidence on the strength, weaknesses and development opportunities of specific types of territories and regions incl. mountain areas. The case studies include the Jura massif (Annex 25 of the Scientific Report), and the Metropolitan Region of Geneva (Annex 38 of the Scientific Report).
DEMIFER	Demography	It provides evidence on the regional effects of migration on Europe's demographic future. The case studies include Munich (see Annex D12-2) and Torino (see Annex D12-7).
SS-LR or SPAN-3	Scenarios	The project develops and applies regional forecasting methodologies and instruments at the appropriate territorial scale, responding to functional local-regional territories. A particular focus is on the Latin Arc.
EATIA	Territorial impact assessment	It tests the practical use of existing methods and tools for Territorial Impact Assessment, by EU Member States, by the European Commission as well as within the ESPON 2006 and 2013 programmes. A particular focus is on Slovenia (Annex 2).
METROBORDER	Metropolitan regions	It identifies criteria, potentials and governance practices for polycentric cross-border metropolitan regions in Europe. One case study is on the "Upper Rhine".
TeDi	Territorial diversity	It provides a better understanding of development processes in territories that are defined as insular, mountainous, sparsely populated or peripheral. The case studies include Jura and Valais in Switzerland.
POLYCE	Metropolitan regions	It studies characteristics of the polycentric system on regional and metropolitan level in order to identify competitive and cooperative aspects between the metropolises, and distinct characteristics and assessing their development potentials. The case studies include Ljubljana and Vienna.
ReRisk	Energy	It focuses on opportunities to support competitive and clean energy supplies for regions in Europe and to generate and strengthen sustainable energy sources. One of the case studies is the city of Freiburg in Germany.
KIT	Innovation	It describes patterns and potentials of regions in terms of knowledge and innovation economy and explores development opportunities (see from map 3.1.1 to 4.4.1). It provides some case studies on Cambridge, Oxford, Cardiff and West Wales (see Draft Final Scientific Report, Vol. 2, 3).
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). The method is applied for the Northwest-Europe cooperation area.

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 Portal** 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

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