ESPON
Evidence Report
Norte

This map does not necessarily reflect the opinion of the ESPON Monitoring Committee

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Regional level: NUTS 2
Source: GISCO, 2010
Origin of data: EUROSTAT, 2012
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Legend

- Important Cities (Urban Audit 2004)
- ■ Capital
- — Main road network
- Boundaries
- NUTS2 Regions

ESPON Project TerrEvi

August 2013

Executive Summary

The ESPON TerrEvi project aims at providing evidence for Structural Funds 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 a workshop in March 2013. The present report assesses the situation of Norte in view of developing a future programme and achieving the three objectives of the Europe 2020 Strategy, namely smart, sustainable and inclusive growth.

Generally, the workshop participants expressed the need for ESPON material to help them developing investment priorities for the Operational Programme. ESPON results can be used for the following moments within the programme cycle:

- Needs analysis,
- Thematic concentration,
- Programme monitoring,
- Project selection, and
- Stakeholder dialogue.

Three important aspects have been considered crucial when discussing the indicators: First of all, some data seem to be dated, due to the fact that either the projects were conducted a few years ago, or there are no updated datasets. Another factor, that may hamper an indicator's usefulness, concerns the territorial level at which data is calculated and presented. A third factor regards the complexity of indicators. Composite indicators that combine several dimensions and sub-indicators can be difficult to understand in policy processes.

Context information

Norte is the northernmost of the five Portuguese NUTS2 regions of the mainland. Its neighbours are the Spanish regions of Castile and Leon, and Galicia. As every region, Norte has its own specific economic and demographic development potentials and challenges.

A detailed look at various ESPON results reveals the situation of Norte in a European context, as well as regional similarities and disparities when comparing Norte to other Portuguese or neighbouring Spanish regions.

Generally, the data only provides a snapshot at a given point in time and there is no possibility to observe any developments or trends, which limits their relevance for the programming.

Europe 2020: Smart growth – main findings

- Expenditures on research and development are considered a driver of economic growth. Investing 3% of GDP for R&D is therefore one of the headline targets of Europe 2020. Private business expenditures are essential to meet the target value. Expenditures on R&D in Norte are above the Portuguese average, and private R&D expenditures in Norte are around Portuguese average.

- Knowledge-intensive services offer opportunities for identifying promising projects. Norte has a lower share of knowledge intensive services than most other Portuguese or neighbouring Spanish regions. The general pattern is similar to central Poland or Greece. However, a more detailed analysis of services is needed to allow for a more nuanced picture on local specialisations within the region.

- As compared to other Western European countries, Portugal has rather low shares of people working in science and technology. Only Lisbon indicates a share of more than 25%. Shares similar to Norte can be found in Turkey or Romania. Future investments might aim at supporting efforts to catch up with other Western European countries.

- As regards territorial patterns of innovation Norte is the only smart technological application area in Portugal, focussing on product related innovation. All other Portuguese regions (except Lisbon as applied science area) and even most regions of the Iberian Peninsula (except Madrid, northeast Spain and Lisbon) are areas of smart and creative diversification. Policy actions can be targeted on the development of a more pronounced strategy in order to sharpen the profile as smart technological application area,

and in order to facilitate a dialogue on how to make use of this outstanding position.

- As concerns the implementation of the Digital Agenda of the EU, information on use of e-commerce and ICT employment reveals that as compared to the rest of Europe only a few people make use of e-commerce in Norte. The same is true for Portugal in general. Cross-border actions and cooperation with neighbouring Spanish regions might offer opportunities to overcome cross-border disparities.

The reviewed indicators on smart growth are especially useful for both the needs analysis and thematic concentration. Indicators on R&D expenditure and knowledge-intensive services are considered adequate for stakeholder dialogues, the project selection and programme monitoring. Meanwhile, information on territorial patterns of innovation can only be used for stakeholder dialogues.

Europe 2020: Sustainable growth – main findings

- Regarding wind power, Norte holds only medium potential despite its coastal position. On the Iberian Peninsula, regions in northwest Spain like Galicia and southern Spain or other parts of Portugal have higher potentials. At the same time, Norte holds good potential for developing wave power because of its exposition to the Atlantic Ocean. The Atlantic coast offers good opportunities for wave power although potentials in northern and northwest Europe seem to be even higher. A consistent approach for developing all existing potentials is recommendable in order to promote synergy effects between different fields of renewable energy.

- In general, Norte faces low to medium negative impacts of climate change, as do other southern European countries like Italy, Greece or Romania. While Norte's inland areas are more vulnerable to climate change due to lower adaptive capacities, urban (and coastal) areas have higher adaptive capacities although they are rather low in a European perspective. It is mainly due to the fact that technology, knowledge and awareness are considered as important dimensions of adaptive capacity. Therefore, targeting adaptation to climate change, in line with the most important

dimensions of adaptive capacity, is important for future policies.

The discussion with the programme illustrated that the reviewed indicators on sustainable growth are especially useful for both the needs analysis and thematic concentration. Indicators on wind and wave power potential are considered adequate for stakeholder dialogues. Detailed information on climate change, its impacts and on adaptive capacity to climate change is useful for the project selection but also for the programme monitoring, i.e. observing changes within the programme period.

Europe 2020: Inclusive growth – main findings

- No Portuguese region shows an employment rate above 75%, in other words no region has reached the Europe 2020 target yet. Furthermore, Galicia indicates a lower employment rate (50-60%) which means that Norte is surrounded by regions with comparable or lower employment rates. In addition, Galicia shows a higher long-term unemployment rate than Norte, i.e. >7%.

- While the general trend of population decline in Norte cannot be reversed in any available ESPON scenario, Norte is highly affected by disparities as regards the ageing structure. Coastal and urban areas of Norte show low shares of old people (<12%) while inland areas show high shares (>20%). This twofold challenge – population decline and disparities in ageing structure – will become more important in the future because drivers of this trend are manifold, including e.g. migration, traditions, culture and structures in society. Regions in France or – when considering cross-border disparities – Eastern Germany and western Poland face a similar challenge. Policy actions and related investments have to take into account that demographic change is a twofold challenge, and that both trends affect each other.

- Norte shows, like all Portuguese regions, rather low shares of people with high education. When zooming in on young academics (aged 30-34 years), it becomes apparent that all neighbouring Spanish regions have already met the Europe 2020 target, i.e. 40% of regional population aged 30-34 with

tertiary education attainment. Future policy actions have to be targeted on overcoming (cross-border) disparities in order to prevent Norte from falling behind.

- An important factor of avoiding high rates of risk of poverty or social exclusion is a decreasing share of early school leavers. In Norte and Alentejo the share of population aged 18-24 years without any degree is >30%. Iceland and Spain show similar shares of early school leavers. This indicator is highly dominated by the national level so that regional measures will only have impacts if stakeholders from the national level take part and the educational and training systems as well as the labour markets are reformed and restructured.

The discussion with the programme illustrated that the reviewed indicators on inclusive growth are especially useful for both the needs analysis and thematic concentration. Indicators on employment are considered adequate for all steps. Meanwhile, indicators on education are considered suitable to observe changes within the programming period, i.e. are useful for programme monitoring.

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 / ESPON indicators used by TerrEvi	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 am 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 Norte programme is free to use the material for their development and implementation of the programme for 2014-2020.

Methodology

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

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

Workshops

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

Step 1 – Preparation Phase

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

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

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

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

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

Following the preliminary phase, the Draft Evidence Report was delivered to the programme authority. It entailed several indicators and highlighted territorial trends with a European perspective. All thematic objectives were covered and there has been a table to match our selected indicators with the thematic objectives. The Draft Evidence Report has been sent to the workshop participants for diffusion.

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

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

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

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

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

Step 3 – Feedback

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

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

The traffic lights at the beginning of the chapter "Europe 2020" were created in order to graphically represent the situation of each analysed CBC[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).

Hypothetical example: a CBC compared to Country A

o NUTS3/NUTS2 Regions of the country A
Q1 - Lower quartile for the country A (splits lowest 25% of NUTS regions)
M_C - Median value for the country A (cuts the data set in half)
Q3 - Upper quartile for the country A (splits highest 25% of NUTS regions)
M_{cbc} - Median value of the CBC regions

$L1 = (Q1+M_C)/2$
$L2 = (Q3+M_C)/2$

The median value of the CBC is compared to L1 and L2 resulting in a specific colour of the traffic light (green in this case).
This example works for the indicators for which high values mean positive situations. Otherwise, red replaces green.

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

The main focus of this report is on a discussion how Norte stands with relation to the three objectives of Europe 2020 (smart, sustainable and inclusive growth) and the investment priorities of future Structural Funds. This discussion may help the programme to see comparative advantage of the programme area which possible could be further strengthened with help of the next programme for Norte. Alternatively, one might also be able to detect comparative disadvantage (as compared to the rest of Europe) which the future programme might help to reduce.

However, before entering this debate, the focus will be on two important context indicators. These are population change and GDP.

Demographic change and economic performance are important aspects which also will be discussed in relation to a series of other indicators throughout the report. Consequently, the first two maps are mainly meant to set the scene and provide a general understanding of the situation.
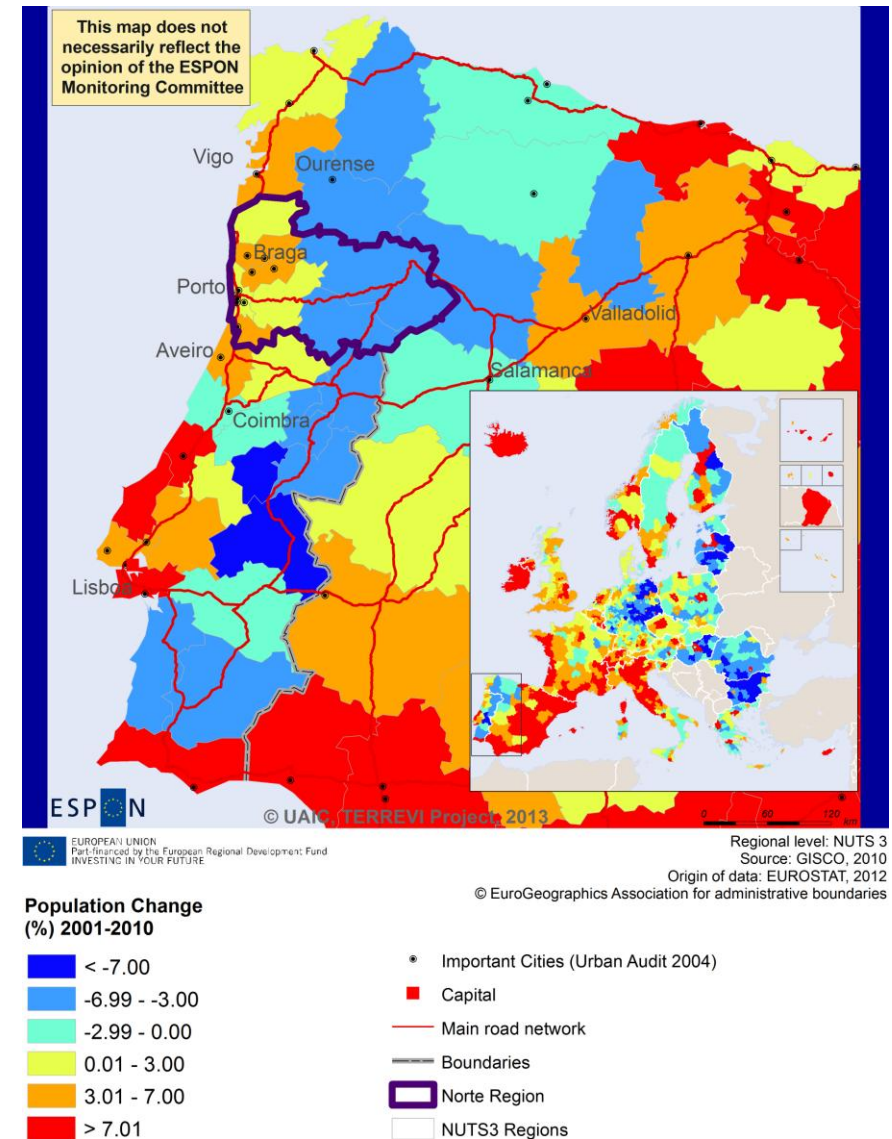
Population change

Population change is the difference in the size of a population in a given time period. The change has two components: natural population change, i.e. number of live births minus number of deaths, and net migration, i.e. number of immigrants minus number of emigrants. The map covers the period 2001 to 2010.

It is striking that areas of population growth and those of significant population decrease are often close to each other. At European level, population is particularly growing in a Mediterranean arc ranging from central Italy over southern France to eastern and southern Spain, and in an Atlantic Arc ranging from western France to Ireland and Iceland. In addition, population grows in some regions of Nordic countries and in all capital regions. Significant population decrease can be found in north-western Spain, several Portuguese regions, eastern and central Germany, the Baltic states, some peripheral regions of Finland and south-eastern Europe – except their capital regions.

An east-west divide affects Norte region and divides it into growing coastal areas and non-coastal areas affected by population decrease. In so doing, Norte shows the same pattern as most Portuguese regions. Western areas around Braga and Porto indicate an increasing population like most western European countries. Meanwhile from a European perspective, eastern areas of Norte are affected by a population decrease like some peripheral Finish, and Romanian or Hungarian regions.

The map shows population change until 2010. One has to take into consideration that the economic crisis, especially in Portugal, Spain and Ireland, has influenced and changed migration patterns since then.

This map was developed in the ESPON DEMIFER project and re-produced for the ESPON TERREVI project.

Population Change (%) 2001-2010

■ (blue)	< -7.00
■ (light blue)	-6.99 - -3.00
■ (teal)	-2.99 - 0.00
■ (yellow)	0.01 - 3.00
■ (orange)	3.01 - 7.00
■ (red)	> 7.01

●	Important Cities (Urban Audit 2004)
■	Capital
—	Main road network
═══	Boundaries
▭	Norte Region
▢	NUTS3 Regions

Regional level: NUTS 3
Source: GISCO, 2010
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries
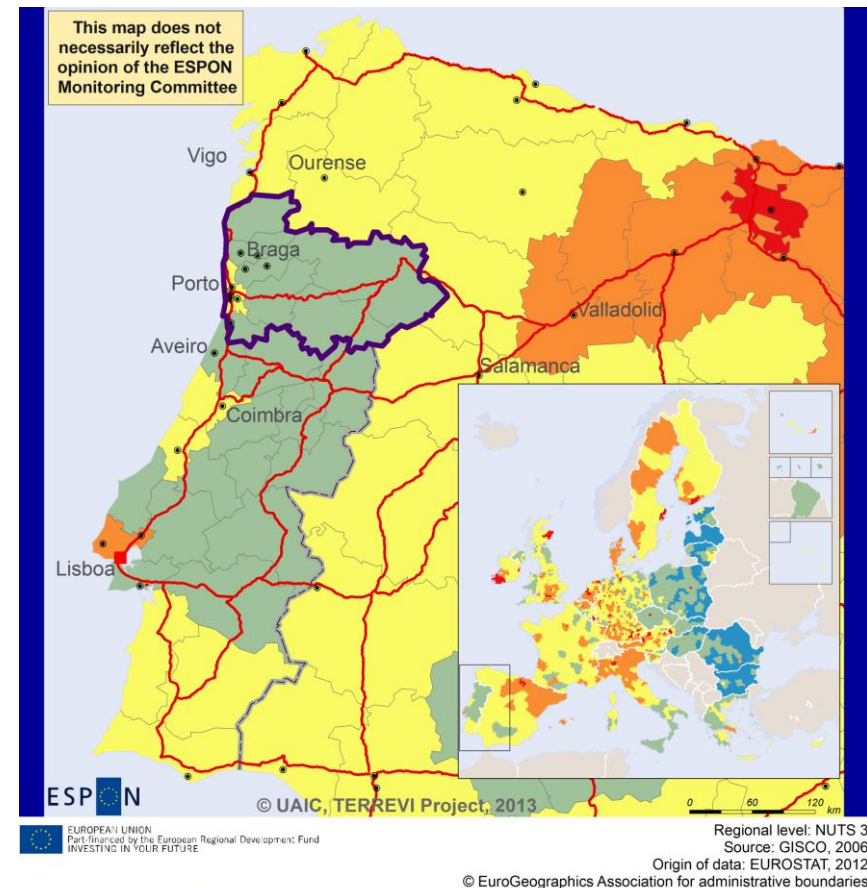
Map 1 Population change, 2001-2010
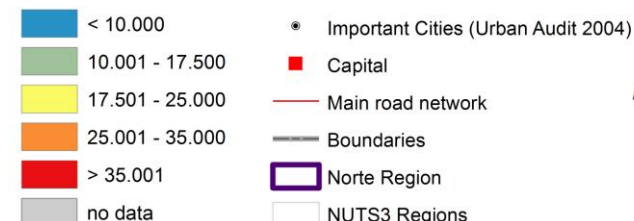
GDP in PPS per capita

GDP (Purchasing Power Standard) per capita is an important indicator for the level of economic competitiveness. At EU level, the territorial distribution of GDP respects the principle of spatial autocorrelation, few deviations from the rule being generated either by the presence of competitive urban centres or by the border effect. The map regards 2009.

The most significant difference in GDP per capita appears between former EU15 states and the Member States which became part of the EU 2004 and 2007. But there are also regions with comparably low GDP in EU15, for example in Greece, Southern Italy, Portugal or the UK. Additionally, the map shows that in many states wealthy regions are far from their capital regions (Munich, Salzburg, Álava, Milano) and that even areas of the European periphery are among economic strong regions (northern and central Sweden, Aberdeen, south-western Ireland for example).

Norte, like most areas of northern and central Portugal, is a region with not more than 17,500 PPS / inhabitant. Only Porto shows higher productivity. Crossing the border, it is striking that all Spanish neighbouring regions hold a higher regional GDP (> 17.500) than Norte. Norte is comparable with Wales, Greece or southern Italy and hence is among the poorest regions of EU15 countries. Considering cross-border disparities, it shows a structure like the Czech Republic or Hungary, for example.

GDP (PPS) / INH 2009

< 10.000	
10.001 - 17.500	
17.501 - 25.000	
25.001 - 35.000	
> 35.001	
no data	

- Important Cities (Urban Audit 2004)
- Capital
- Main road network
- Boundaries
- Norte Region
- NUTS3 Regions

Data for 70% of Spain: authors' calculations

Map 2 GDP (PPS), 2009

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.

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.

The following chapters include traffic lights for selected indicators, showing 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 were created in order to graphically represent the situation of the programme 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.

1.1 Smart Growth

Smart growth is a key component of the Europe 2020 Strategy. During the past years it has evolved into an objective for many European sector policies as well as for a wide range of national policies all over Europe. Structural Funds Programmes are expected to make a sizable contribution to smart growth.

Broadly smart growth means improving Europe's economic performance by focusing on research and innovation, the digital society and the competitiveness of SMEs and a range of different sectors. The focus is on creating new and better products and service – not at least by diffusing information and communication technologies – that generate economic growth and jobs. So, it is tightly linked to performance in the education field and the concept of green growth, i.e. the aim to shift the pattern of economic growth towards an environmentally-friendly one.

The contribution which any city or region can make to these aims depends on a wide range of territorially varying preconditions. This territorial diversity is an important asset to achieving smart growth. At the same time, work towards smart growth will have territorial impacts, which lay the ground for changing development opportunities in different types of territories. This section discusses some of territorial variations that shape the pre-conditions to contribute to smart growth, and their effects.

Smart growth is tightly linked to the economic performance of private enterprises in a globalised world. Some years ago, globalisation was seen as the end of geography. Today it is clear that there are simultaneous processes of regionalisation and globalisation. Distance and agglomeration economies have become even more central through increasing financial, trade, human and knowledge flows. This results in two decisive functional scales for globalisation: city and macro-region.

The three smart growth indicators presented in the traffic light show that Norte performs better than the Portuguese medium and about European medium when it comes to expenditure for research and development (R&D). Concerning employment in knowledge intensive services and the use of internet the region Norte performs under the Portuguese and European medium.

The following sections will discuss in further detail some additional indicators related to smart growth.

	value of the region	Portugal	EU-27+4
Total Intramural R&D Expenditure (GERD). Percentage of the GDP (2009)	1.43	0.79	1.22
Employment in knowledge-intensive services as percentage of total employment (2010)	24	33	39
Percentage of individuals regularly using internet (2011)	46	47	71

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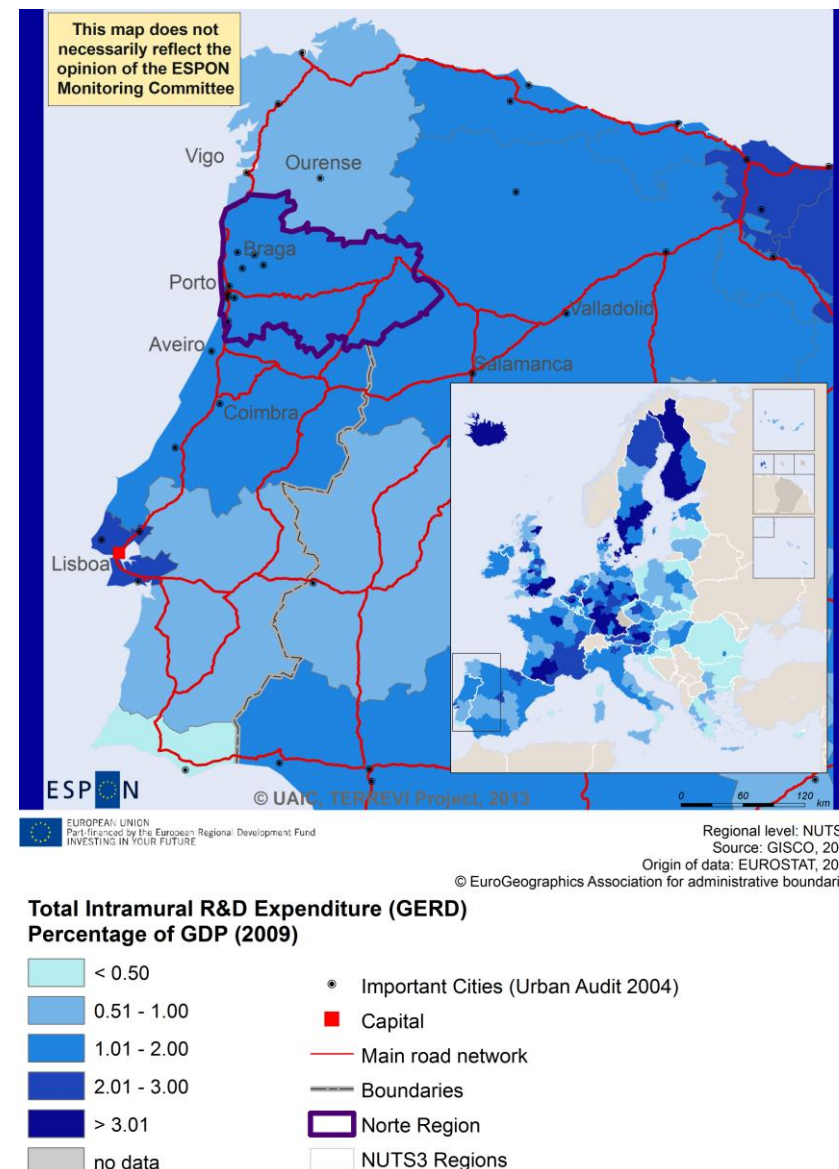*Origin of data: EUROSTAT 2012*

Total intramural R&D expenditure – percentage of GDP

According to EUROSTAT, the total gross domestic expenditure on research and development comprises: business enterprise expenditure on R&D, higher education expenditure on R&D, government expenditure on R&D and private non-profit sector expenditure on R&D. The indicator measures the key R&D investments that support future competitiveness and result in higher GDP. R&D expenditure represents one of the major drivers of economic growth in a knowledge-based economy. Investing 3% of GDP is therefore one of the headline targets in the new Europe 2020 strategy for developing an economy based on knowledge and innovation.

The shares of R&D expenditure on GDP seem to generally differ within Europe. A higher share affects the Nordic countries (especially Finland) and the 'pentagon' area (London-Hamburg-Munich-Milano-Paris). No Southern or (South-)Eastern (EU12) European region spends more than 3% of GDP for R&D. Especially Bulgaria und Romania are shaped by R&D expenditure rates below 0.50%. Still, sub-national differences predominantly occur, depending on local and regional specializations, governance, public or private participation to R&D etc. In southern France and southern UK for example, the share in neighbouring regions varies from 0.51 to more than 3%.

With the exception of Lisbon as capital and main university town, no Portuguese region spends more than 2% of its GDP for R&D. Within Portugal and excluding Lisbon, Norte and Centro have higher shares of R&D expenditure than Alentejo and Algarve. Holding a share of 1-2%, Norte is in the same group as Castile and León and has a higher share than Galicia. Other European regions showing a similar performance are situated in western France or central Italy.

This map was developed in the ESPON KIT project and re-produced for the ESPON TERREVI project.

Total Intramural R&D Expenditure (GERD) Percentage of GDP (2009)

< 0.50	
0.51 - 1.00	● Important Cities (Urban Audit 2004)
1.01 - 2.00	■ Capital
2.01 - 3.00	— Main road network
> 3.01	═ Boundaries
no data	▢ Norte Region
	▢ NUTS3 Regions

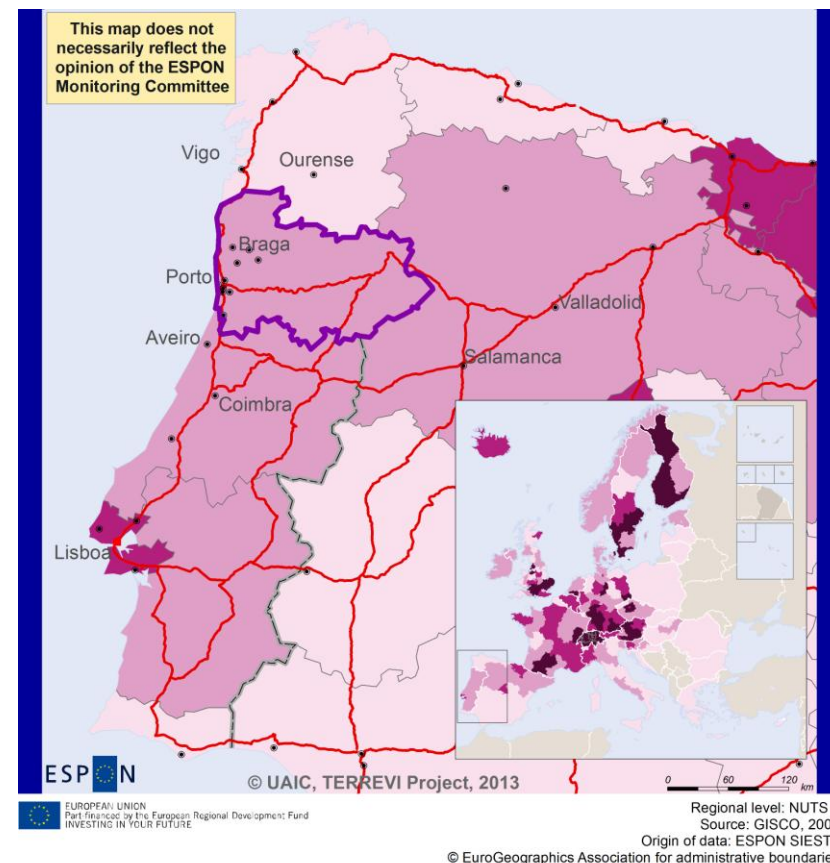**Map 3 Share of R&D expenditure of GDP, 2009**

Private sector R&D expenditures

Private sector investment is considered central to enhancing economic productivity and growth. Therefore, flagship actions focus on creating favourable conditions for private sector investments like measures on access to finance, risk-sharing, the provision of venture capital, cross-border matching of innovative firms with investors, a review of regulatory frameworks and the development of a European knowledge market for patents and licensing.

Three corridors with comparatively high shares stand out: From southern France to southern Germany, from Copenhagen to Finland and from south-east England to Austria. In addition, an east-west divide occurs. Except Prague and Ljubljana no region of the new member states indicates shares of > 1%. As for total R&D expenditure, sub-national disparities become apparent especially between urban centres and their rural surrounding, for example in Aberdeen, Berlin or Madrid.

Like most Portuguese regions and like Castile and León, Norte indicates a share of 0.6-1%. Only Lisbon shows a share of more than 1%. In Galicia business expenditures are even below 0.5% of the regional GDP. Similar patterns with a comparatively strong capital region and some weaker regions in neighbouring countries can be detected for the Czech Republic or Slovenia, for example.

This map was produced for the ESPON SIESTA project.

Business expenditure in R&D as percentage of regional GDP combined data 2007 - 2009

0,0 - 0,5	Important Cities (Urban Audit 2004)
0,6 - 1,0	Capital
1,1 - 2,0	Main road network
2,1 - 5,5	Boundaries
no data	Norte Region
	NUTS3 Regions

Notes:
Data for EL are shown for 2007 and BG is shown for 2008.
Data for NO, BE and CH are all available for country level.

Map 4 Business expenditure on R&D as percentage of regional GDP, combined years from 2007 to 2009
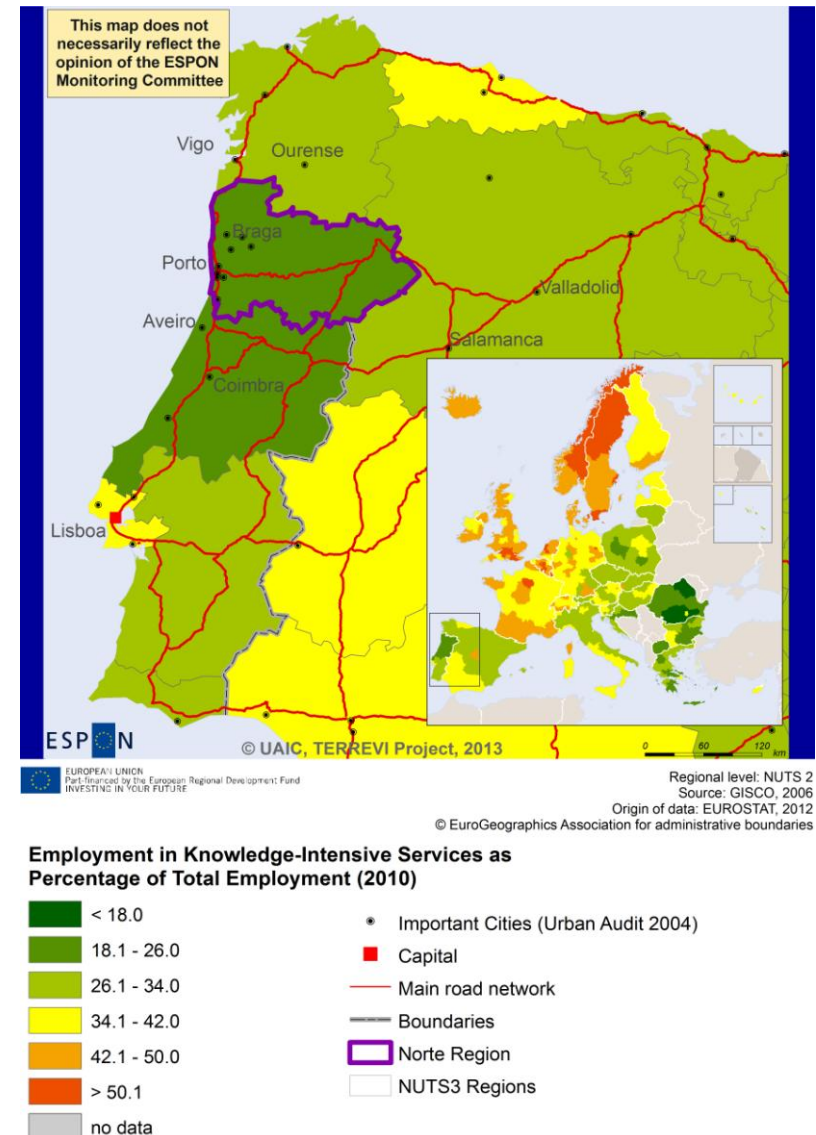
Employment in Knowledge-Intensive Services

Knowledge-intensive services comprise a broad set of very different activities. Innovation processes, structures, and performance differ notably among these services. They include according to EUROSTAT:

(1) knowledge-intensive high-tech services: Post and Tele-communications; Computer and related activities; R&D;

(2) knowledge-intensive market services (excluding financial intermediation and high-tech services): Water transport; Air transport; Real estate activities; Renting of machinery and equipment without operator, and of personal and household goods;

(3) knowledge-intensive financial services: Financial intermediation, except insurance and pension funding; Insurance and pension funding, except compulsory social security; Activities auxiliary to financial intermediation;

(4) other KIS: Education; Health and social work; Recreational, cultural and sporting activities.

The share of employment in Knowledge-Intensive Services varies across Europe. Northern regions (Ireland, the UK, France, as well as the Nordic countries and Germany) are better endowed for this type of human capital, while Southern and Eastern Europe (which includes Spain (except Madrid region) and Portugal) have low shares, below the EU average. Capital regions do in general have a higher share of KIS than the surrounding regions. Still, infra-national differences occur, as a result of local combinations of factors.

The region of Norte has a share (18-26%) that is below the share of most Portuguese regions and on the same level as Centro. In addition, neighbouring Spanish regions hold a share of at least 26% so that Norte is underperforming in its regional context. Similar regional differences occur in central Poland or Greece / Bulgaria. Of course, the impact of these regional differences must be interpreted in combination with local specializations, R&D investments, presence of major research centers or specific regional innovation systems for example.

This map was developed in the ESPON KIT project and re-produced for the ESPON TERREVI project.

Map 5 Employment in Knowledge-Intensive Services, 2010

Human resources in science and technology

According to EUROSTAT, human resources in science and technology (HRST) are defined as persons fulfilling at least one of the following two conditions:
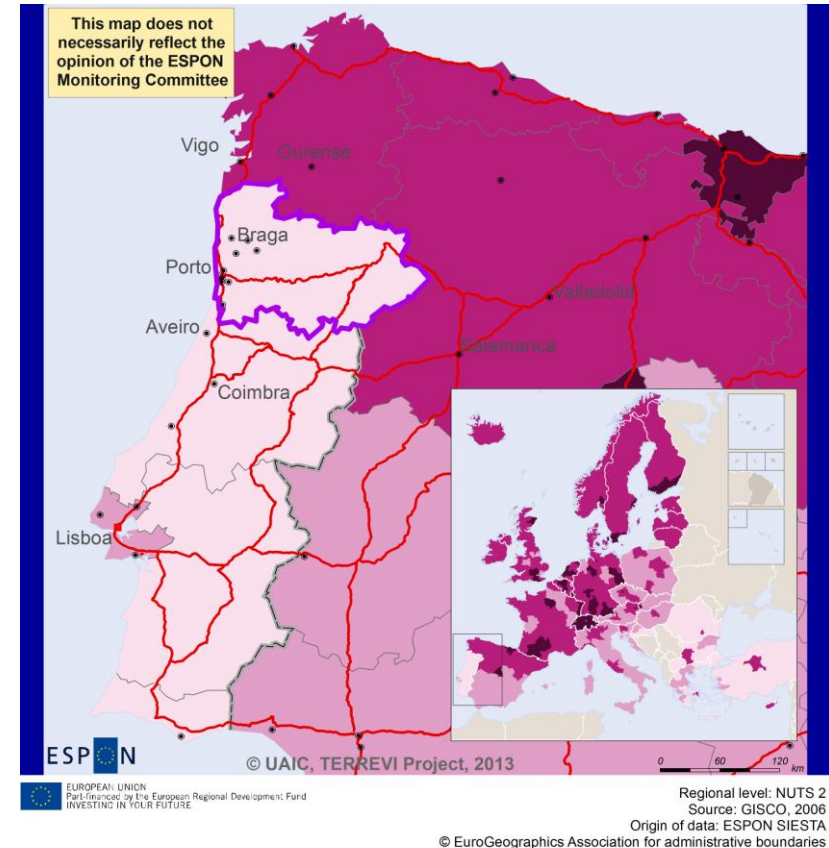
(1) human resources in terms of education: individuals who have successfully completed a university level education;
(2) human resources in terms of occupation: individuals who are employed in a science and technology occupation as 'Professionals' or 'Technicians and associate professionals'.

The group that fulfils both of these criteria is called the HRST core.
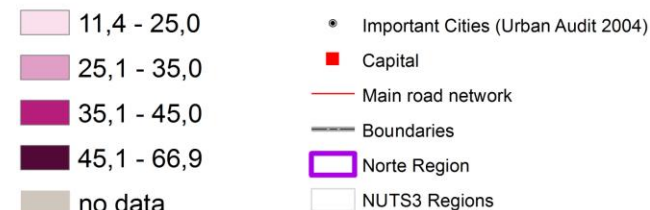
There is a concentration of scientists and technologists in Northwest Europe as well as in the Nordic and in the Baltic countries. Most capital cities employ > 35% of human resources in science and technology. On the other side, large parts of Eastern and Southern Europe (except northern Spain and most capital regions), indicate shares < 35%. Most regions in Romania, Bulgaria, Turkey and Portugal even show shares < 25%.

Except Lisbon all Portuguese regions only show shares of < 25%. In doing so they stand out of the relatively homogenous pattern in Western Europe. Norte is therefore affected by enormous cross-border disparities because both Galicia and Castile and León indicate shares of 35-45%. Regarding this indicator both Norte and other Portuguese regions verge of falling behind. A similar performance is to be stated for Romania or Turkey.

This map was produced for the ESPON SIESTA project.

Human resources in science and technology as percentage of active population, 2010

11,4 - 25,0	Important Cities (Urban Audit 2004)
25,1 - 35,0	Capital
35,1 - 45,0	Main road network
45,1 - 66,9	Boundaries
no data	Norte Region
	NUTS3 Regions

Map 6 Human resources in science and technology as percentage of regional active population, 2010
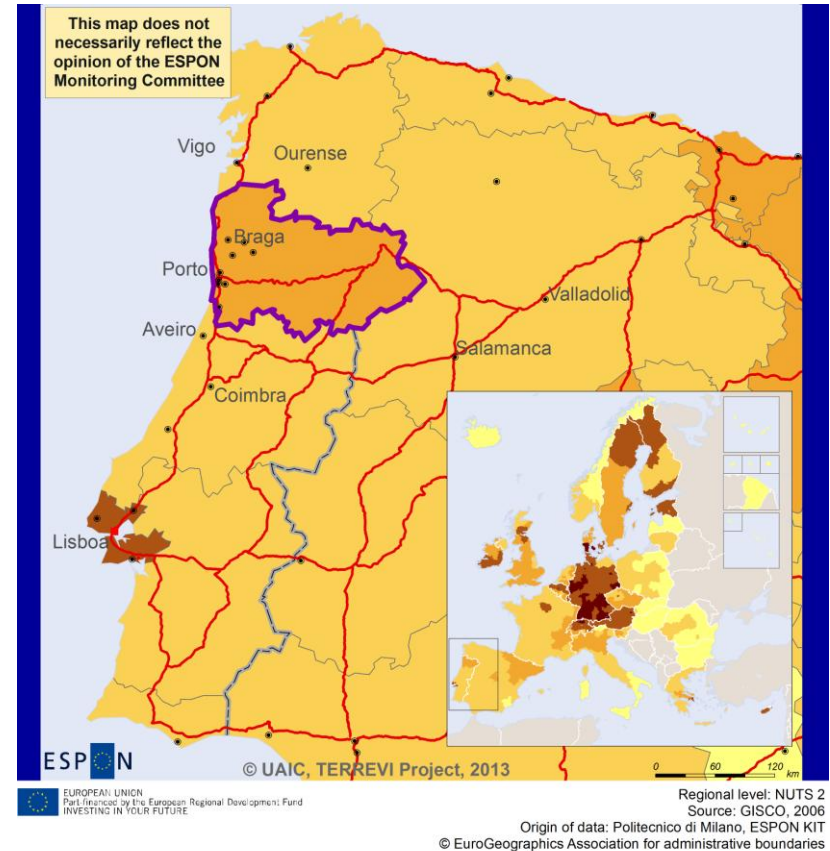
Territorial Patterns of Innovation

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.[3] Main conditions concern science-based local knowledge, R&D endowment, scientific and highly educated human capital, receptivity to interpret and use external knowledge and creativity. 'European science-based areas' are most knowledge and innovation intensive but seem to be less attractive and creative. While 'Applied science areas' have the chance to specialise themselves in the production of applied knowledge by utilising higher creative potentials, 'Smart technological application areas' focus on product innovation. Innovation capacity in 'Smart and creative diversification areas' is fed by external knowledge which is embedded in technical and organisational capabilities. 'Imitative innovation areas' can build on local preconditions like creativity and especially attractiveness in order to embrace new adoption, imitation and innovation strategies.

'European science-based areas' are located in Germany, Austria and southern Denmark. 'Applied science areas' compass this core but are also located in the periphery. While 'smart technological application areas' are mainly located in northern Europe and compass applied science areas, 'smart and creative diversification areas' are distributed all across Europe. Regions from southeast and eastern Europe (and NO and IS) are formed as 'imitative innovation areas'.

Norte is the only region in Portugal that is classified as 'smart technological application area', i.e. the region focuses on product innovation. It shows a limited degree of local applied science and provides high creativity which allows translating knowledge into innovation. The main target is to achieve specialized diversification across related technologies. All encompassing regions are 'smart and creative diversification areas' that base on local competences and a high degree of creativity and entrepreneurship. A similar pattern can be detected for northwest Spain and southern Greece.

This map was produced for the ESPON KIT project.

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[3] For the list and the methodology for the identification of territorial patterns of innovation, see chapter 2 in Vol. 1 of the Scientific Report of the ESPON KIT project.

Territorial Patterns of Innovation

Creative imitation area

Smart and creative diversification area

Smart technological application area

Applied science area

European science-based area

no data

Important Cities (Urban Audit 2004)

Capital

Main road network

Boundaries

Norte Region

NUTS3 Regions

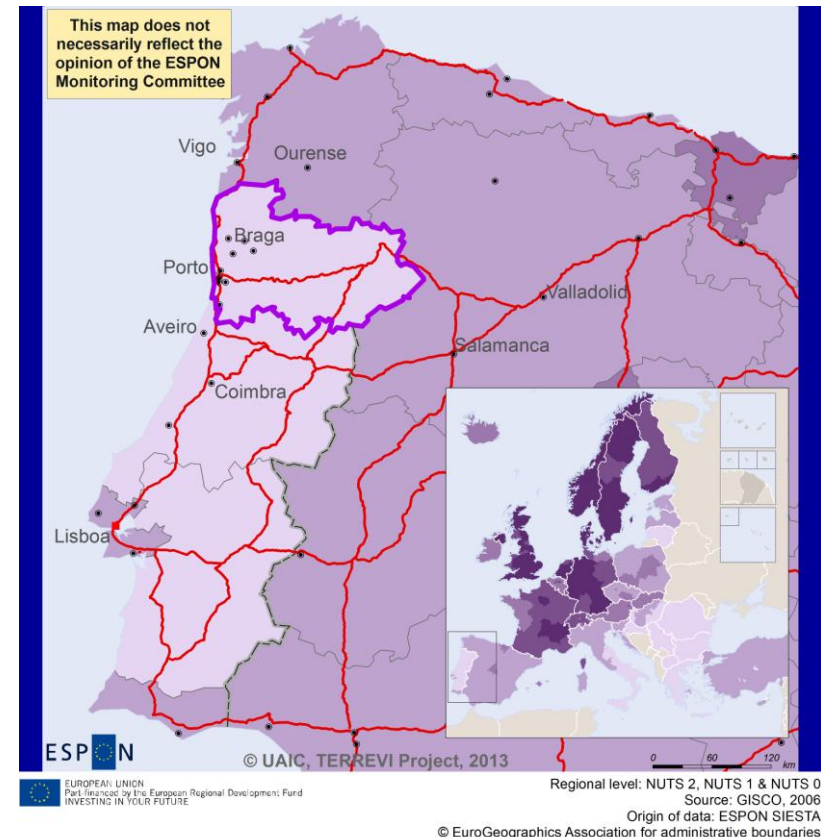**Map 7 Territorial Patterns of Innovation, 2011**

Private use of e-commerce

E-commerce is closely related to the uneven access of households and enterprises to internet facilities. This links e-commerce with the so-called digital degree. The map shows the share of individuals (aged 16 to 74 years) who ordered goods or services over the internet for private use. In doing so, the map also shows whether the internet is being used for commercial purposes, i.e. how it is effectively penetrating in businesses across Europe. The map shows information for 2010.
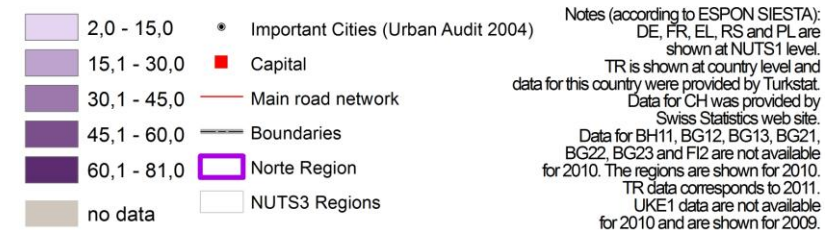
As the maps shows, the use of e-commerce differs mainly between countries and only to a limited degree between regions within a country, with north western European regions being more advanced. In the UK, Norway, Sweden, Germany or other countries where the internet is widely accepted and used, only limited regional variations can be observed. At the same time, e-commerce exploitation is low across the regions of the Mediterranean countries, Portugal and large parts of Eastern Europe. In these countries, even in capital cities and large metropolitan regions, e-commerce is not widely utilised.

E-commerce is widely-used neither in Norte nor generally in the Iberian Peninsula. Not more than 15% of all individuals (aged 16-74) in Norte use e-commerce for private purposes. In Lisbon, Algarve and in most Spanish regions (except Madrid and País Vasco) 15-30% make use of e-commerce. Italy, Hungary and Croatia indicate a similar usage of e-commerce.

This map was produced for the ESPON SIESTA project.

E-commerce or individuals (aged 16 to 74) who ordered goods or services over the Internet for private use as a percentage, 2010

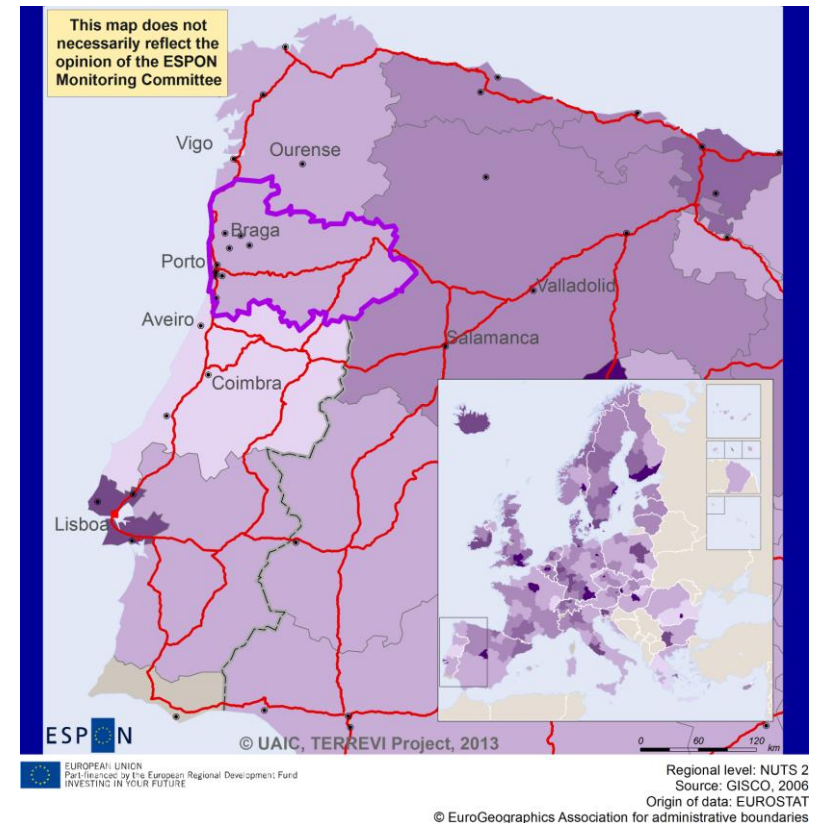**Map 8 Private use of e-commerce, 2010**

ICT employment

The Information and Communication Technologies (ICT) sector accounts for a substantial part of European GDP, employment and R&D expenditures. It is a highly R&D intensive sector. As general purpose technologies, ICT goods and services are important drivers of productivity growth and economic performance across all sectors.
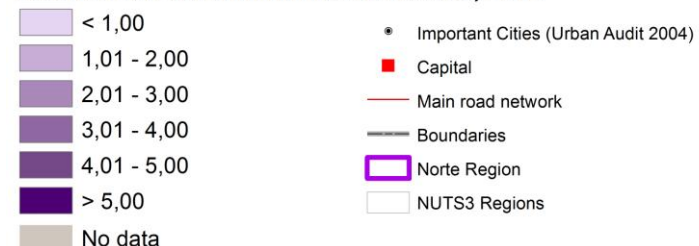
The distribution of ICT employment is highly uneven across Europe. In general, capital regions stand out as those regions showing highest values, i.e. > 5%. On the other hand, rural areas and mainly those in Eastern and Southern Europe tend to lag behind. Therefore, a general rural-urban divide is evident. Regions with shares of < 1% are mainly located in Greece and Romania. These regions verge of falling behind and constitute an important territorial challenge which requires initiatives promoting ICT technologies and focussing on peripheral areas.

Like Alentejo, in Norte 1-2% of employed persons work in the ICT sector. The capital region of Lisbon shows the highest share in Portugal (4-5%) while in Centro even less than 1% work in the ICT sector. Neighbouring Spanish regions show either similar (Galicia) or higher (Castile and León) shares. Regional disparities within Portugal mainly occur between the capital on the one hand, and other regions on the other hand. A similar situation can be detected for Greece or Romania.

This map was produced for the ESPON SIESTA & M4D projects.

Share of employed persons in the information and communication sector, 2012

Share	Legend
< 1,00	
1,01 - 2,00	Important Cities (Urban Audit 2004)
2,01 - 3,00	Capital
3,01 - 4,00	Main road network
4,01 - 5,00	Boundaries
> 5,00	Norte Region
No data	NUTS3 Regions

Map 9 People working in the ICT sector as percentage of total regional employment, 2012
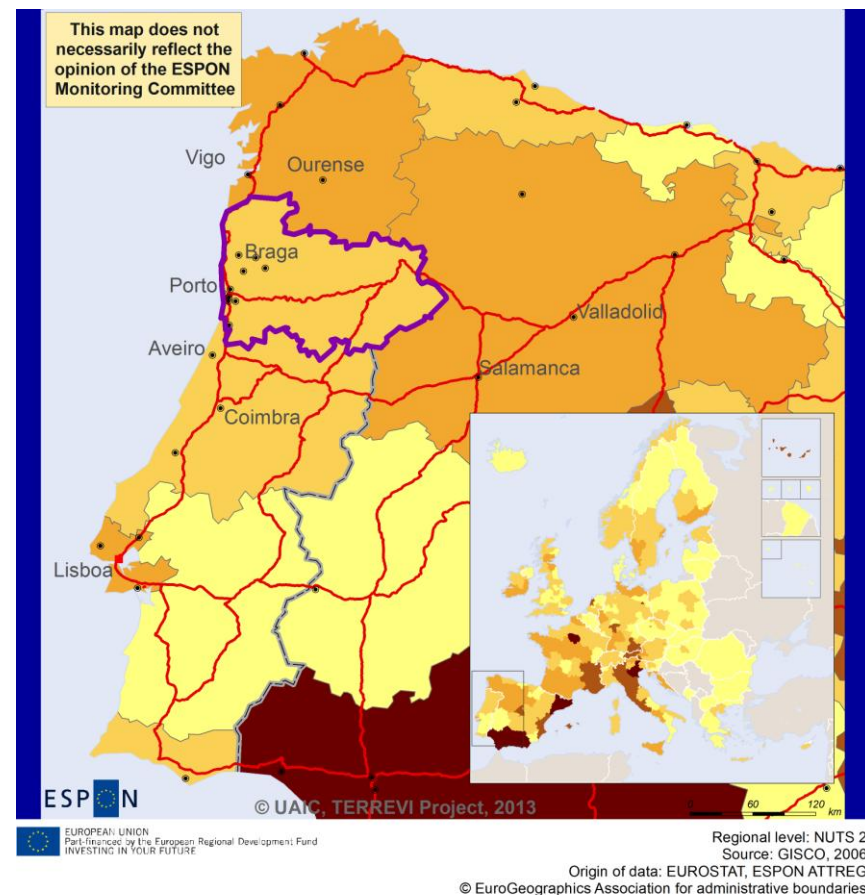
Tourist arrivals 2008-2011

The total number of tourist arrivals includes both national and foreign travellers. All kinds of accommodation are taken into account and the number of tourist arrivals is calculated as an average value over 2008-2011 period. However, there are enormous differences in national systems of accounting and reporting tourist arrivals. Additionally, the map's categories encompass wide ranges, for example from 4 m to more than 7,5 m.
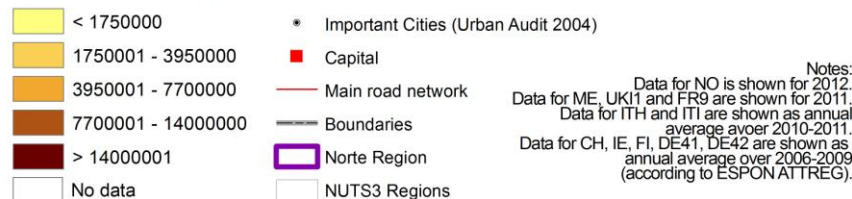
Within Europe certain destinations stand out. On the one hand several regions in Southern Europe like the southern and eastern coast of Spain, the Balearic Islands, the Canaries, southern France, Italy or the Adriatic coast of Croatia as typical tourism destinations for beach holidays are to be pointed out. On the other hand, destinations of city tourism like Berlin, Amsterdam, Paris, Rome, or Madrid become apparent. Surprisingly, Portuguese and Greek regions and islands seem to have rather low values which might be due to the different national, regional and local systems of accounting and reporting tourists to statistical offices.

The Iberian Peninsula shows large disparities. More than 14 m tourists arrived in some Spanish regions like Andalusia or the area around Barcelona (Catalonia) whereas in Alentejo, for example, less than 2 m tourists arrived. One has to consider that numbers of tourists are not related to the size of a region. However, Norte, like most Portuguese regions, was visited by approximately 2-4 m tourists. Neighbouring Spanish regions and Lisbon show higher values of more than 4 m and up to 7.7 m tourists.

This map was produced for the ESPON ATTREG project.

Annual average number of tourists arrivals over 2008 - 2011

< 1750000	* Important Cities (Urban Audit 2004)
1750001 - 3950000	■ Capital
3950001 - 7700000	— Main road network
7700001 - 14000000	= Boundaries
> 14000001	□ Norte Region
No data	NUTS3 Regions

Notes:
Data for NO is shown for 2012.
Data for ME, UKI1 and FR9 are shown for 2011.
Data for ITH and ITI are shown as annual average avoer 2010-2011.
Data for CH, IE, FI, DE41, DE42 are shown as annual average over 2006-2009 (according to ESPON ATTREG).

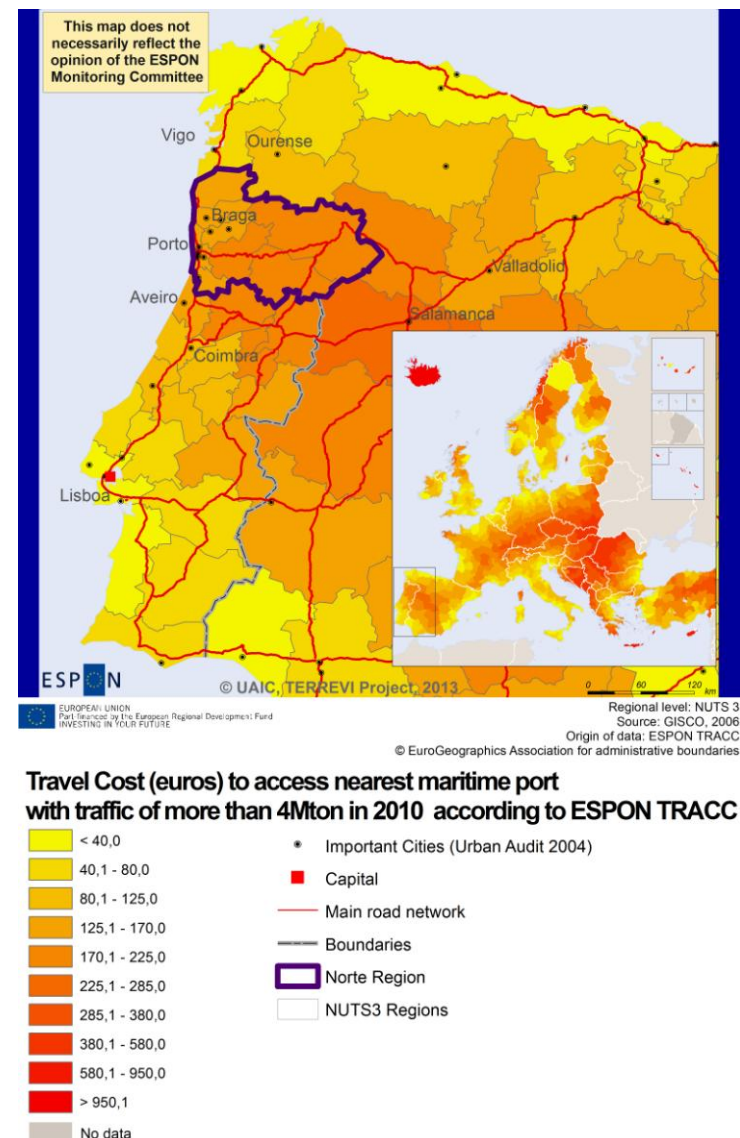**Map 10 Tourist arrivals, 2008-2011**

Travel cost to nearest maritime port

The accessibility to closest ports provides an integrated measure of the level of accessibility of regions with respect to maritime freight terminals, as an important element in the economy to allow exports of local commodities and imports. In this respect, the indicator is computed with reference to ports with a throughput of at least 4 million tonnes yearly, i.e. those ports which actually play a role as gates towards other regions.

Not surprisingly, coastal zones are generally more accessible. Especially locked-in countries in Central Europe like the Czech Republic, Slovakia or Hungary cannot provide good access to ports. Nevertheless, geographical position is not enough and even coastal zones may have a poor accessibility if infrastructures (ports) are not adequate (i.e. only minor ports are located nearby or connections are expensive). Regions having poor accessibility despite a coastal position are the Balkan states and peripheral and island regions like Iceland, Cyprus or Greek islands.

Transporting commodities from Norte to the nearest maritime port requires higher travel costs than from central and southern Portugal or northwest Spain. In addition and almost self-evident, it is cheaper at a small coastal strip and more expensive in the inland areas of Norte. The regional price differential is quite similar in the Baltic states, southern and western France or eastern Greece, for example.

This map was produced for the ESPON TRACC project.

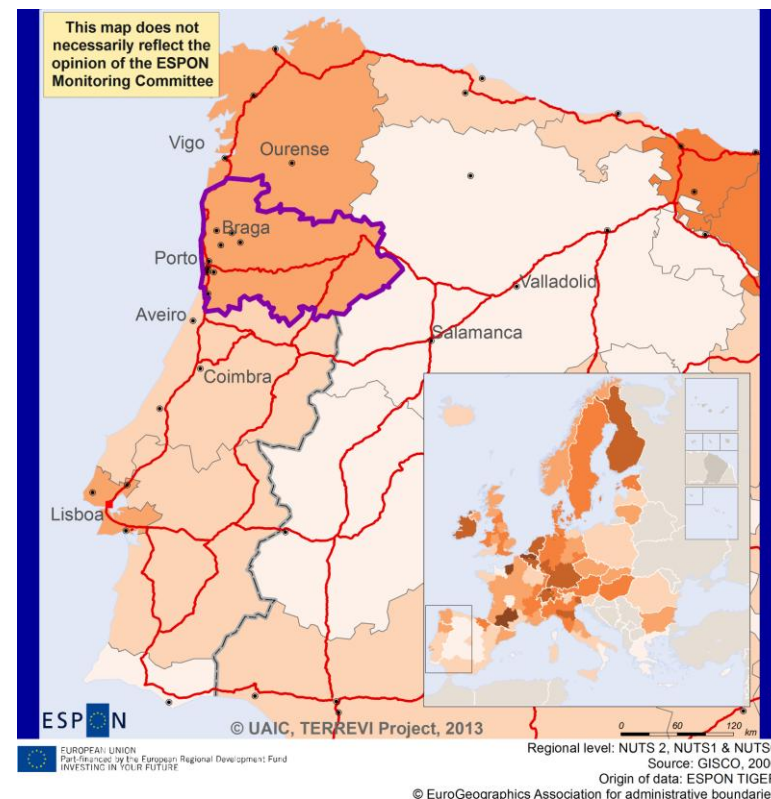**Map 11 Travel cost to access nearest maritime port, 2010**

Openness to extra-ESPON and neighbourhood trade

Extra-EU / extra-ESPON and neighbourhood exports exclude all exports within the ESPON space as well as its immediate neighbourhood (Western Balkans, Near East, former-USSR and Northern Africa). Therefore only trade with Asian countries, with Northern and Latin America, with the Antipodes and Oceania, and with central and southern Africa are taken into consideration. Of course, participation in global trade is only one way to take part in the global economy and other types of data are required in order to give a more complete picture of the regional participation in the global economy. However, many European regions are relatively closed to the global economy and many of these regions have indeed very limited relations to the rest of the world.

Global trends affect regional economies across Europe in a much more differentiated way because of the huge variety in the participation in global trade. The most important result is the evidence of a huge diversity in the openness to extra-EU trade. The figures vary from values close to 0% (0.1% in Corsica) to 30% in northwest Europe (31% in Flanders). No general pattern is to be detected. However, especially central Spain, southern Italy, Greece and Cyprus stand out as regions where extra-EU and neighbourhood exports are of almost no importance.

In Portugal only Norte and Lisbon show shares of extra-EU trade between 4-6%. For other Portuguese regions this kind of trade is less important (2-4%), for the Algarve almost unimportant (< 2%). Focussing on the cross-border area, the coastal regions Norte and Galicia, where the ports of Porto and Vigo are located, have shares > 4% while extra-EU trade is of low relevance for the inland region of Castile and León (< 2%).

This map was produced for the ESPON TIGER project.

Openness rate 2007-2009
Extra EU Exports / GDP
(excluding EU neighbourhood to avoid EU border effect)

0,0 - 2,0	Important Cities (Urban Audit 2004)
2,1 - 3,0	Capital
3,1 - 6,0	Main road network
6,1 - 8,8	Boundaries
8,9 - 15,0	Norte Region
15,1 - 31,0	NUTS3 Regions
no data	

Map 12 Openness to extra-ESPON and neighbourhood trade of European regions, average 2007-2009

Results and feedback from the workshop

In general, indicators provided by ESPON projects and presented within the evidence report are considered useful for Norte. However, some aspects may limit the usefulness. They might provide opportunities to further improve the presented indicators.

First of all, some indicators seem to be dated, due to the fact that either the projects were conducted a few years ago, or the data sets are rather old. The main reason is that it takes some time to collect and harmonise data sets at European level.

Another factor that may hamper an indicator's usefulness, concerns the territorial level at which it is calculated and presented. To use data on territorial patterns of innovation for example, NUTS2 regions might give a description of the European pattern. Yet, it would be desirable if it were more specific and detailed – both regarding content and regarding the territorial scale.

A third factor regards the complexity of indicators. Composite indicators that combine several and very different dimensions and sub-indicators can be difficult to understand in policy processes.

A fourth point that might distort result concerns the regional background and context of an area. Cultural differences or regional disparities in income might cause bias but are often not taken into consideration. Each region has specific characteristics and might therefore need even more specific indicators.
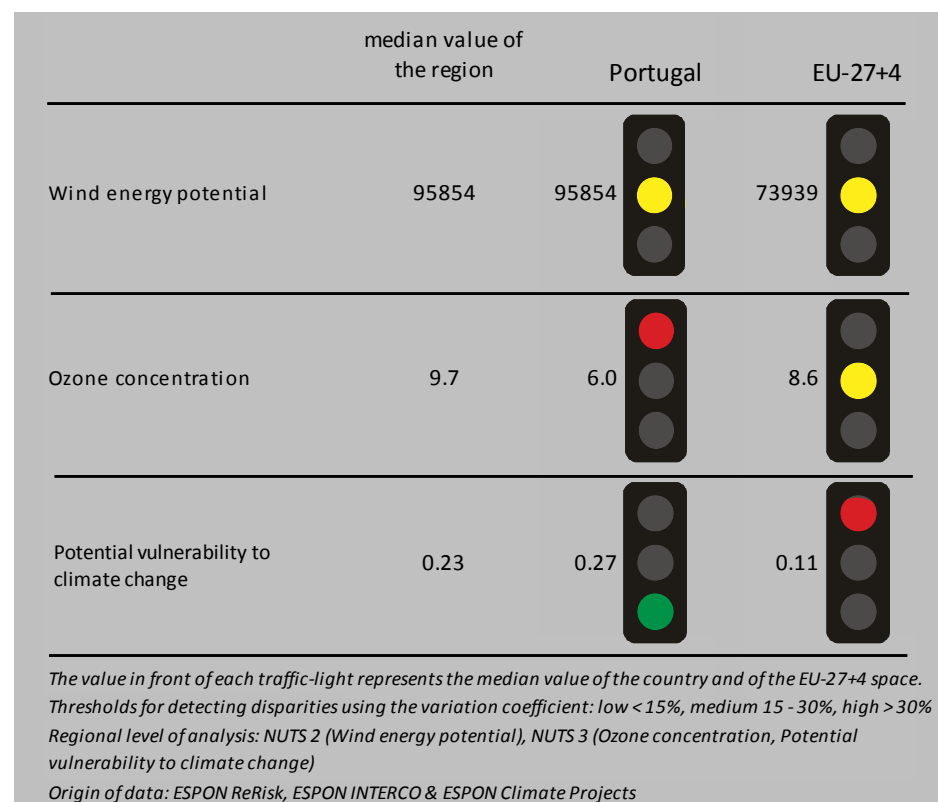
Programming steps

Focussing on details concerning the five programming steps, the reviewed indicators are relevant both for the needs analysis and the thematic concentration. The situation is more differentiated when it comes to other programming steps. Indicators on R&D expenditure, KIS and territorial patterns of innovation are considered adequate to be included into dialogues with other stakeholders of the programme area. Only indicators on R&D expenditures and KIS are considered suitable for identifying promising projects, and suitable as indicators for programme monitoring, i.e. observing changes within the programming period or even within single projects.

Further suggestions

Intramural R&D expenditure	- split by different economic sectors - show educational expenditures as separate / additional indicator - focus on SME
Knowledge-intensive services	- disaggregation required, split by different economic sectors - show single fields of KIS, for example nano-technology
Territorial patterns of innovation	- level of NUTS3 more useful than NUTS2 - Territorial patterns could be calculated / identified for single sectors - patterns could be calculated for sectors that are of special relevance for a region / some regions
Private use of e-commerce	- could be combined with other issues: eServices, eGovernment, availability and use of internet devices - distinguish between households, enterprises, suppliers and authorities etc. - include other targets of the EU Digital Agenda
Travel cost to nearest port	- operational costs at ports should be added - short-sea shipping as additional indicator on maritime transport

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.

	median value of the region	Portugal		EU-27+4	
Wind energy potential	95854	95854	🟡	73939	🟡
Ozone concentration	9.7	6.0	🔴	8.6	🟡
Potential vulnerability to climate change	0.23	0.27	🟢	0.11	🔴

The value in front of each traffic-light represents the median value of the country and of the EU-27+4 space.
Thresholds for detecting disparities using the variation coefficient: low < 15%, medium 15 - 30%, high > 30%
Regional level of analysis: NUTS 2 (Wind energy potential), NUTS 3 (Ozone concentration, Potential vulnerability to climate change)
Origin of data: ESPON ReRisk, ESPON INTERCO & ESPON Climate Projects

The 2020 sustainable growth headline targets of the Europe 2020 strategy are expressed in the "20/20/20" formula. It stands for a 20% reduction in greenhouse gas emissions compared to 1990 levels; plus 20% of our energy to come from renewable resources, and finally a 20% increase in energy efficiency. Each country then sets its own targets within these.

The Europe 2020 strategy sees sustainable growth not purely as environmental protection. Rather the aim is to look for ways that growth can be both in harmony with the environment, but also less vulnerable in the future to the kind of economic crises that have so damaged economies since 2007/2008.

While focussing on global challenges such as climate change, sustainable growth ultimately depends on place-based actions. The territorial perspective is again to refine understanding of what kind of interventions in what places can steer regions and Europe as a whole onto the path to a green economy and sustainable growth. In this respect also potentials for blue growth deriving from a maritime resources are of interest.

The traffic light shows three indicators related to sustainable growth. In this respect the region Norte has about medium wind energy potential in both a Portuguese and European perspective. The ozone concentration is rather high as compared to the rest of Portugal and about medium as compared to the rest of Europe. The region has a compared to the rest of Portugal a relatively potential vulnerability to climate change than, but it is high compared to the rest of Europe.

The following sections will discuss in further detail some additional indicators related to smart growth.
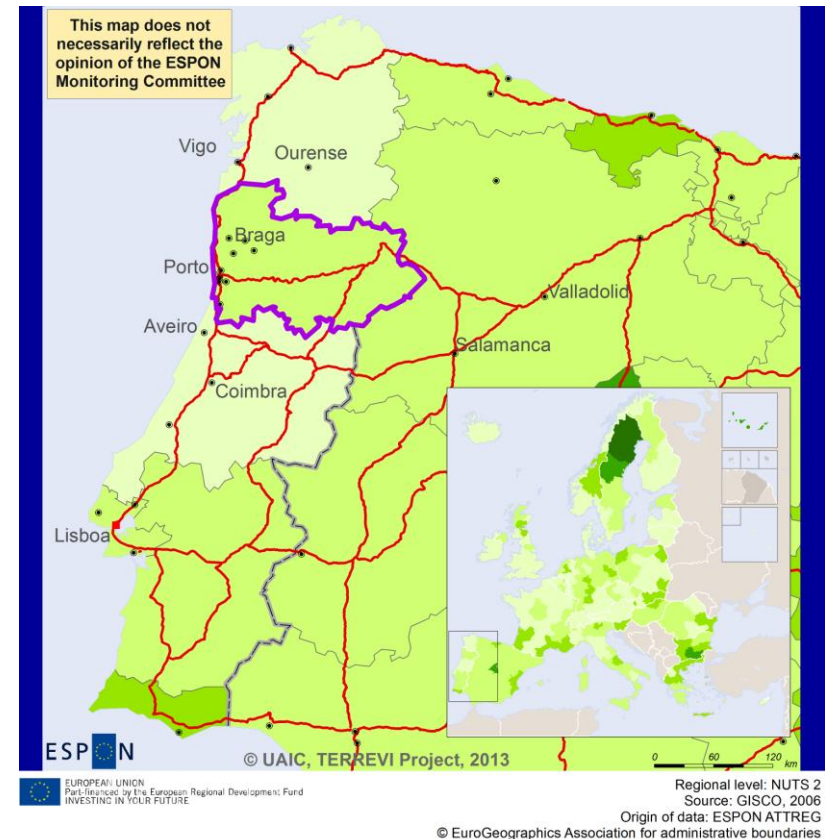
Quality of natural landscape

The quality of natural landscape does not only concern environmental issues but affects many thematic fields. As a green and healthy environment is an important part of the regional quality of life, it can influence people's mobility when choosing a new primary centre of interest and living. On the other hand, attractive and sound landscapes also enhance positive image of regions as tourism destination and therefore affect travel patterns.

Regarding the quality of the natural landscape, the share of classified NATURA 2000 sites emphasises the potential attractiveness of many rural and peripheral regions, although important urban regions like Madrid, Marseille and Rome, and intensely developed tourist region like the Canary Islands and the southern French coast, also score very well.

Norte generally shows a medium value (20-40%) both within the Iberian Peninsula and compared to other Portuguese regions. Madrid, Algarve, Valencia Community, and Cantabria show highest shares on the Peninsula, i.e. > 40%. Norte's neighbouring regions like Galicia and Centro have lowest shares of NATURA 2000 sites in Spain and Portugal respectively (< 20%).

This map was produced for the ESPON ATTREG project.

Map 13 Quality of natural landscape based on NATURA 2000 sites
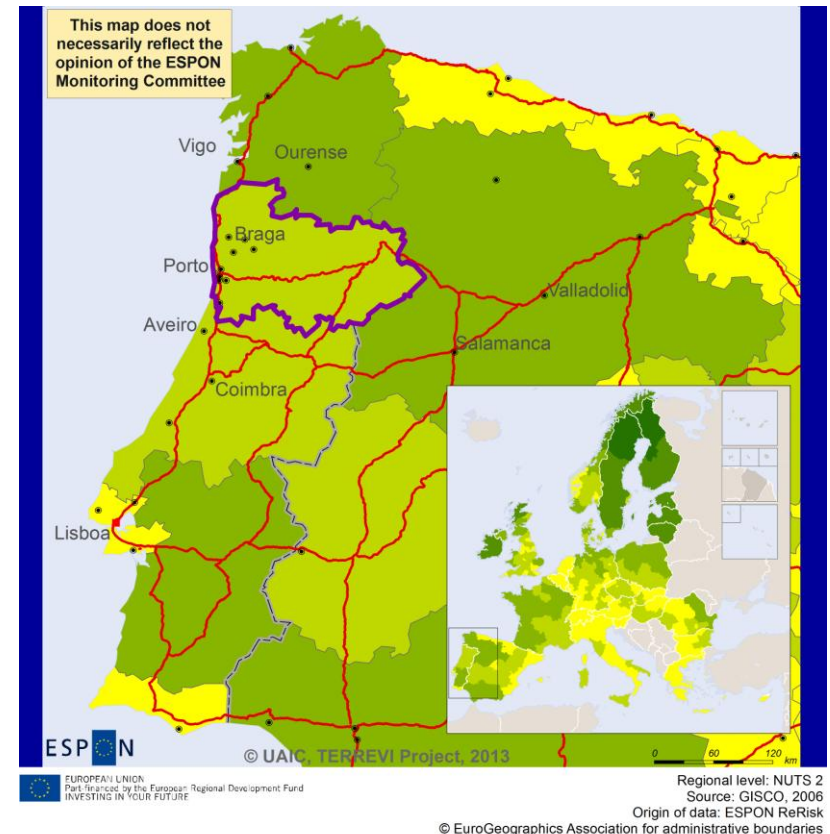
Wind power potential

The use of wind energy potential could be one of the cornerstones in building a competitive low-carbon economy in the EU. Yet, wind power potential does not only highlight the regions with high wind speeds but with the greatest wind power potential, i.e. it takes the size of large areas into account. The map takes into account some, mainly environmental, restrictions which limit the possibility to put up wind farms. Following EEA's recommendations, Natura 2000 areas are excluded in order to calculate constrained potentials. Although it is not illegal to site wind warms in these areas, they provide a proxy for the restrictions implied by biodiversity protection. Hence, the map indicates how much energy might be feasible in practical terms.

The greatest potentials for wind power are located in Sweden, Finland and the Baltic states but also in northern Norway, Scotland and Ireland. Beside the Baltic Sea (incl. Barents Sea), the regions located at the Atlantic Ocean hold greatest potentials for using wind power. In contrast, Mediterranean regions and those close to the North Sea, like the Netherlands or Belgium, have comparatively low values despite their coastal geographic position.
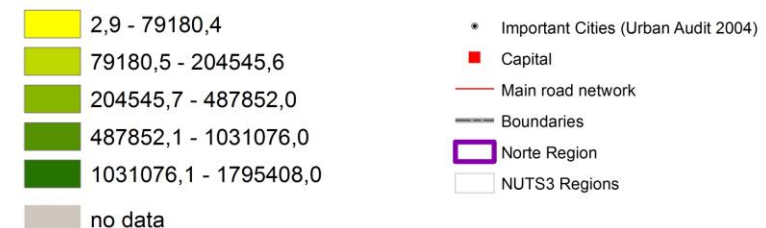
In comparison to Galicia and Castile and León, Norte provides less wind power potential but it is still similar to the potential in Centro. Focussing on the Iberian Peninsula, Norte provides medium potentials despite its coastal position. A similar spatial pattern is found in northern France, Denmark and southern Norway.

This map was produced for the ESPON ReRisk project.

Wind Power Potentials
(Measured in km/s and considering the area of NUTS2 regions in km^2)

2,9 - 79180,4	
79180,5 - 204545,6	
204545,7 - 487852,0	
487852,1 - 1031076,0	
1031076,1 - 1795408,0	
no data	

* Important Cities (Urban Audit 2004)
■ Capital
— Main road network
--- Boundaries
□ Norte Region
□ NUTS3 Regions

Regional level: NUTS 2
Source: GISCO, 2006
Origin of data: ESPON ReRisk
© EuroGeographics Association for administrative boundaries

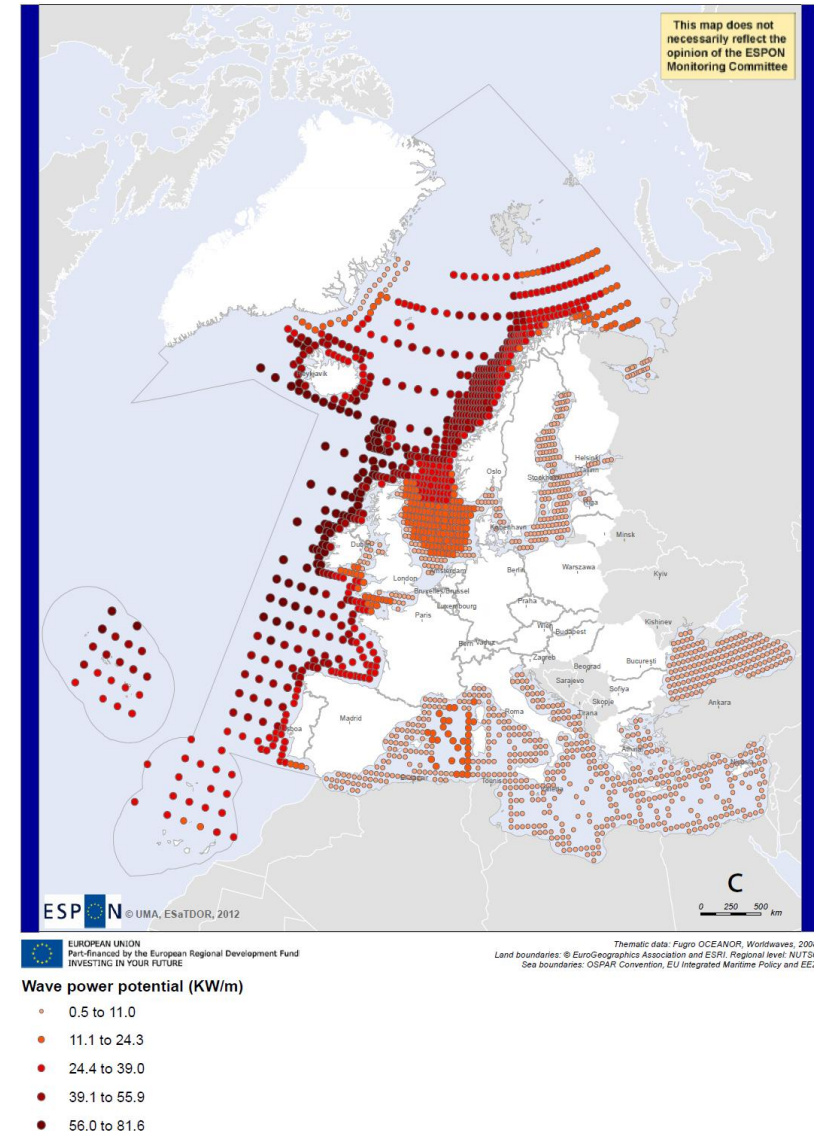**Map 14 Wind power potential (m/s/km2)**

Wave power potential

A considerable amount of research effort is currently going into assessing the energy potential of Europe's seas. For example, the FP7 ORECCA project has mapped the likely energy potential of wave power. Wave power energy as offshore renewable, i.e. 'blue' energy, is important for the European strategy on 'Blue Growth'. This strategy is still at an early stage of development and therefore provides opportunities for future marine and sustainable maritime growth. It claims to be suitable for minimizing land-use requirements and reducing greenhouse gas emissions. However, the development of marine renewables depends on many factors. Wave energy is much more difficult to capture, and technological development remains at an experimental stage. The take-up of tidal energy is also more challenging, especially as the physical opportunities for development are much more limited and are frequently in sensitive coastal or estuarine locations. Research efforts are, nonetheless, ongoing; for example, the *Pelamis* wave energy convertor has been trialed in Scottish and Portuguese waters.

Western coastal areas fully exposed to the Atlantic have the greatest capacity to develop wave power, followed by open areas in the North and single areas in the Mediterranean Sea. However, enclosed sea areas like the most parts of the Mediterranean, the Baltic or the Black Sea have relatively little potential in this regard.

Although the potential is not as extensive as for the North Sea and northern parts of the Atlantic coast, the French, Spanish and Portuguese coast-line of the Atlantic Ocean provides opportunities to make use of wave power and to promote this increasing field of renewable 'blue' energy. Nevertheless, all environmental and seascape-related aspects have to be taken into consideration since coastal areas, as environmentally sensitive areas, and land- and seascapes need special protection because of their land-/seascape and wildlife value.

Information on solar power can be found in the ESPON ReRisk report. For further information on tidal power, see ESPON ESaTDOR report. This map was produced for the ESaTDOR project.

Wave power potential (KW/m)

- 0.5 to 11.0
- 11.1 to 24.3
- 24.4 to 39.0
- 39.1 to 55.9
- 56.0 to 81.6

Map 15 Wave power potential (kW/m)
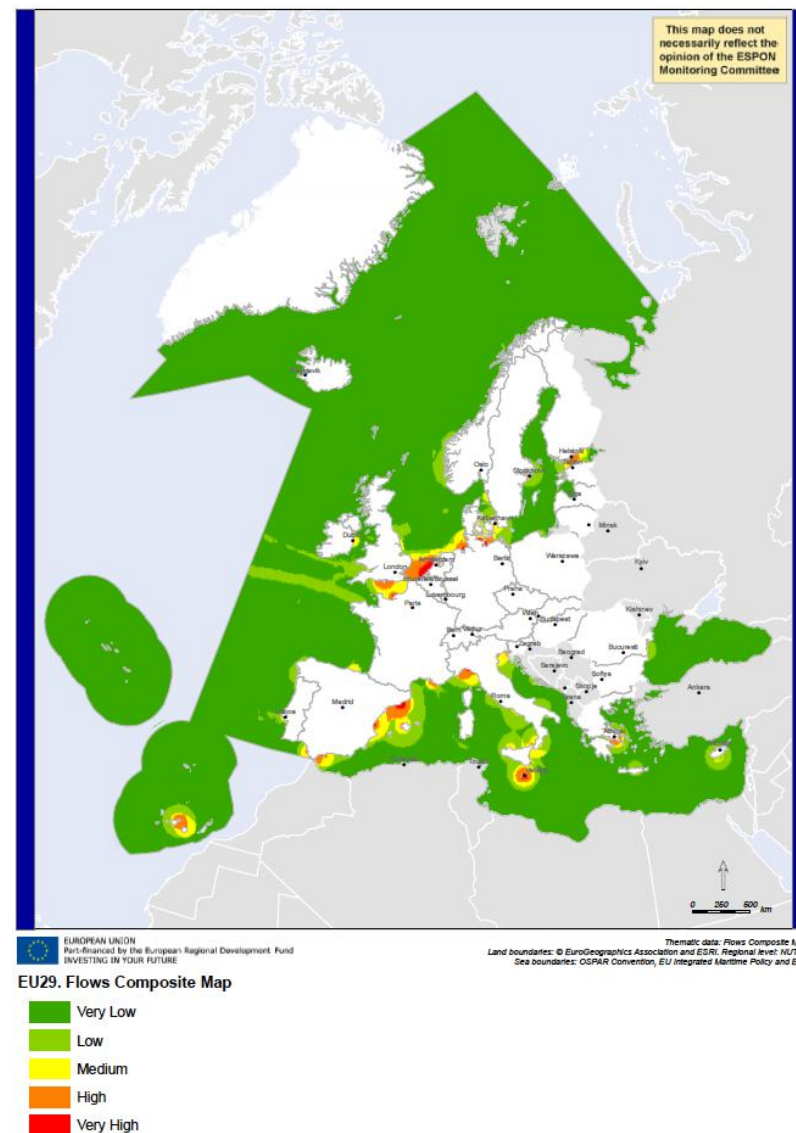
Maritime flows

Maritime flows represent influences generated by land-sea interactions of people, goods and information moving through the seas, i.e. container traffics, cruise passengers, liquid bulk (oil and gas) and submarine telecommunication cables. As a composite indicator it aggregates the following flows:

- Flows of goods: Economic influence of container ports, based on port proximity and container volume (weighting 50%),

- Flows of people: Economic influence of cruise ports, based on port proximity and cruise passenger volume (weighting 30%),

- Flows of energy: Marine exposure due to port influence, based on port proximity and volume of energy (weighting 10%),

- Flows of information: Undersea cable influence, based on proximity to cable and length per grid square (weighting 10%).

Two areas of high maritime activity are detected. First high activity area of flows is concentrated between Le Havre, in France, and Bremen, in Germany. In this coast are concentrated the main ports of freight transport of the northern range (Rotterdam, Hamburg Antwerp, Bremerhaven, Felixstowe and Southampton). A second high activity area of flows is identified in the Mediterranean, where container activity is slightly smaller but where the main ports of cruises are concentrated, such as in Barcelona and Palma de Mallorca, Napoli, Livorno and Civitavecchia, Piraeus and Malta.

No hotspot of maritime flows is located in Portugal. These hotspots are situated in regions highly affected by container shipping and cruise activity which does not apply to Portugal.[4] There are some regional hotspots around Lisbon, Bilbao and Vigo. The last-mentioned port also affects Norte but only to low extent. If data on cruise activity for Portugal were reported to Eurostat, the map would look slightly different. Considering the data represented in this map, the Adriatic coast or the Baltic Sea indicate similar maritime flows.

This map was produced for the ESPON ESaTDOR project.

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[4] The composition for Portuguese regions is affected by the fact that no data on cruise passengers for Portugal were reported to Eurostat.

Map 16 Maritime flows, 2008

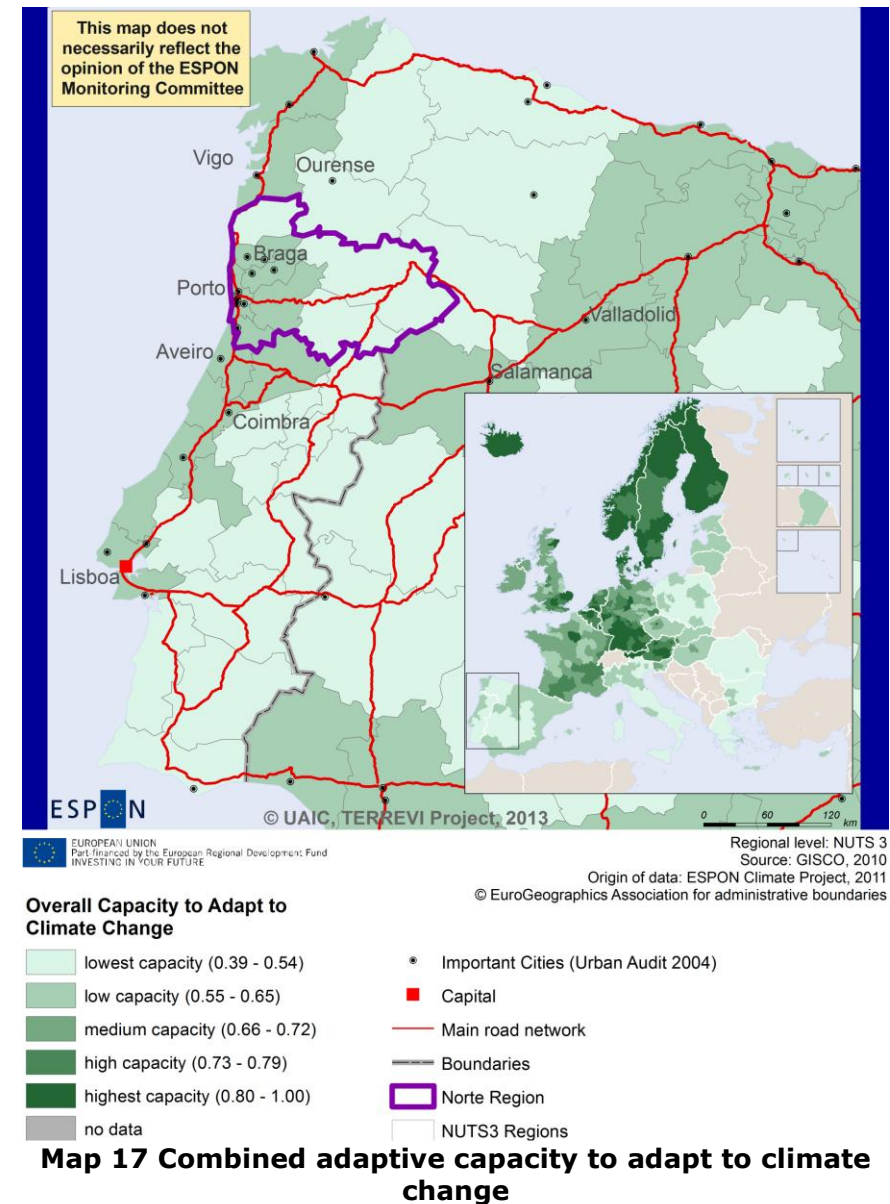## Combined adaptive capacity to climate change

Adaptive capacity 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 both preventing and/or moderating potential damages, and taking advantage of new opportunities opened up by climate change. A total of 15 indicators were developed and then aggregated to reflect on the five adaptation dimensions. The overall adaptive capacity was calculated by combining these dimensions.

Indicator	Dimension	Weighting
Educational commitment		
Computer skills	Knowledge and awareness	23%
Attitudes towards climate change		
Resources for technology		
Capacity to undertake research	Technology	23%
Patents		
Transport		
Water infrastructure	Infrastructure	16%
Health		
Government effectiveness		
NAS	Institutions	17%
Democracy		
Income per capita		
Age dependency	Economic resources	21%
Unemployment		

Firstly, a difference in adaptive capacity can be distinguished across Europe. Overall, Nordic countries have the highest capacity. A second group with regional disparities encompasses Germany, France, the UK, Austria and the Benelux countries. In Eastern European and Southern European countries with low and lowest capacity, capital city and urban regions generally hold higher capacity than other regions within the country.
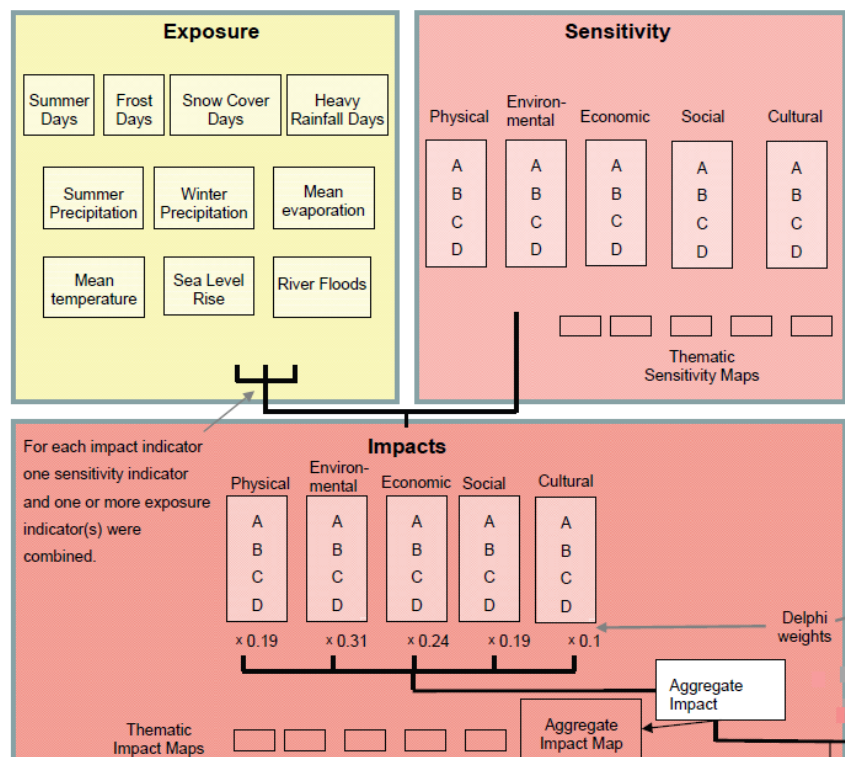
Not even a single Iberian region holds medium capacity to adapt to climate change. For Portugal, mainly coastal regions hold at least low capacity while inland and southern regions only hold lowest capacities. This east-west divide also dominates Norte. The urban area around Porto and Braga holds low capacity. From a European perspective, this pattern is comparable to Italy or Poland.

This map was developed in the ESPON Climate project and re-produced for the ESPON TERREVI project.

Overall Capacity to Adapt to Climate Change

- lowest capacity (0.39 - 0.54)
- low capacity (0.55 - 0.65)
- medium capacity (0.66 - 0.72)
- high capacity (0.73 - 0.79)
- highest capacity (0.80 - 1.00)
- no data
- Important Cities (Urban Audit 2004)
- Capital
- Main road network
- Boundaries
- Norte Region
- NUTS3 Regions

Map 17 Combined adaptive capacity to adapt to climate change

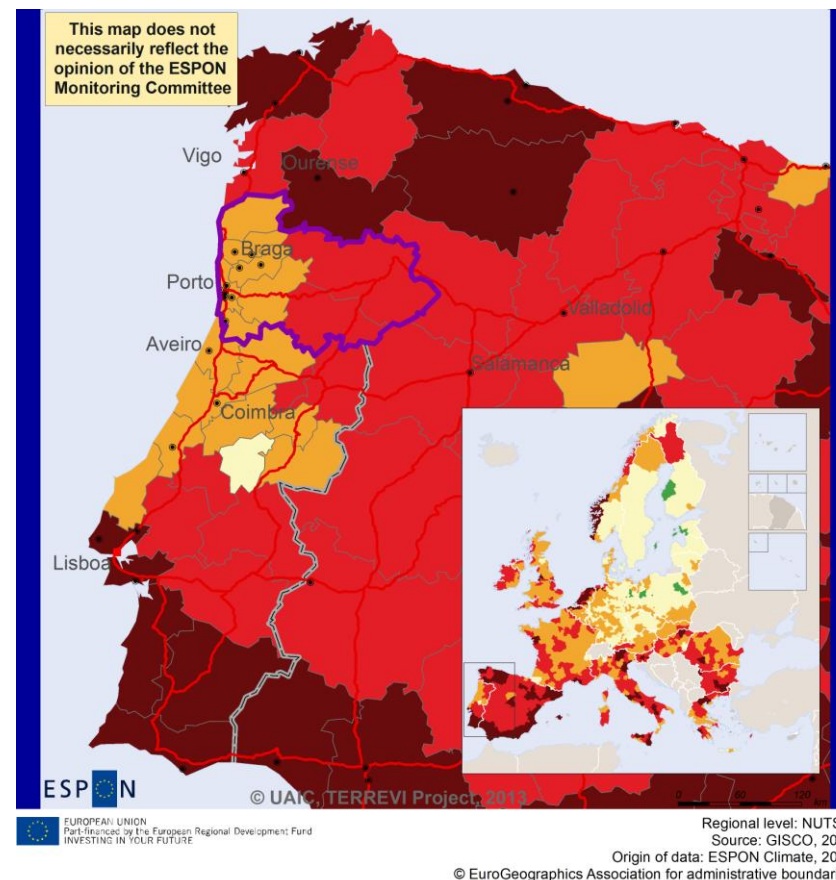## Potential impact of climate change

The map of potential impact combines 10 indicators of 'exposure' to climate change with 5 dimensions of 'sensitivity' to climate change.
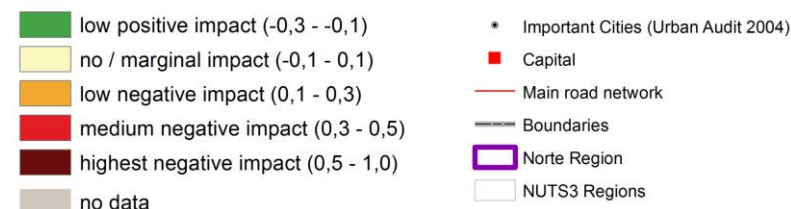

Taking into account certain exceptions like the Netherlands or Ireland, especially Southern regions will face highest impacts, i.e. those regions which only show low and lowest adaptive capacities.

As for adaptive capacity, also potential vulnerability for Norte is dominated by an east-west divide. Coastal areas only have to expect low negative impacts while inland regions will be affected by medium negative impacts. Some neighbouring areas in northwest Spain also have to expect even highest negative impacts. A similar pattern can be detected in Italy, Greece, Romania and Bulgaria.

This map was produced for the ESPON Climate project. See the Final Report for maps on single 'exposure' and 'sensitivity' indicators.

Aggregate impact of climate change

- low positive impact (-0,3 - -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)
- no data

- * Important Cities (Urban Audit 2004)
- ■ Capital
- Main road network
- Boundaries
- Norte Region
- NUTS3 Regions
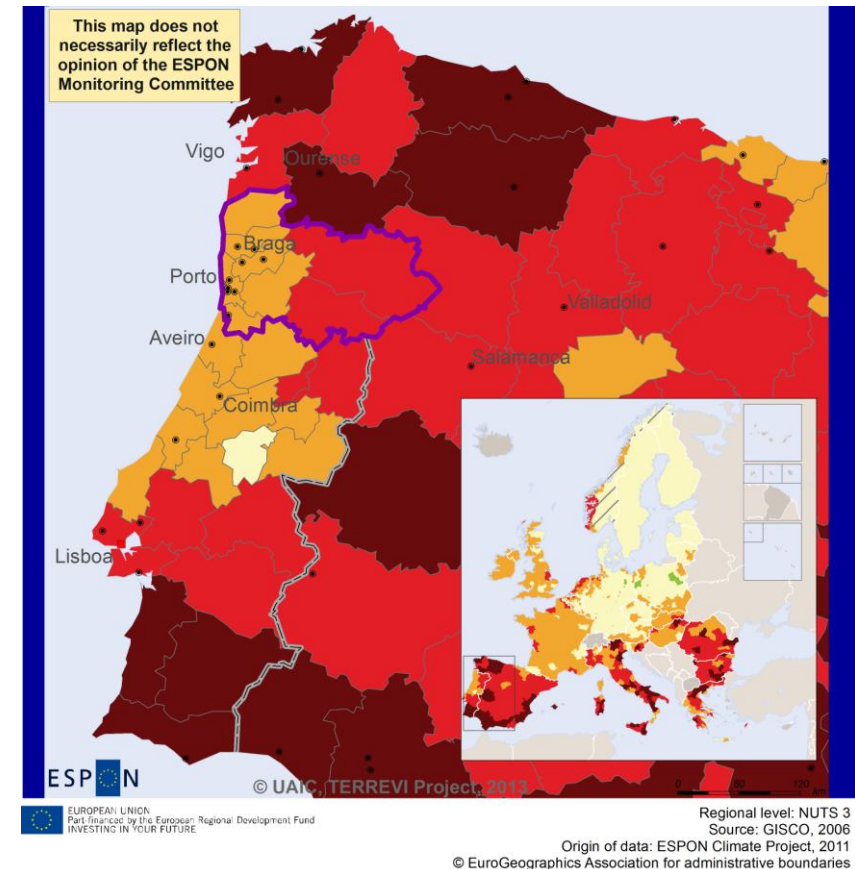
Map 18 Aggregate impact of climate change

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.
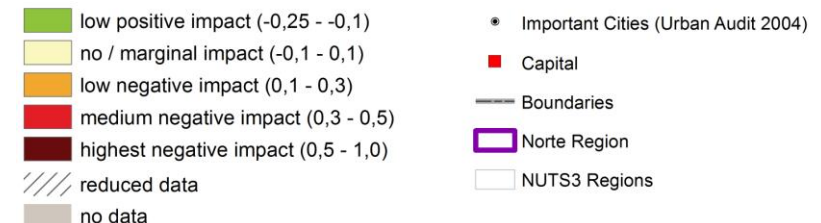
The south-north gradient which was already visible on the adaptive capacity map is now much more obvious. This is due to the considerable adaptive capacity of Scandinavia and Western European countries. Furthermore, those countries which only have less adaptive capacity, have to expect a medium to high increase in impacts. In consequence, a medium to high increase of vulnerability may be expected in the Mediterranean countries and in South-East Europe. This scenario for the future runs counter to territorial cohesion because climate change would trigger a deepening of the existing socio-economic imbalances between the core of Europe and its Southern and South-eastern periphery.

As for adaptive capacity, also the potential vulnerability for Norte is dominated by an east-west divide. Coastal areas only have to expect low negative impacts. While inland regions will be affected by medium negative impacts, neighbouring regions in northwest Spain expect medium and even highest negative impacts. An agglomeration of areas affected by low and medium negative impacts and surrounded by regions affected by more intense impacts can also be detected in Italy, Greece, Romania and Bulgaria.

This map was developed in the ESPON Climate project and re-produced for the ESPON TERREVI project.

Map 19 Potential vulnerability to climate change

Results and feedback from the workshop

In general, indicators provided by ESPON projects and presented within the evidence report are considered useful for Norte. However, some aspects may limit the usefulness. They might provide opportunities to further improve the presented indicators.

First of all, some indicators seem to be dated, due to the fact that either the projects were conducted a few years ago, or the data sets are rather old. The main reason is that it takes some time to collect and harmonise data sets at European level.

Another factor that may hamper an indicator's usefulness, concerns the territorial level at which it is calculated and presented. To use data on wind power potentials, NUTS2 might give a description of the European pattern. Yet, it would be desirable if it were more specific and detailed regarding the territorial scale because potentials could differ considerably between coastal and inland areas.

A third factor regards the complexity of indicators. Composite indicators that combine several and very different dimensions and sub-indicators can be difficult to understand in policy processes. Potential vulnerability to climate change, for example, combines adaptive capacity with impacts of climate change. On the other hand, these sub-indicators are also complex composite indicators.

A fourth point that might distort result concerns the regional background and context of an area. Cultural differences or regional disparities in income might cause bias but are often not taken into consideration. Each region has specific characteristics and might therefore need even more specific indicators.

Programming steps

Focussing on details concerning the five programming steps, the reviewed indicators are relevant both for the needs analysis and the thematic concentration. The situation is more differentiated when it comes to other programming steps. While indicators on wind and wave power potential are considered adequate to be included into dialogues with other stakeholders of the programme area, indicators on climate change are considered suitable for the selection of projects, and programme monitoring, i.e. observing changes within the programming period or even within single projects.

Further suggestions

Wind power potential	- Integration of off-shore wind potential - Including outermost territories - Capacity to use the potential: access to smart grids etc. - Comparing current use and potential might be useful - Exclusion of NATURA2000 sites not useful, bias derives from that
Wave power potential	- Integrate other sea-energy potentials like tidal power - Density of wave power stations might be interesting - Indicators on biomass, general dependency on energy import
Maritime flows	- Consider not only intensity but also direction /dynamics of flows - More information on shipping as it is very relevant for the regional economy
Combined adaptive capacity to climate change	- Maps on single indicators and dimensions necessary to understand this composite indicator (available in the Climate Report)
Potential vulnerability to climate change	- Maps on single indicators and dimensions necessary to understand this composite indicator (available in the Climate Report)

1.3 Inclusive Growth

Inclusive growth is an important dimension of the Europe 2020 Strategy. Inclusive growth focuses both on the pace and pattern of growth, and it brings together two aspects which usually have been dealt with separately in policy-making: poverty and growth.

In this perspective territorial evidence can be used to analyse at a regional or city level the sources, and constraints to sustained, high growth, and not only on one group – the poor. The territorial evidence allows looking for ways to raise the pace of growth by utilising more fully parts of the labour force trapped in low-productivity activities or completely excluded from the growth process.

The main policy instruments for inclusive growth are seen in the field of productive employment. In other words, inclusive growth means raising Europe's employment rate by creating more and better jobs, especially for women, young people and older workers, by helping people of all ages anticipate and manage change through investment in skills & training, and by modernising labour markets and welfare systems ensuring the benefits of growth reach all parts of the EU.

Growth is highly dependent on levels of income, poverty, and asset inequality, but also geography, demography, governance, politics, social considerations, and the set of existing policies. These differ not only between countries, but also over time within the same country.

In territorial terms, this raises important question as to the mobility of labour force and regional difference of the labour force, as well as regional differences in related to poverty and education levels and the infrastructure and mechanisms to overcome challenges and help individuals to escape poverty and benefit from livelong learning increasing their prospects on the labour market.

	value of the region	Portugal	EU-27+4
Long-term unemployment rate (12 months and more) - 2011	6.6	6.2	3.0
At-risk-of-poverty rate - 2011	19	17	16
Persons aged 25-64 and 20-24 with upper secondary or tertiary education attainment (%) - 2011	31	32	76

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

The traffic light shows that the region Norte is particularly challenged (as compared to the rest of Portugal and also the rest of Europe) with regard to the three selected inclusive growth indicators, i.e. long-term unemployment rate, at risk of poverty rate and the share of persons in working age having a tertiary education.
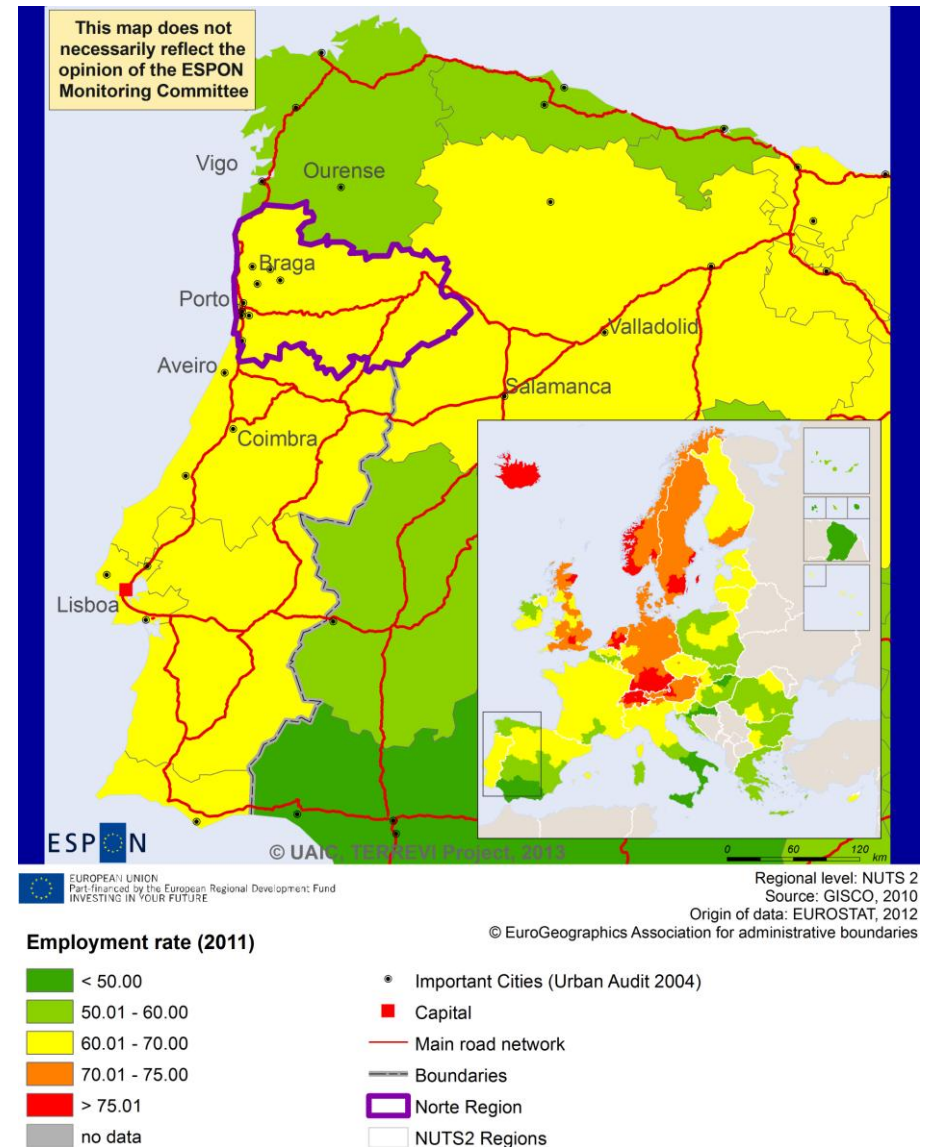
The following sections will discuss in further detail some additional indicators related to smart growth.

Employment rate 2011

According to EUROSTAT, employment rate represents persons in employment as a percentage of the population of working age (15-64 years). 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. One has to consider that employment rates can even increase despite a total decline of people in employment.

Employment rates are above 70% in all Nordic countries (except Finland), Germany, the Netherlands, Austria, Switzerland and most parts of the UK. However, no explicit gradient (neither north-south / east-west nor core-periphery) exists, as e.g. the Baltic States, France, northern Italy, northern Spain, Portugal, the Czech Republic and some parts of Poland and Finland show employment rates above 60%. Nevertheless, most regions with rates below 60% are situated in peripheral regions in Southern, Eastern and Southeast Europe.

All Portuguese regions show employment rates between 60 and 70%. Spain is affected by a north-south divide (except northeast Spain), i.e. northern Spain indicates higher employment rates than central or southern Spain. On the other hand, Galicia, Asturias and Cantabria, once again show employment rates below 60% so that Norte is encompassed by regions with a comparable or lower employment rate. A similar spatial structure is stated for central Italy, central Poland or Ireland.
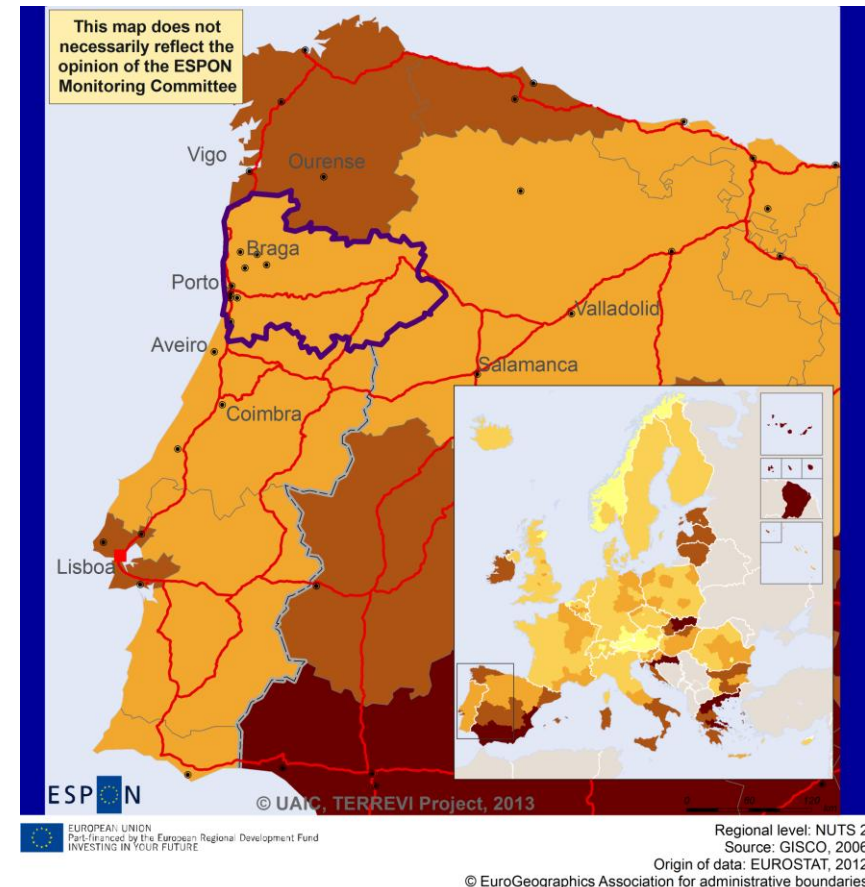

Map 20 Employment Rate, 2011
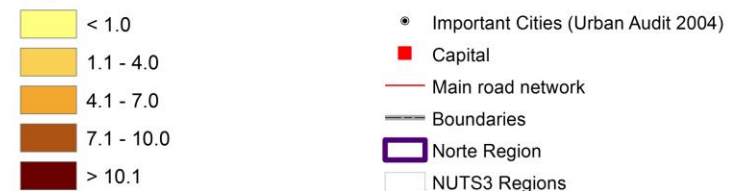
39

Long-term unemployment rate 2011

Long-term unemployment rate refers to the number of people who are out of work and have been actively seeking employment 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. According to EUROSTAT, 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).

There are specific countries in Europe that have all their regions with high long-term unemployment rates like Ireland, the Baltic states, Slovakia (except Bratislava), Croatia (except Zagreb) and Greece. Other states from Southern and South-eastern Europe like Italy, Spain or Romania have large areas with high unemployment rates, i.e. more than 7%. Most parts of Europe have medium rates (1-4%) although some regions with structural problems from Central Europe like East Germany, southern Belgium or Northern France, or from the periphery like Romania, Portugal and Spain stand out (4-7%). On the other side, mainly regions from Austria and Southern Germany, and Norway as a non-EU country are outstanding with very low long-term unemployment rates (< 1%).

In contrast to Spain that shows an north-south divide (except northeast and northwest Spain), all Portuguese regions (except Lisbon) show similar long-term unemployment rates (4-7%). However, Galicia even shows a rate of more than 7%. As for Europe and despite certain regional divisions that appear, these rates are to a high degree influenced by the national level. Hungary, central and southern Italy and eastern Bulgaria / Romania indicate a pattern similar to Norte and its neighbouring regions.

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

< 1.0	
1.1 - 4.0	
4.1 - 7.0	
7.1 - 10.0	
> 10.1	

- Important Cities (Urban Audit 2004)
- Capital
- Main road network
- Boundaries
- Norte Region
- NUTS3 Regions

Map 21 Long-term unemployment rate, 2011
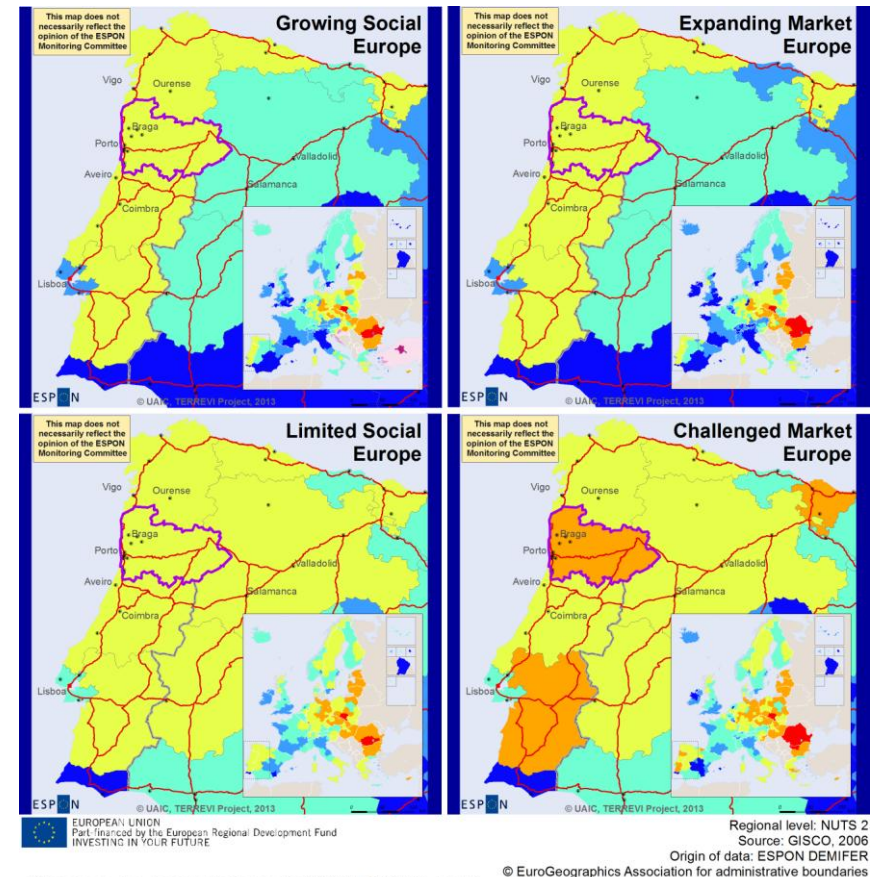
40

Change in population in 2005-2050

Population change is the difference in the size of a population in a given time period. The change has two components: natural population change, i.e. number of live births minus number of deaths, and net migration, i.e. number of immigrants minus number of emigrants. The maps cover the period 2005 to 2050 and show the percentage change in the projected population of each region for all four scenarios.

The "Growing Social Europe" and "Expanding Market Europe" scenarios indicate rather similar patterns for 2050. Areas affected by population growth are concentrated in an Atlantic arc from Ireland to southern France, a Mediterranean arc from southern Portugal to Italy and southern Scandinavia. Regions affected by a shrinking population are mainly located in Eastern Europe, Germany and especially in south-eastern Europe. Additionally, most regions in Portugal will face a decrease in population.
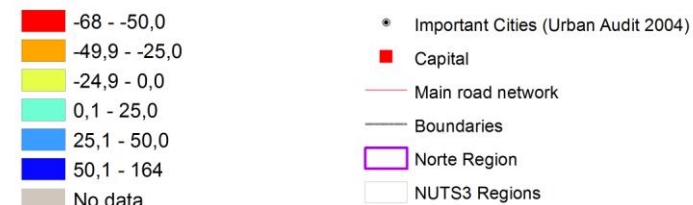
In the "Limited Social Europe" and "Challenged Market Europe" scenarios the general trend is not reversed but just the extent of population change by 2050. Even wider parts of Poland, Hungary, and Eastern Germany are affected by a population decrease of more than 50%. In these scenarios, population in western Spain is also decreasing to a higher extent than in the aforementioned scenarios. Areas of population increase remain those close to the Atlantic and the Mediterranean Sea.

None of the scenarios reverses the trend either for Norte or for other Portuguese regions but only the extent of population decrease. Norte will be affected by a decline in population in all scenarios, up to 25% in three scenarios and even up to 50% in scenario "Challenged Market Europe". Its Spanish and Portuguese neighbouring regions will also face a decreasing population, only the extent varies between different scenarios, especially for Castile and León.

This map was produced for the ESPON DEMIFER project.

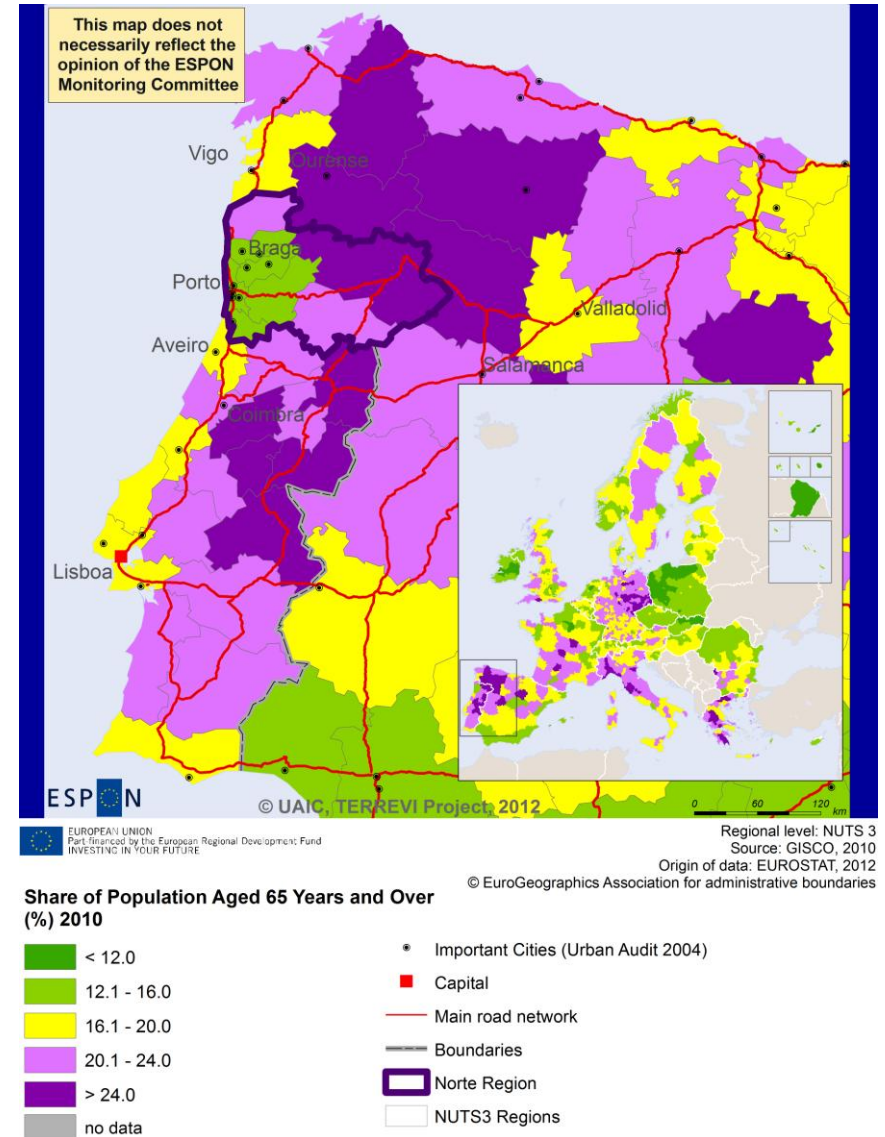**Change in population in 2005-2050, in % after DEMIFER Policy Scenarios**

■ -68 - -50,0	
■ -49,9 - -25,0	
■ -24,9 - 0,0	
■ 0,1 - 25,0	
■ 25,1 - 50,0	
■ 50,1 - 164	
■ No data	

● Important Cities (Urban Audit 2004)
■ Capital
— Main road network
— Boundaries
▢ Norte Region
▢ NUTS3 Regions

Regional level: NUTS 2
Source: GISCO, 2006
Origin of data: ESPON DEMIFER
© EuroGeographics Association for administrative boundaries

Map 22 Change in population in 2005-2050

Share of old people

The ageing population within the European Union is a trend, which is likely to increase in importance in the coming decade. Consistently low birth rates and higher life expectancy will transform the demographic pyramid; the proportion of people of working age in the EU is shrinking while the relative number of retired is expanding. This will increase the burden of social expenditures, and potentially lead to a reduction in social services. The map outlines the territorial impact of this trend, showing the share of population above 65 years.

The map shows a territorial pattern with considerable differences between countries in Europe. In Poland, Czech Republic, Slovakia, Romania, Ireland and Luxembourg most regions have a relatively young population. On the other hand Greece, Germany, northern Italy, northwest Spain, Portugal and southwest France show a dominance of regions with a high share (> 20%) of old people. Furthermore a rural-urban divide can be detected; Capital regions generally have a younger population, while especially peripheral regions are impacted by high shares of old people.

Norte is affected by an east-west divide and large disparities that even occur in neighbouring areas. While less than 16% of the population in the coastal area around Porto and Braga are elderlies, their share increases for the eastern mainland areas up to 25%. Norte therefore includes both areas with the lowest shares and areas with the highest shares of old people in Portugal and is mainly encompassed by regions with a share of more than 20%. For the Iberian Peninsula, only the coastal strip of southern and eastern Spain (mainly southern Andalusia) indicates shares of similar value. However, these regional disparities will be a challenge for Norte in the coming years; both in regard to coping with the consequences (e.g. extra social expenses and decreasing tax-income), but also demanding action in order to reverse this trend. Drivers of this emerging pattern can be manifold; migration, traditions and culture or structures in the society. A similar situation applies to some regions in central Italy, France or, considering cross-border disparities, Germany and Poland.

Map 23 Share of old people, 2010

Regional sex ratio structure

The map shows sex ratio structures. The typology is derived from the balance between male and female population (20 to 34 years).
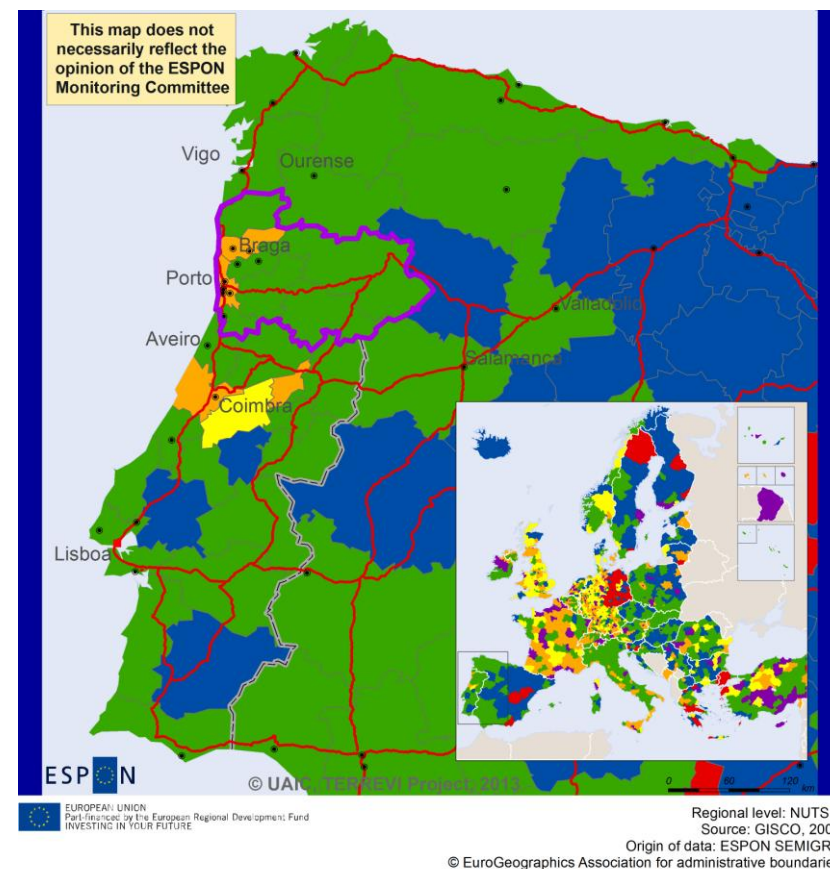
	Women per 100 men in the age group		
	20-24	25-29	30-34
Cluster 1 Strong lack of women	78.4	82.4	86.1
Cluster 2 Moderate lack of women	92.2	90.2	91.6
Cluster 3 Sex ration turnaround	89.5	93.7	101.0
Cluster 4 Balanced sex ratio	96.4	96.5	96.4
Cluster 5 Feminising regions	94.2	101.3	104.5
Cluster 6 Surplus of women	107.8	103.7	99.9
MEAN EEA 31	96.5	97.4	97.5

Sex ratio imbalances are not only an issue for gender politics, but also for territorial development. Dynamics in population's mobility and in particular for the younger age groups are an important aspect of economic development. Considerable imbalances in the sex ratio are to some extent connected to several malfunctions in the local and regional economy. In general, a 'male-oriented' economic structure is an important explanation for a lack of women. However, regional sex ratios are also dependent on the national context.

There are some pan-European trends in the regional pattern of sex ratio imbalances, but there are even more differences and national peculiarities. It appears that the European core area (UK, FR, BE, NL, LU, CH, Western DE) is mainly characterised by female surplus, in particular in the age group 30-34. Whereas the rest of Europe is more characterised by balanced sex ratios and regions with a male surplus. A few countries, e.g. Turkey, stand out with a mix of regions facing a male or female surplus. Regions with a surplus of males in early adulthood tend to be peripheral rural areas, while females outnumber men in the urban centres and their hinterland.

Focussing on Norte, the general picture shows a balanced sex ratio, with the urban costal areas having a surplus of women in the age group 30-34. The situation is largely comparable to other regions in Portugal, and also to a large number of Italian regions.

This map was produced for the ESPON SEMIGRA project.

Regional Sex Ratio Structure (ESPON SEMIGRA Typology)

- Cluster 1: Strong "lack" of women in all age groups
- Cluster 2: Moderate "lack" of women in all age groups
- Cluster 3: "Surplus" of men in the age group 20-24, "surplus" of women in the age group 30-34
- Cluster 4: Balanced sex ratio in all age groups
- Cluster 5: Balanced sex ratio in the age group 20-24, "surplus" of women in the age group 30-34
- Cluster 6: "Surplus" of women in all age groups
- No data

- ⊛ Important Cities (Urban Audit 2004)
- ■ Capital
- — Main road network
- === Boundaries
- ▭ Norte Region
- □ NUTS3 Regions

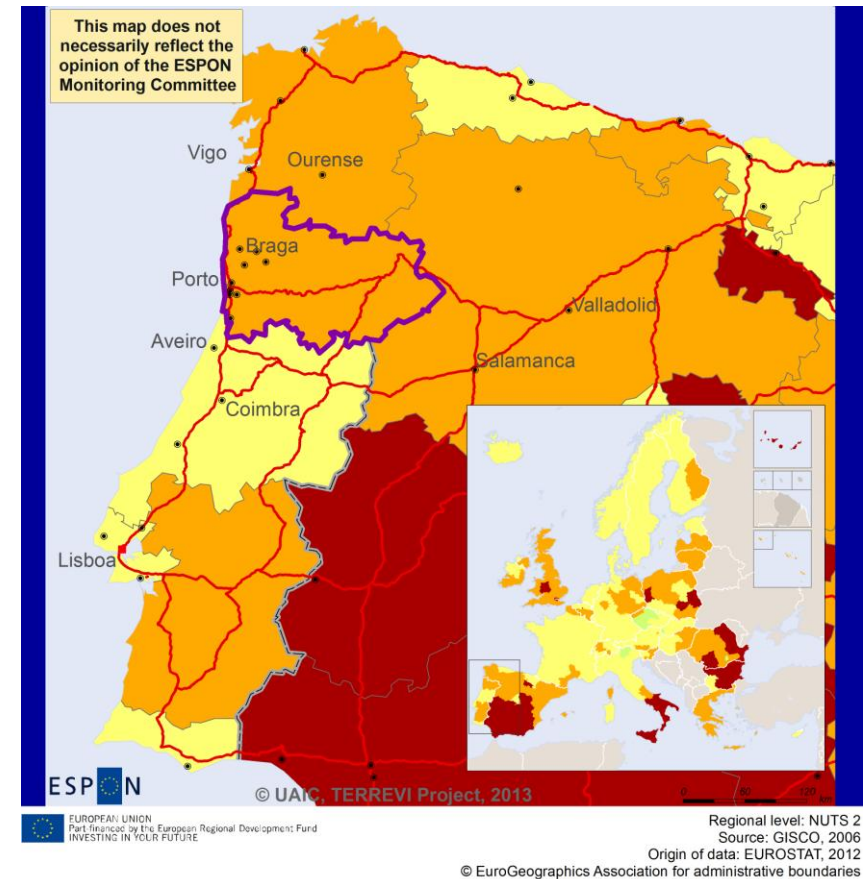**Map 24 Regional sex ratio structure, 2011**

People at risk of poverty

One specific aim of the inclusive growth policy is to reduce poverty and social exclusion. The Europe 2020 target is a share of < 20% for all European regions. To monitor this policy, an indicator showing the share of population at risk of poverty is used. The indicator covers the number of people who are at risk of poverty. The main component is an income below 60% of the median average national income (after social transfers).
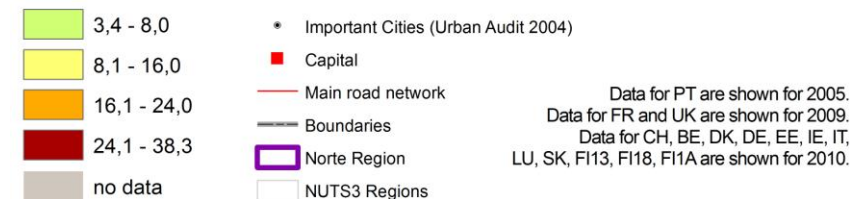
Taking into account certain exceptions like the UK or Eastern Germany, many most developed countries (towards the North and the West) have rather low shares of population at risk of poverty. It also seems to be distributed more homogenously. In contrast, in the Eastern and Southern countries internal heterogeneity is more pronounced, i.e. Italy, Spain, Bulgaria, Romania and Poland. This suggests that poverty is a very territorial issue in these countries, especially in peripheral areas.

Zooming in on Portugal, it can be seen that the whole country shows a share of 8-24%, i.e. that no Portuguese region faces a share of more than 24% like most parts of southern and several areas of central Spain do. However, all these regions face the same challenge of reducing poverty. The reasons for poverty can differ, so while regions at the same time can corporate and learn from each other in reducing poverty, one ought not forget that poverty need to be fought with many different means. One has to consider that poverty rates are presented for 2011. Rates for 2012 / 2013, especially in Southern Europe, may deviate exceedingly due to crisis' impacts.

This map was produced for the ESPON SIESTA project.

At-Risk-of-Poverty Rate (2011)

3,4 - 8,0	Important Cities (Urban Audit 2004)
8,1 - 16,0	Capital
16,1 - 24,0	Main road network
24,1 - 38,3	Boundaries
no data	Norte Region
	NUTS3 Regions

Data for PT are shown for 2005.
Data for FR and UK are shown for 2009.
Data for CH, BE, DK, DE, EE, IE, IT,
LU, SK, FI13, FI18, FI1A are shown for 2010.

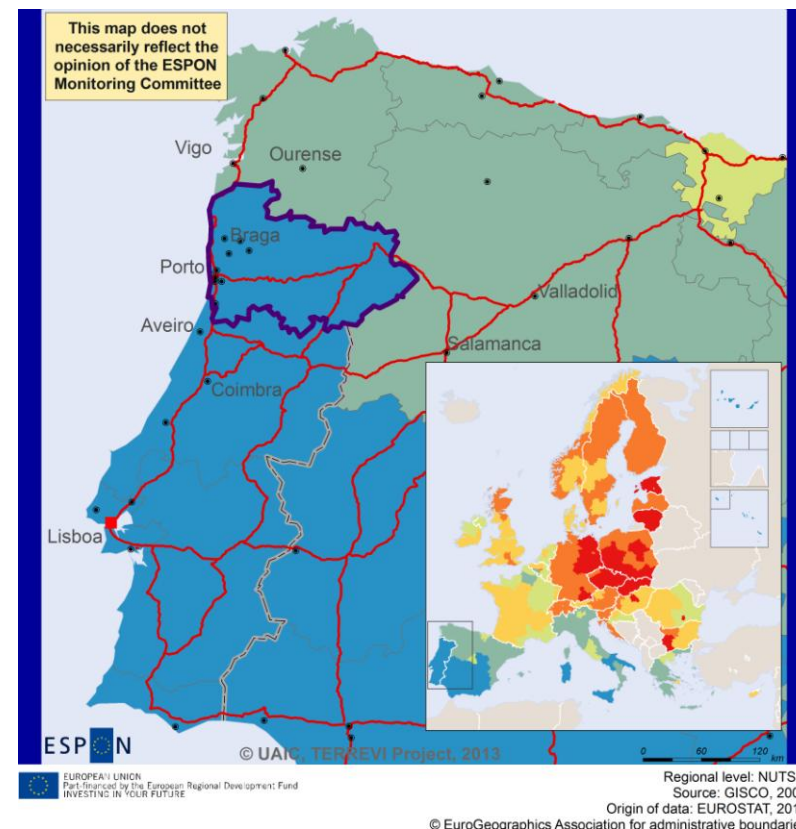**Map 25 Population at Risk of Poverty, 2011**

People with high education

The map shows the percentage of the adult population that has completed upper secondary or tertiary education. Upper secondary education (ISCED 3) generally begins at the end of compulsory education. The entrance age is typically 15 or 16 years. Entrance qualifications are usually needed. The typical duration of upper secondary education varies from two to five years. It may either be "terminal" (preparing for entry into working life) or "preparatory" (i.e. preparing for tertiary education) but usually corresponds to the final stage of secondary education. Tertiary education (ISCED 5 and 6) usually requires the successful completion of upper secondary education. According to both the OECD and EUROSTAT, tertiary education includes both programmes with a theoretical and an occupational orientation but also studies that lead to an advanced research qualification.

Portugal, Spain, Italy and Greece all lack behind the rest of Europe in this regard. Most regions in these countries do only have a share below 64% of the population having obtained at least an Upper Secondary degree. Best performing regions are found in North-Eastern Europe with most regions having a share higher than 72%. Regions in France, Ireland, the Benelux countries and Romania range between shares of 64% and 80%. The map indicates a pattern showing high dependency on the country, to which a region belongs. This indicates that the social structure and the structure of the national educational system have a great influence on the level of education of the population.

All Portuguese regions show shares below 50%. Hence, Portugal is the only European country where no region has a share of more than 50%. Madrid and País Vasco are the only regions in the Iberian Peninsula indicating shares of more than 64%, i.e. around two-thirds. The Spanish regions north and east of Norte, Galicia and Castile and León, have shares of 50-64%. A similar pattern can only be detected for Italy and, with reservations, for Greece.

This map was developed in the ESPON SIESTA project and re-produced for the ESPON TERREVI project.

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

■ < 50.0	✳ Important Cities (Urban Audit 2004)
■ 50.1 - 64.0	■ Capital
■ 64.1 - 72.0	— Main road network
■ 72.1 - 80.0	▬ Boundaries
■ 80.1 - 88.0	▭ Norte Region
■ > 88.1	▭ NUTS3 Regions
■ no data	

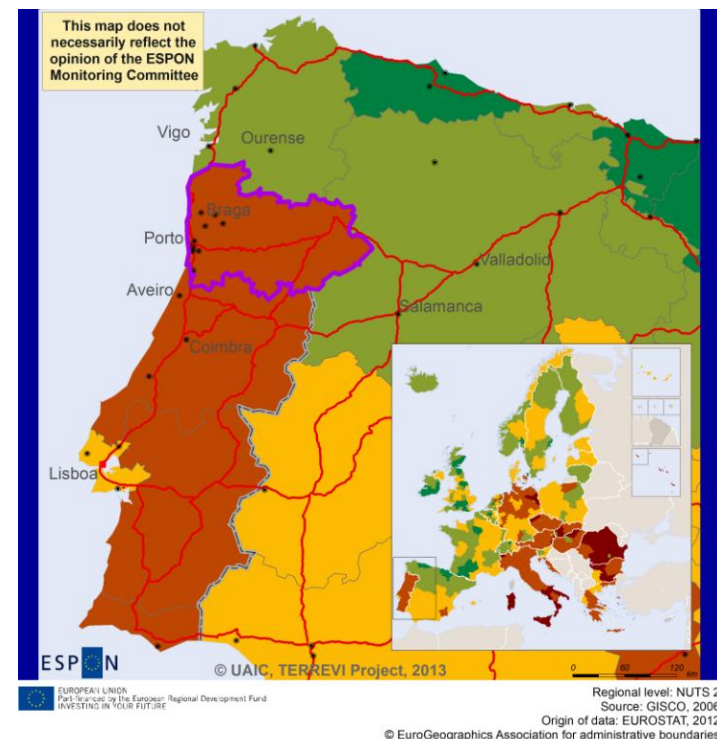**Map 26 Persons aged 25-64 and 20-24 with Upper Secondary or Tertiary Education Attainment, 2011**

Young academics

A share of 40% of regional population aged 30 to 34 years with tertiary education attainment is one main headline target for inclusive growth within the Europe 2020 strategy. Tertiary education (ISCED 5 and 6) usually requires the successful completion of upper secondary education. It includes both programmes with a theoretical and an occupational orientation but also studies that lead to an advanced research qualification. It can be seen that approximately ¼ of all regions already reached this target which also means that most regions have not matched the target yet.

Highest shares are to be stated for northern Spain, France, the UK and Nordic countries. Surprisingly, northern German and Austrian regions score very low. On the other hand, capital regions of Eastern Europe like Warszawa, Bratislava, Budapest, Ljubljana or Sofia stand out as regions where population with tertiary education attainment agglomerates. Besides Germany and Austria, mainly Eastern and Southern European countries (except Spain, Poland and the Baltic states) show values of less than 30% - some even less than 20% - of total population aged 30-34 with tertiary education.

Portuguese regions verge to fall behind concerning the share of young academics as no region has matched the target yet. While in Castile and León, and in Galicia more than 40% of total population aged 30-34 hold a degree of tertiary education, Norte, like most Portuguese regions (except Lisbon), shows a value of 20-30% which means that these regions have to increase their values by 10-20 percentage points in order to get at least close to the Europe 2020 target value of 40%. A similar situation can be seen in the Czech Republic, Austria or Italy, for example.

This map was produced for the ESPON SIESTA project.

Map 27 Regional population aged 30 to 34 with tertiary education, 2012
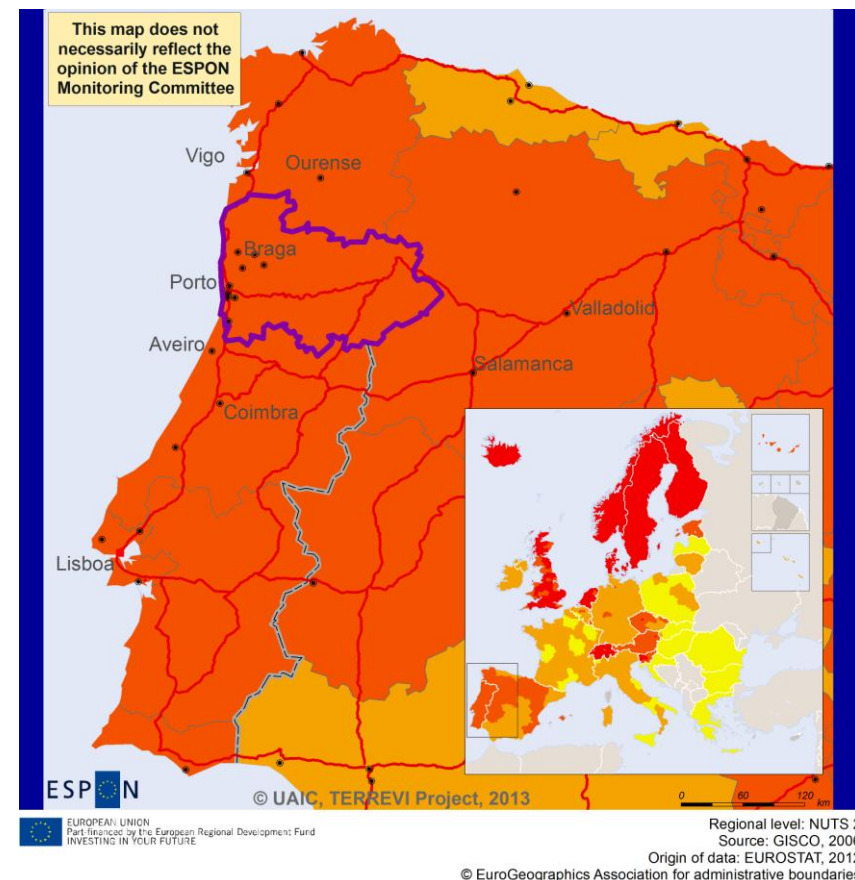
46

Adults in education and training

For improving and maintaining the skills of the labour force, adult education is an important instrument. Life-long learning is the reality and a pressing demand of today's labour market. Furthermore, it can be an important tool to improve the general level of education in the population and thereby potentially reduce the risk of poverty. The map shows the percentage of the working age population (age 24-65) attending adult education or training.
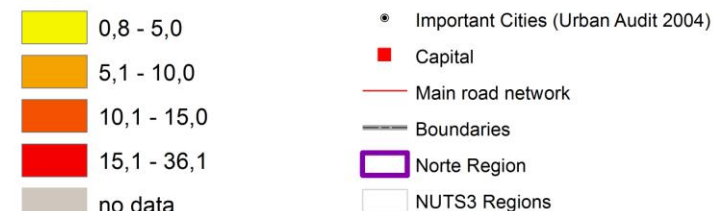
The Nordic countries, many regions in the United Kingdom and the Netherlands have more than 15% of the working age population participating in adult education. Looking at the rest of Europe, in most Spanish, Austrian, Slovenian and Portuguese regions still 10-15% of the working age population are in adult education. For the group of countries with a share below 10%, a further West-East divide becomes apparent. Eastern European countries (except Estonia) generally have the lowest share of population in adult education, while German, French, Italian and Irish regions show a better performance. It is interesting to see once again that the country to a great extent is a determinant factor for the performance of a region (see map 26). Explanations of this pattern can be as simple as a lack of opportunities to attend adult education, which can be linked to traditions and infrastructure of adult education or training opportunities in the individual countries (lack of supply, support from employer or financial means to do so).

Like in all Portuguese regions, 10-15% of working age population is in adult education and training in Norte. The share is similar in most Spanish and in all neighbouring Spanish regions. Norte indicates a performance and a structural pattern comparable to regions in Austria or the Czech Republic.

This map was produced for the ESPON SIESTA project.

Participation of adults aged 25-64 in education and training (%) 2011

0,8 - 5,0	Important Cities (Urban Audit 2004)
5,1 - 10,0	Capital
10,1 - 15,0	Main road network
15,1 - 36,1	Boundaries
no data	Norte Region / NUTS3 Regions

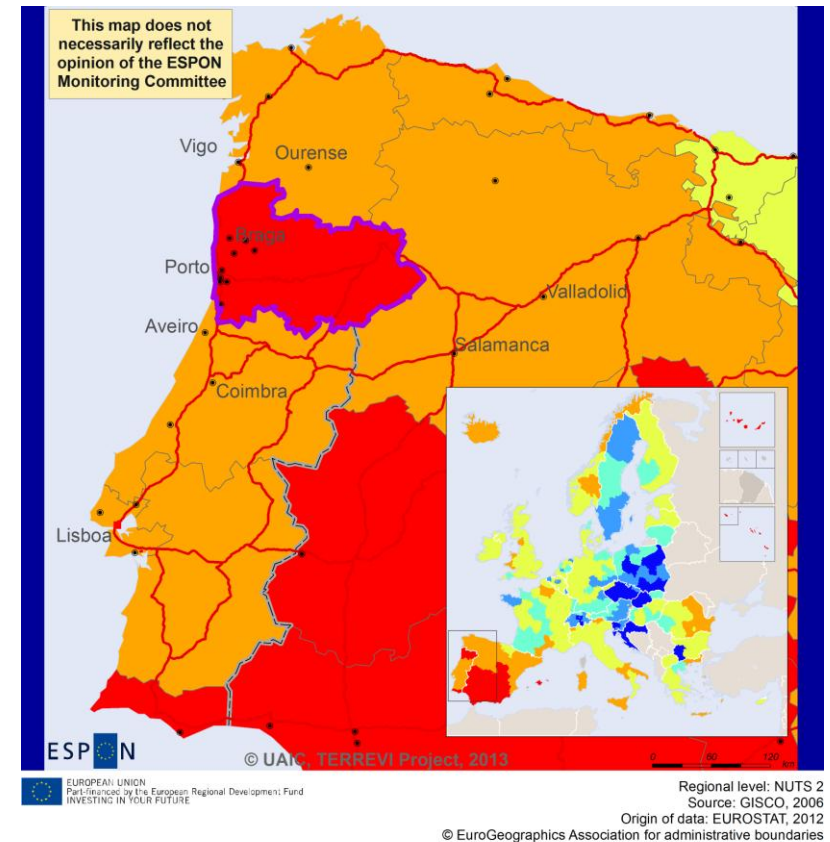**Map 28 Share of adults in education and training, 2011**

Regional early school leavers

Another headline target of the Europe 2020 strategy concerns regional early school leavers. By 2020 the share of young people (aged 18-24) without any degree is supposed to be < 10%. Therefore, the map indicates which regions have already met the target and for which regions this challenge will remain a persisting one for the next ten years.

In general, Eastern European countries perform better than many Western European countries. All regions of the corridor ranging from Switzerland and Croatia over Southern Germany, Austria and Slovenia up to Poland have already met the target. Additionally, several Scandinavian and western French regions as well as single regions in the Benelux countries and Germany stand out in Western Europe. On the other hand, the worrying situation in all parts of Spain and Portugal indicates that the regional performance of educational systems is highly influenced by the national level. Furthermore, some peripheral regions like Wales, Scotland, Iceland or Norway also have high shares of early school leavers.

The Iberian Peninsula is far above the Europe 2020 target of 10% of population aged 18-24 as a rate of early school leavers as no region (except two northern Spanish regions) indicates shares below 20%. Besides several regions in central and southern Spain, Algarve and Norte are the regions on the Iberian Peninsula with shares > 30%. However, it becomes apparent that most regions in Europe have not matched the target value of 10% yet.

This map was produced for the ESPON SIESTA project.

Early leavers from education and training as percentage of population aged 18-24 (2010)
EU 2020 Target = 10%

Map 29 Regional early school leavers from education and training as percentage of population aged 18 to 24 (drop-out rate), 2010

Results and feedback from the workshop

In general, indicators provided by ESPON projects and presented within the evidence report are considered useful for Norte. However, some aspects may limit the usefulness. They might provide opportunities to further improve the presented indicators.

First of all, some indicators seem to be dated, due to the fact that either the projects were conducted a few years ago, or the data sets are rather old. The main reason is that it takes some time to collect and harmonise data sets at European level.

Another factor that may hamper an indicator's usefulness, concerns the territorial level at which it is calculated and presented. To use data on risk of poverty, NUTS0 (UK, PT) might give a description of the European pattern. Yet, it would be desirable if it were more specific and detailed regarding the territorial scale because the rate might considerably differ between different regions.

A third factor regards the complexity of indicators. Composite indicators that combine several and very different dimensions and sub-indicators can be difficult to understand in policy processes.

A fourth point that might distort result concerns the regional background and context of an area. Cultural differences or regional disparities in income might cause bias but are often not taken into consideration. Each region has specific characteristics and might therefore need even more specific indicators.

Programming steps

Focussing on details concerning the five programming steps, the reviewed indicators are generally relevant both for the needs analysis and the thematic concentration. The situation is more differentiated when it comes to other programming steps. While indicators on employment rates and risk of poverty are considered adequate to be included into all programming steps, indicators on education are considered suitable for programme monitoring, i.e. observing changes within the programming period or even within single projects.

Further suggestions

Employment rate	- Split by gender - Split by age groups - Split by economic sectors - Split by educational level, qualification - Indicator that shows if employment is actually increasing (not only the rate)
Long-term unemployment rate	- Interesting to know how families are affected by unemployment
Share of old people	- Combining with activity rates of different age groups would be useful
People with high education	- Show only young people with upper secondary / tertiary education attainment - Indicators on people with educational attainments below ISCED 5 and 6 would be interesting
Population at risk of poverty	- Distinguish between "before" and "after" social transfers

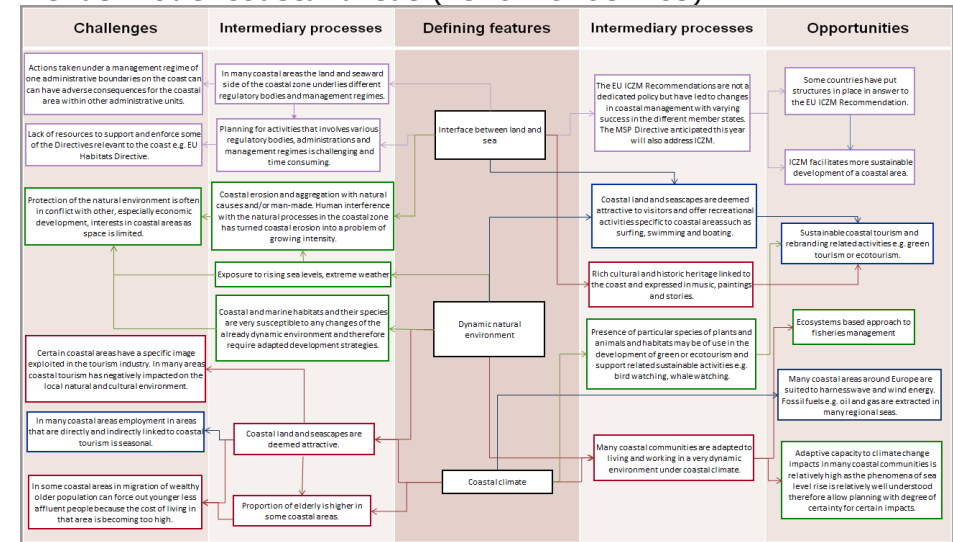# 2 Territorial factors of interest for the programme area

Regional programmes can make a difference for the future development of an area 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.
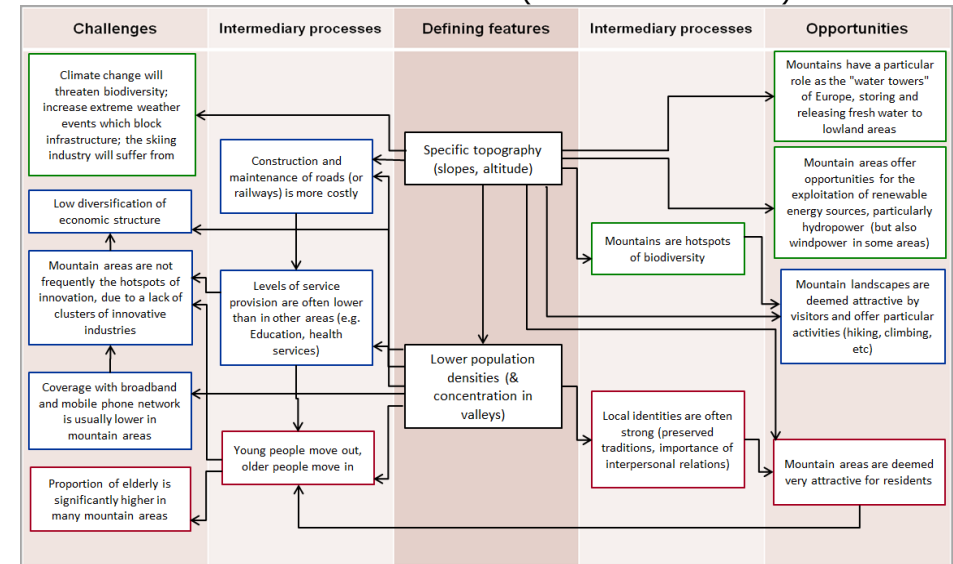
Within ESPON, a series of nexus models have been developed focusing on the defining features of an areas, intermediated challenges deriving form this and particular development challenges and opportunities. For the case of Norte the two models for coastal and mountainous areas can be of interest.

In addition the following section provides also an example of a territorial impact assessment of a European policy. This is mainly to inspire discussion on how large generally not territorially differentiating policies can have territorially differentiated effects. The development of a region shaped by an interplay of many different factors and not all of these can be expressed in a single maps.

Nexus model coastal areas (ESPON GEOSPECS)

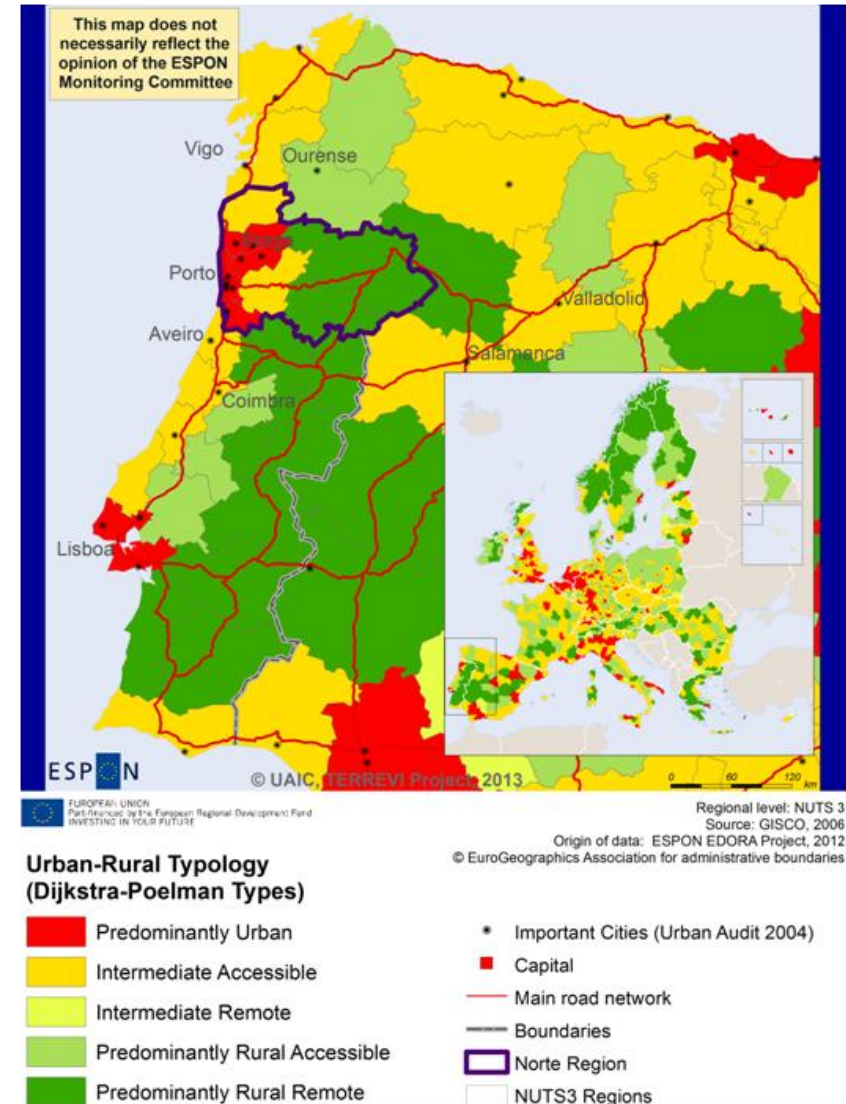**Nexus model mountainous areas** (ESPON GEOSPECS)

Urban-rural typology

This typology draws together various story lines. The first step is to classify all local units as urban or rural, using a criteria of population density of 150 inhabitants per square kilometre. Predominantly Urban regions are those in which less than 15% live in rural local units. Intermediate regions are defined as those in which between 15% and 50% live in rural local units. Predominantly Rural regions have more than 50% of their population living in rural local units. Intermediate and Rural regions are further divided into accessible and remote groups. A region is in the accessible group if more than half of its residents can drive to 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.

At first glance, it is striking that most rural remote regions are situated in the European periphery, i.e. in Spain, Portugal, Greece, Ireland, Scandinavia and Finland. In contrast, a pattern of predominantly urban areas streches from the UK to the Netherlands, Belgium, Germany to northern Italy. One can discern that even urban and rural remote areas can be neighbouring regions. This is a sign of Europe as a patchwork of densely and sparsely populated regions which additionally show different levels of accessibility.

Just like Europe, Norte is characterised by variations. On the one hand there are predominantly urban and coastal areas around Porto and Braga. Meanwhile, the inland areas of northeast Portugal are predominantly rural remote areas. Besides Lisbon, the coastal strip of Norte is the only predominantly urban area in Portugal and is also of relevance for northwest Spain that does not have any own predominantly urban regions as Spanish regions north to Norte are either intermediate accessible or predominantly rural accessible regions while the Spanish region east to Norte, i.e. Zamora, is predominantly rural remote like Portuguese inland areas. Areas around Helsinki, Athens or Marseille show a similar urban-rural pattern.

This map was developed in the ESPON EDORA project and re-produced for the ESPON TERREVI project.
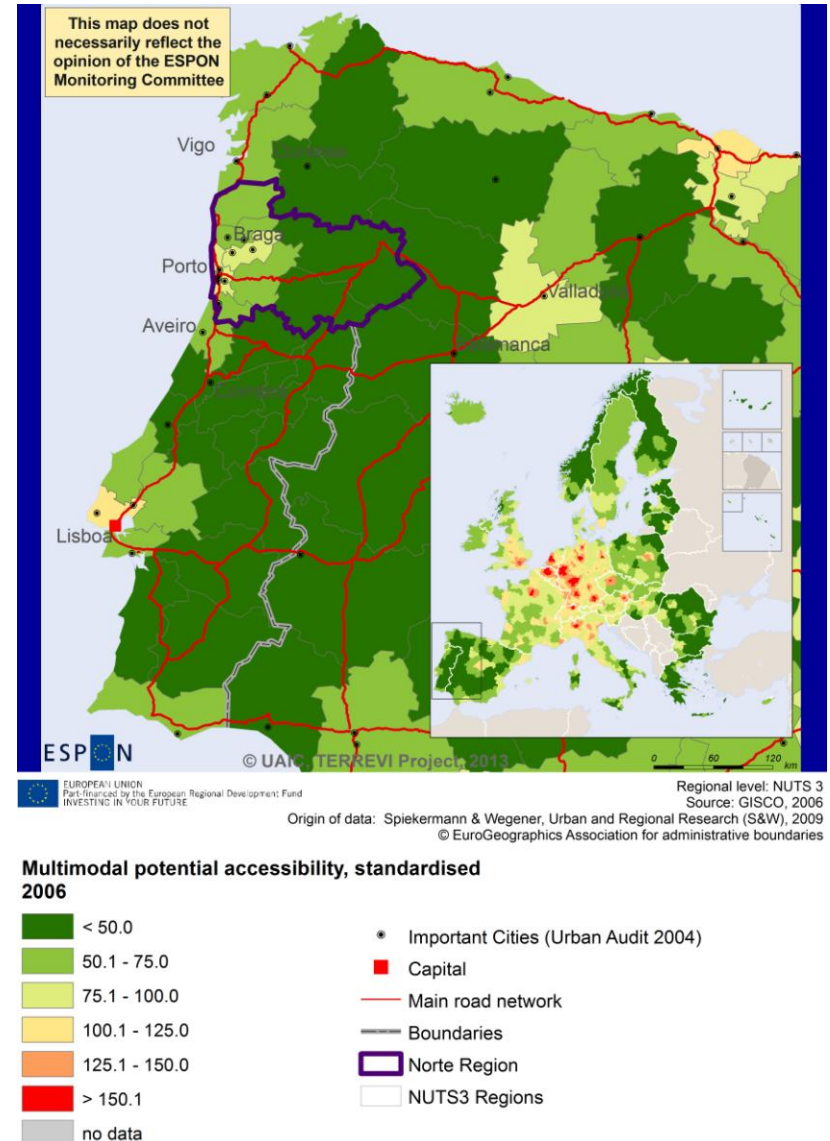

Map 30 Urban-rural typology of NUTS3 regions

Multimodal accessibilty

With the purpose of providing an overview of the degree of accessibility of European regions, multimodal potential accessibility synthesizes indicators specific for each travel mode (road, rail and air). Travel costs mainly depend on the physical distances and on the limits of travel speed. While dense road and rail networks are responsible for high potential accessibility in Central Europe, multimodal accessibility for peripheral areas primarily bases upon air accessibility.

Taking also into account an obvious core-periphery pattern, analysing multimodal accessibility moreover creates a more balanced version of this traditional European pattern. The basic core-periphery picture is constituted by road and rail transport but somehow balanced by the impact of air transport. This is especially significant for capital regions of the European periphery whose accessibility is clearly above the accessibility of the surrounding regions. However, capital regions in peripheral countries do not reach the degree of accessibility of urban regions in the European pentagon (London, Paris, Milano, Munich, Hamburg). These urban regions benefit both from high air and from high rail and road accessibility.

The map reveals Portugal as a part of the European periphery. Due to good international air connections, only the sub-regions of Grande Porto and Ave indicate multimodal potential accessibility of more than 75%, i.e. they are at least close to the EU27 average. In general Norte incorporates areas with accessibility below the European average. Especially mainland areas are affected by a standardised accessibility of < 50%. This points out both the lack of integration in transnational transport systems and their rather remote position far away from densely populated areas. This pattern applies the whole western Iberian Peninsula. Other European areas showing a similar pattern are Greece and the Baltic states.

This map was developed in the ESPON TRACC project and re-produced for the ESPON TERREVI project.

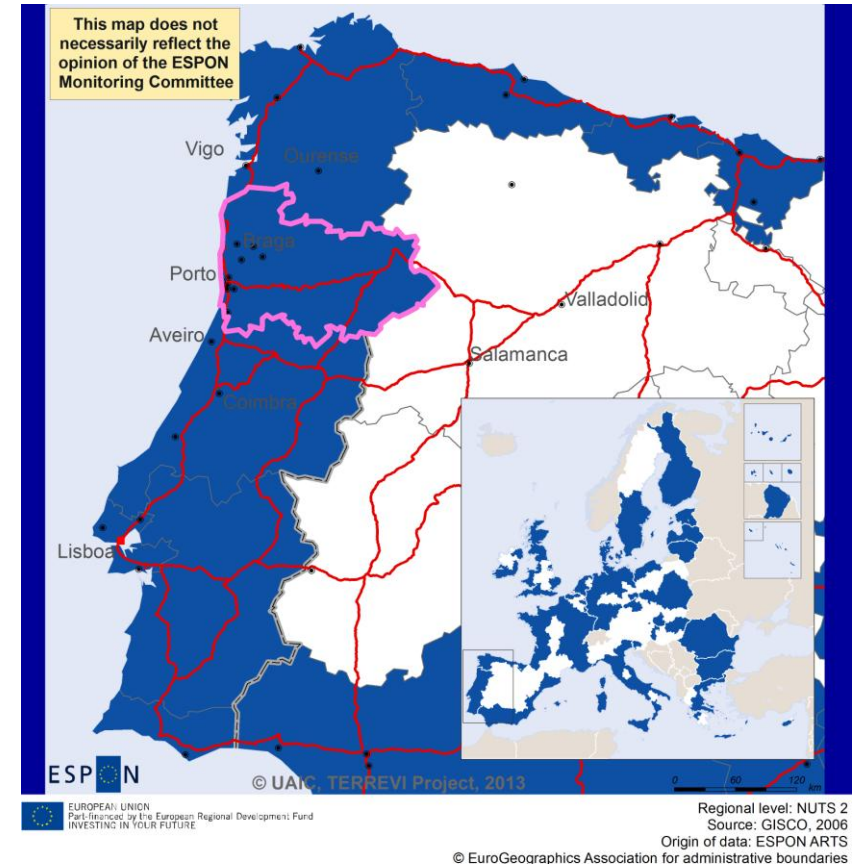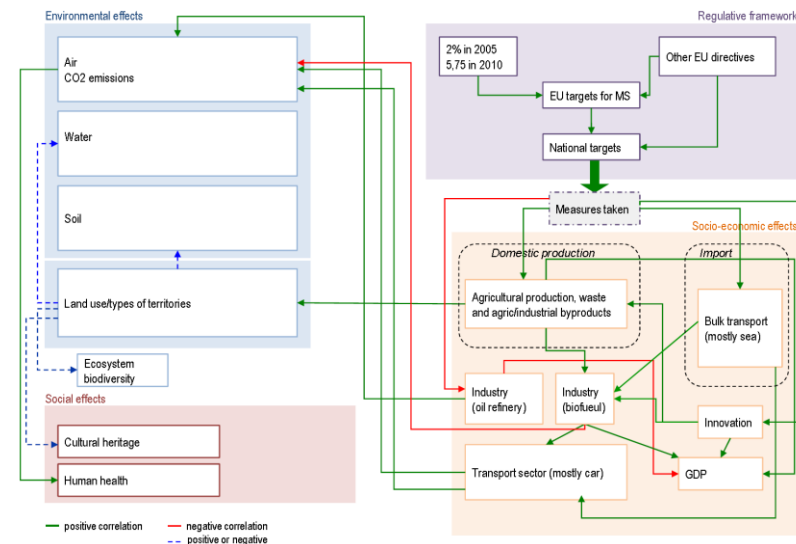**Map 31 Multimodal potential accessibility, 2006**

Territorial Impact Assessment

This directive sets minimum percentages for renewables in fuels. As member states can determine how to meet the target, territorial impacts depend on the measures taken by them: Either they focus on domestic production (branch a) or on import (branch b). While import means increasing transport and processing, domestic production mainly influences land-use as it adds up a choice for farmers to switch to biofuels. Both branches imply different effects, presented in the figure below. As an indicator for branch a, harbours (both sea and inland ports) and their accessibility were selected, for branch b it was assumed that farmers more likely decide to switch to grow biofuel crops if the region is of low agricultural profitability.
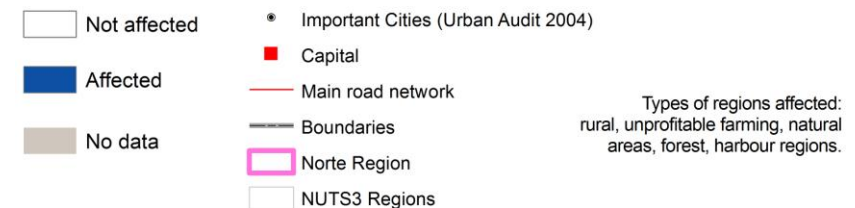
As Norte, most coastal regions are affected by this directive, especially if they are both a coastal area (harbours) and have areas of low agricultural profitability. The fact that some regions are not affected by the directive does not imply that local circumstances cannot be favourable for biofuel crop production in these regions.

This map is mainly to be understood as an example of territorial impact assessments which ESPON carried out for various policies. Similar approaches can also be used to assess other policies of relevance for the programme area.

This map was produced for the ESPON ARTS project.

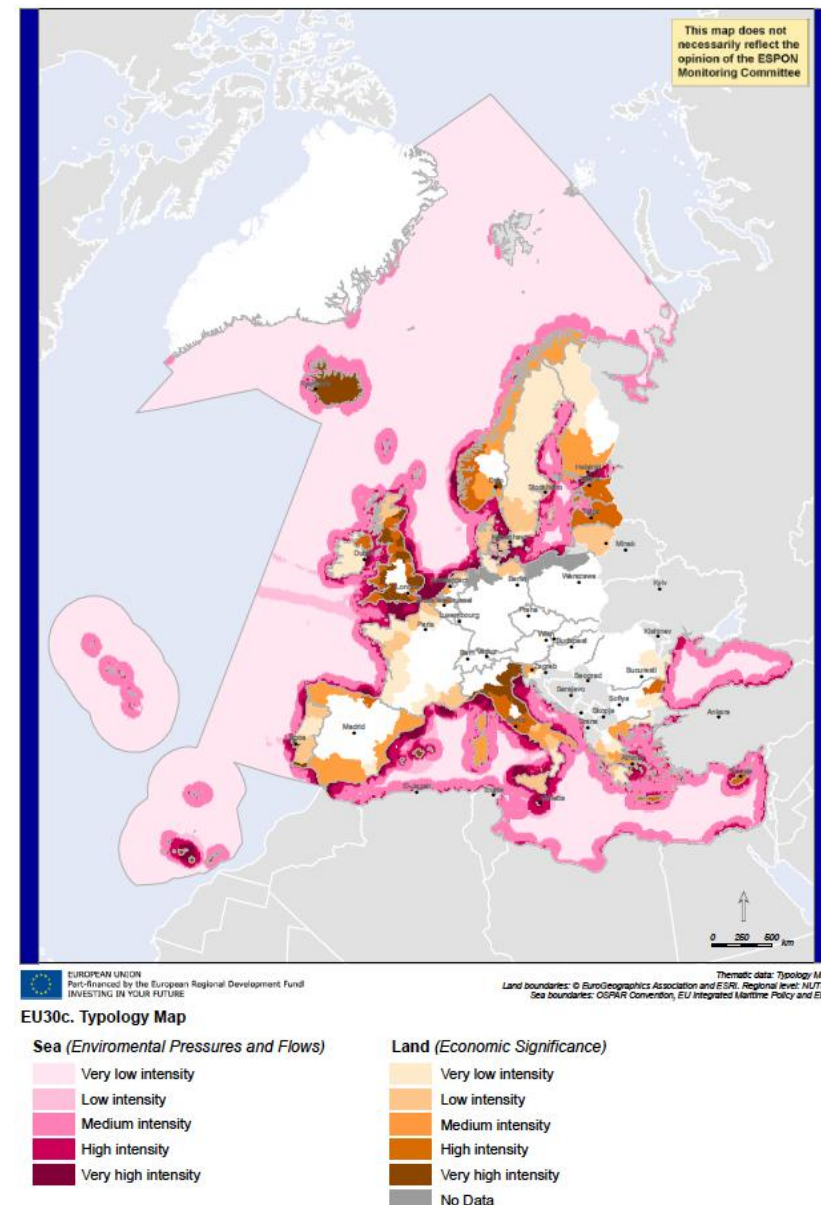**Map 32 Regions affected by Directive on promotion of use of biofuels**

Cold- and hotspots of maritime activities

The synthesis of three composite indicators (environmental pressures, flows 2008, economic significance 2009) is the basis for this typology map showing cold spots and hotspots of maritime activities on land and at sea. The indicator "Environmental Pressures" attempts to capture natural changes and human impacts such as nutrient and organic inputs and pollution, and incidents of invasive species introduced through shipping. "Flows" tries to capture the movement of goods (incl. container traffic, liquid energy products), data and people across maritime regions. "Economic significance" attempts to show the economic importance of coastal areas through mapping employment clusters in different maritime sectors, such as shipbuilding, tourism, transport and fisheries.

With the exception of island regions (Iceland, Azores, Canaries, Balearic, Crete, Cyprus, Malta) maritime employment is only of high or very high importance in the UK, northern Italy, Estonia, Latvia, western Norway and some single regions like the Algarve or País Vasco. In contrast, maritime sectors are not of economic significance for many other coastal areas like western France, Portugal (except Algarve and Lisbon), southern Italy, Greece or Ireland. Environmental pressure is intense in many coastal areas of Europe, especially around the Azores, in western parts of the Mediterranean, the English Channel, the North Sea, the Kattegat, the Gulf of Finland, and at major ports as these are focal points for invasive species. No European coastal region is affected by low or even very low sea influences. All areas are either influenced by invasive species or by pollution associated with farming and industrial activity.

Maritime landward activities affect Norte to low extent while seaward activities influences are of medium and high intensity. Only the regions of Lisbon and Algarve show high and very high intensity of maritime landward activities. Both sea- and landward activities are of higher intensity for Galicia and of lower intensity for Centro. A pattern with a gradually increasing level of intensity along the coastline can also be detected for Denmark, southern Italy or western Greece

This map was produced for the ESPON ESaTDOR project.

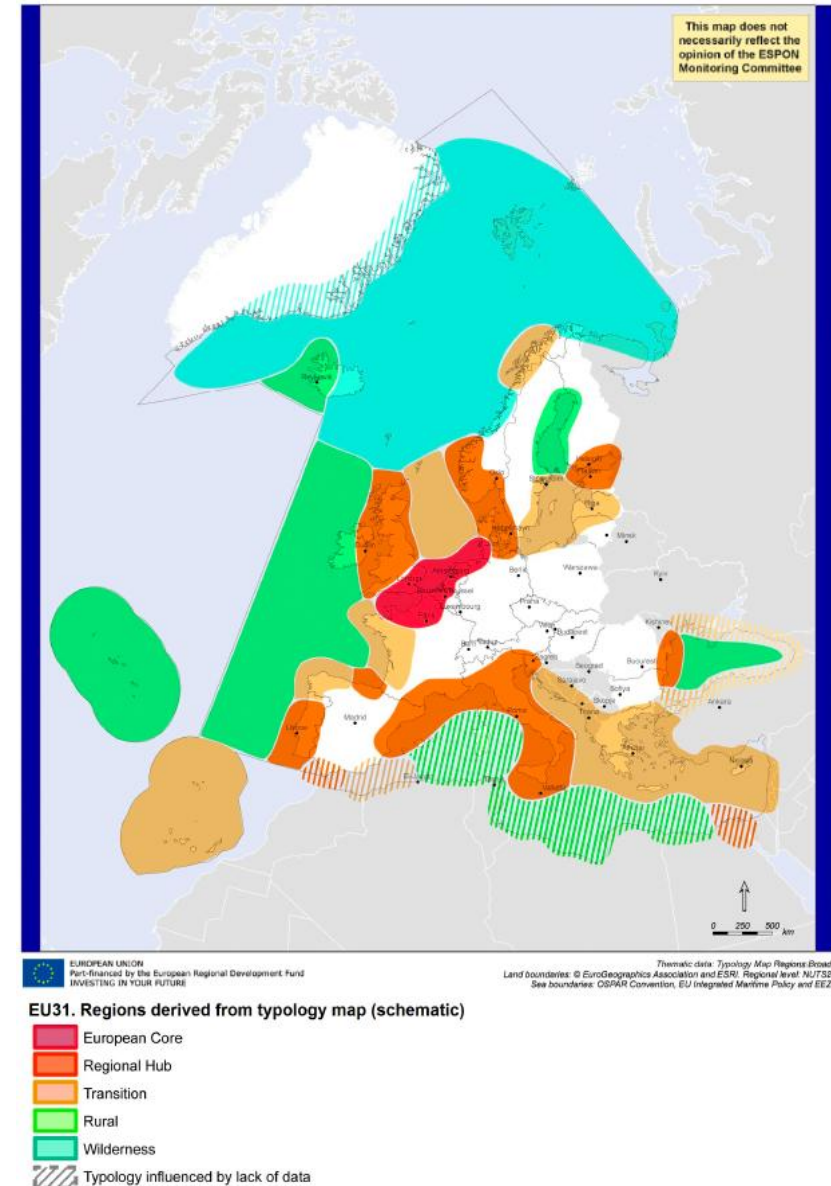**Map 33 Typology of cold- and hotspots of maritime activities**

European maritime patterns

The "typology map" (see map above) shows regional hot- and cold spots that are affected or that are not affected by maritime land-sea interaction. This synthesis of three indicators was used to identify which maritime regions should be classified as the Core, Regional Hub, Transition, Rural and Wilderness areas.

The map highlights the significance of the Channel and southern North Sea as the Core maritime region of Europe. This is where overall land sea interactions are currently at their greatest. The map reflects the concentration of population and economic activity, the presence of mega ports and the bundling of communication and trade routes between Europe and the rest of the world through this strategically important area. The map also shows a number of regional hubs that relate to significant spatial concentrations of strong land-sea interactions. Some of these hubs have a transnational character and relate to more than one European sea. So for example the British hub spans both the Atlantic and the North Sea, while the hub related to Norway, Sweden, Germany and Denmark spans the North and the Baltic Sea. The eastern Mediterranean is the largest transition area but all European seas have areas where land sea interactions are still locally significant, mainly because of smaller ports and tourist destinations. Much of the remaining maritime areas are classified as rural, reflecting the increasingly low levels of human use at these islands and rather peripheral regions. Nevertheless, only the Norwegian Sea and eastern Iceland can still be characterized as Wilderness.

Norte encompasses different types of European maritime regions as it is both part of regional hub (Portugal) and part of a transition area (northwest Spain). While the regional hub of Portugal is characterised by two main regions, Lisbon and Algarve, the ports of the western Spanish coast as area of ports and tourist destinations also influence Norte and northwest Spain. However, total maritime influences are higher in the area around Bilbao. Other regions that are also affected by both regional hubs and transition areas are situated in southwest France and southern Sweden, for example.

This map was produced for the ESPON ESaTDOR project.

Map 34 European maritime patterns

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
CAEE	Agglomeration economies	It aims at a better understanding of the economic costs and benefits of large urban agglomerations (see e.g. figure 1). The case studies include Dublin and Manchester (Annexes 2 & 3).
TRANSMEC	European cooperation	It develops general tools to support territorial cooperation programmes in capitalisation and considerations on future strategic project development (see map 27 and from map 36 to 39 on potential accessibility indicators). The method is applied for the Northwest-Europe cooperation area. It covers also two projects of Interreg IVB Atlantic Area, i.e. SHAREBIOTECH and ATLANTOX.
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 among others Cork (annex of the Scientific Report).
ATTREG	Attractiveness	It provides a better understanding of the contribution of European regions' and cities' attractiveness to economic performance. The case studies comprise among others Cornwall and the Isles of Scilly, in the United Kingdom (Annex 4/3) and the Algarve, in Portugal (Annex 4/1).
GEOSPECS	Specific types of territories	It provides evidence on the strength, weaknesses and development opportunities of specific types of territories and regions (e.g. border areas, highly or sparsely populated areas). The case studies include Highland Council area in Scotland (Annex 24) and the Irish Sea (Annex 31).
EATIA	Territorial impact assessment	It tests the practical use of existing methods and tools for Territorial Impact Assessment. A particular focus is on Portugal (Annex 3) and the UK (Annex 1).
ESATDOR	Seas & territorial development	It provides evidence on the exploitation of sea and coastal areas for economic purposes which are increasingly important but also face growing concerns on environmental issues.
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. The case studies include Navarra, in particular in the case of Wind Energy.
PURR	Rural regions	It creates and tests new ways to explore the territorial potentials of some rural areas and small and medium-sized towns in peripheral parts of Europe around the North Sea, the Irish Sea and the Baltic Sea. The project analyses the Cambrian Mountains, in Wales, as a case study region.
TPM	Territorial performance	It establishes knowledge on how territorial impacts of these macro challenges translate at the regional level and how to deal with these challenges. Two regional highlights concern Navarra and the Greater Dublin Area.
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).

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

All ESPON reports and tools are freely available at

www.espon.eu

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