

SIESTA

Spatial Indicators for a ‘Europe 2020 Strategy’ Territorial Analysis

Applied Research 2013/1/18

Report | Version 24/12/2012



This report presents the final results of an Applied Research Project conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

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

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

Information on the ESPON Programme and projects can be found on www.espon.eu

The web site provides the possibility to download and examine the most recent documents produced by finalised and ongoing ESPON projects.

This basic report exists only in an electronic version.

© ESPON & Universidade de Santiago de Compostela, 2012.

Printing, reproduction or quotation is authorised provided the source is acknowledged and a copy is forwarded to the ESPON Coordination Unit in Luxembourg.

Lead Partner (University of Santiago de Compostela)

Rubén C. Lois González – Project Coordinator

Valerià Paül Carril – Project Manager

José Carlos Macía Arce – Communication Manager

Alejandra Feal Pérez

Yamilé Pérez Guilarte

María José Piñeira Mantiñán

With the collaboration of Anxo Ramón Calvo Silvosa, Miguel Pazos Otón, Anxos Piñeiro Antelo and José Ignacio Vila Vázquez.

With the participation of:

– **National Centre for Scientific Research (France):** Petros Petsimeris, José Ignacio Vila Vázquez, Maria Luisa Caputo.

– **Adam Mickiewicz University in Poznan (Poland):** Lidia Mierzejewska.

– **University Mediterranea of Reggio Calabria (Italy):** Francesco Bonsinetto, Giuseppe Modica, Angelo Cannizzaro, Enzo Falco, Barbara Lino.

– **Hellenic Open University (Greece):** Lila Leontidou, Alex Afouxenidis, Stelios Gialis, Anastasia Stringli, Anastasia Vatsou.

– **University of Bucharest (Romania):** Ioan Ianos, Natasa Vaidianu, Daniela Rodica Stoian, Andrei Schvab, Florentina-Cristina Merciu.

– **University College Dublin (Ireland):** Niamh Moore, Delphine Ancien.

– **MCRIT SL (Spain):** Andreu Ulled, Oriol Biosca, Marta Calvet, Rafa Rodrigo.

Santiago de Compostela, Galicia, Spain, 24 December 2012

Table of Contents

Foreword	1
1. The Europe 2020 Strategy: an Overlook	4
2. Sustainable Growth	7
2.1. Growth and Competitiveness in a Crisis Differently Affecting the European Territories	8
2.2. Territorial Dissimilarities in Energy and Climate Change	13
2.2.1. Territorial Heterogeneity on Renewable Energy Development and Reduction of Energy Consumption.....	13
2.2.2. Speed of the European Territories in the Transition towards a Low Emissions Economy	21
3. Smart Growth	25
3.1. Research, Development and Innovation across the European Territories	25
3.1.1. Territorial Disparities in Research and Development	25
3.1.2. The Extreme Territorial Concentration of Innovation	30
3.2. The Territorial Dimension of Education	33
3.2.1. Territorial Polarisation in Basic Educational Achievement.....	33
3.2.2. Territorial Contradictions in Tertiary Education.....	38
3.3. Persisting Digital Society Territorial Divides.....	42
4. Inclusive Growth	47
4.1. The Territorial Configurations of Employment and Lifelong Learning	47
4.1.1. The Contrasting Territories of Employment and Unemployment	47
4.1.2. Territorial Opposition between Lifelong Learning and Low Educational Attainment	54
4.2. Territorial Dissimilarities in Poverty and Exclusion	57
5. Conclusions: The Uneven Territories of the EU2020S	64
5.1. Unbalanced Territorial Interpretations of the EU2020S through an Aggregate Index	64
5.2. Territorial Clustering of the EU2020S: towards a Great Division?.....	68
5.3. Concluding Remark	70

List of Maps

Map 2.1 Regional GDP per head measured as purchasing power standard in percentage of the EU average (EU=100), 2009.....	9
Map 2.2 Change in regional GDP per head measured as purchasing power standard in percentage of the EU average (EU=100), 2000-2009.....	10
Map 2.3 Change in national GDP per head measured as percentage of change in pps in the years of the crisis, 2007-2011.....	11
Map 2.4 Regional labour productivity expressed in relation to the EU27 average (EU27=100), 2008.....	12
Map 2.5 National share of renewable energy in gross final energy consumption represented as percentage, 2009.....	14
Map 2.6 National share of renewable energy in gross final energy consumption represented as distance to the 2020 national targets, 2009.....	15
Map 2.7 Regional potential for electricity production from wind power stations represented in meters/second, 2005.....	16
Map 2.8 Regional potential for electricity production from photovoltaic panels represented in kWh, 2005.....	17
Map 2.9 Energy intensity of the national economy represented as gross inland consumption of energy divided by GDP, 2010.....	18
Map 2.10 Energy intensity of the national economy represented as distance to the 2020 national targets, 2010.....	19
Map 2.11 Change in energy intensity of the national economy represented as percentage of change, 2000-2010.....	20
Map 2.12 National GHG emissions, 2009, compared to 1990.....	22
Map 2.13 Change in national GHG emissions represented as distance to the 2020 national targets, 2005-2009.....	23
Map 2.14 Estimated regional GHG emissions excluding LULUCF, 2008.....	24
Map 3.1 General expenditure on R&D as percentage of regional GDP, 2009.....	26
Map 3.2 General expenditure on R&D as percentage of regional GDP represented as distance to the 2020 national targets, 2009.....	27
Map 3.3 Change in general expenditure on R&D as percentage of regional GDP, 2003-2009.....	28
Map 3.4 Human resources in science and technology as percentage of regional active population, 2009.....	29
Map 3.5 Business expenditure on R&D as percentage of regional GDP, combined years from 2007 to 2009.....	31
Map 3.6 Patent applications to the EPO per 1,000 inhabitants by inventor's region of residence, 2008.....	32
Map 3.7 Regional early school leavers from education and training as percentage of population aged 18 to 28 (drop-out rate), 2010.....	34
Map 3.8 Regional drop-out rate represented as distance to the 2020 national targets, 2010.....	35
Map 3.9 Change in regional drop-out rate, 2000-2010.....	36
Map 3.10 LUZ drop-out rate, combined years from 2004 to 2008.....	37
Map 3.11 Regional population aged 30 to 34 with tertiary education, 2010.....	39
Map 3.12 Regional population aged 30 to 34 with tertiary education represented as distance to the 2020 national targets, 2010.....	40
Map 3.13 Change in regional population aged 30 to 34 with tertiary education, 2000-2010.....	41
Map 3.14 People working in the ICT sector as percentage of total regional employment, 2010.....	43
Map 3.15 Broadband penetration rate as percentage of total regional households, combined years from 2006 to 2009.....	44
Map 3.16 Individuals (aged 16 to 74) who ordered goods or services over the Internet for private use as percentage of regional population, 2010.....	45
Map 3.17 Individuals who have never used a computer as percentage of regional population, 2011.....	46
Map 4.1 Regional employment rate as percentage of active population aged 20 to 64, 2010.....	48
Map 4.2 Regional employment rate (percentage of active population aged 20 to 64) represented as distance to the 2020 national target, 2010.....	49
Map 4.3 Change in regional employment rate (percentage of active population aged 20 to 64), 2000-2010.....	50
Map 4.4 Gender balance in regional employment rate (percentage of active population aged 20 to 64), 2010.....	51
Map 4.5 Regional unemployment rate (percentage of active population aged 15 to 74), 2010.....	52
Map 4.6 Regional youth unemployment rate as percentage of total labour force aged 15 to 24, 2009.....	53
Map 4.7 Participation of adults (aged 25 to 64) in education and training, 2009.....	55
Map 4.8 Persons (aged 25 to 64) with low educational attainment (level 1 or 2 ISCED) by regions, 2010.....	56
Map 4.9 Regional/national population at-risk-of-poverty or social exclusion represented as distance to the EU2020 target, 2010.....	58
Map 4.10 Regional people at-risk-of-poverty after social transfers, 2010.....	59
Map 4.11 Change in regional people at-risk-of-poverty after social transfers, 2005-2010.....	60
Map 4.12 Severe material deprivation rate as percentage of total regional population, 2010.....	61
Map 4.13 Regional people living in households with very low work intensity as percentage of population aged 0 to 59, 2010.....	62
Map 4.14 Regional long-term unemployment as percentage of the unemployed population, 2010.....	63
Map 5.1 Regional EU2020S aggregate index, combined years from 2009 to 2010.....	65
Map 5.2 Regional change in the EU2020S aggregate index (4 headline targets with available regionalised datasets), 2005-2010.....	66
Map 5.3 Change in the EU2020S aggregate index by countries, 2005-2010.....	67
Map 5.4 First regional cluster analysis: 'two blocks' result.....	68
Map 5.5 Second regional cluster analysis: four clusters of regions.....	69

Foreword

This is not a usual Atlas, but a document attempting to translate a written strategic plan which lacks any territorial representation into a consistent collection of maps. This policy document is the Europe 2020 Strategy (EU2020S), which was issued in 2010 by the European Commission and constitutes a growth scheme for the decade 2010-2020 that aims to help the European Union to recover from the current ongoing crisis through the so-called smart, sustainable and inclusive dimensions of growth.

The first point to note is that the territorial dimension of the EU2020S is not obvious. Indeed scholars such as Böhme *et al.* (2011) have stated that the EU2020S is territorially blind. That has made the production of this Atlas especially challenging given that the territorial derivative of the EU2020S has had to be inferred. This has been the SIESTA (Spatial Indicators for a 'Europe 2020 Strategy' Territorial Analysis) Project's main task, under the ESPON Programme, between September 2011 and August 2012. Thus, this Atlas constitutes SIESTA's major achievement, contributing to a synoptic, analytical and comprehensive review of the EU2020S in territorial terms. From August to December 2012 a major revision has been developed, namely to simplify the text and reduce the overall number of maps.

It is important to acknowledge that appropriate and relevant datasets are scarce and that means that, although a very intensive data screening has been carried out, the selection of maps is not only derived from the EU2020S itself, but also is a product of data availability. Indeed, the first issue that the SIESTA team wishes to highlight is the need for more consistent and timely data gathering by the European institutions, especially Eurostat. It is impossible to explain the EU2020S in the regional or urban setting if the appropriate datasets do not exist.

The maps in this Atlas have been elaborated at the most detailed scale possible, representing urban areas when feasible, but this has been extremely difficult and there are several critical variables that are represented by countries. Methodological explanations in this respect are out of place in this Foreword and are part of SIESTA's Scientific Report.

This Atlas begins with an introductory section devoted to presenting the EU2020S, departing from the assumption that policy-makers and a wider public audience are not necessarily familiar with the strategic document. It then turns to consider the three dimensions of growth as envisaged by the EU2020S that have been intentionally rescheduled in order to put the very notion of growth in the forefront of the thematic contents. The Atlas concludes with an overall territorial analysis of the EU2020S.

The textual contents of this Atlas partially come from thematic reports developed by SIESTA's Project Partners, but the Lead Partner has developed this synthesis. The maps were produced by the Lead Partner with the collaboration of MCRIT. Graphics and tables are entirely SIESTA's Lead Partner development.

Santiago de Compostela, 24 December 2012

Böhme, K. et al. (2011): *How to Strengthen the Territorial Dimension of 'Europe 2020' and the EU Cohesion Policy*. Warsaw: Ministry of Regional Development.

1. The Europe 2020 Strategy: an Overview

The Europe 2020 Strategy (EU2020S) was launched by the European Commission (EC) in November 2009 and discussed during the Spanish Presidency of the EU in the first semester of 2010 by different EU institutions (the Parliament, the Council of Ministers, etc.), with a first overall discussion held in the European Council meeting on the 25th-26th March 2010 in Brussels. The consolidated official document of the EU2020S constitutes a Communication from the Commission published in March 2010, and was finally adopted by the European Council on the 17th of June 2010 in a meeting held in Brussels.

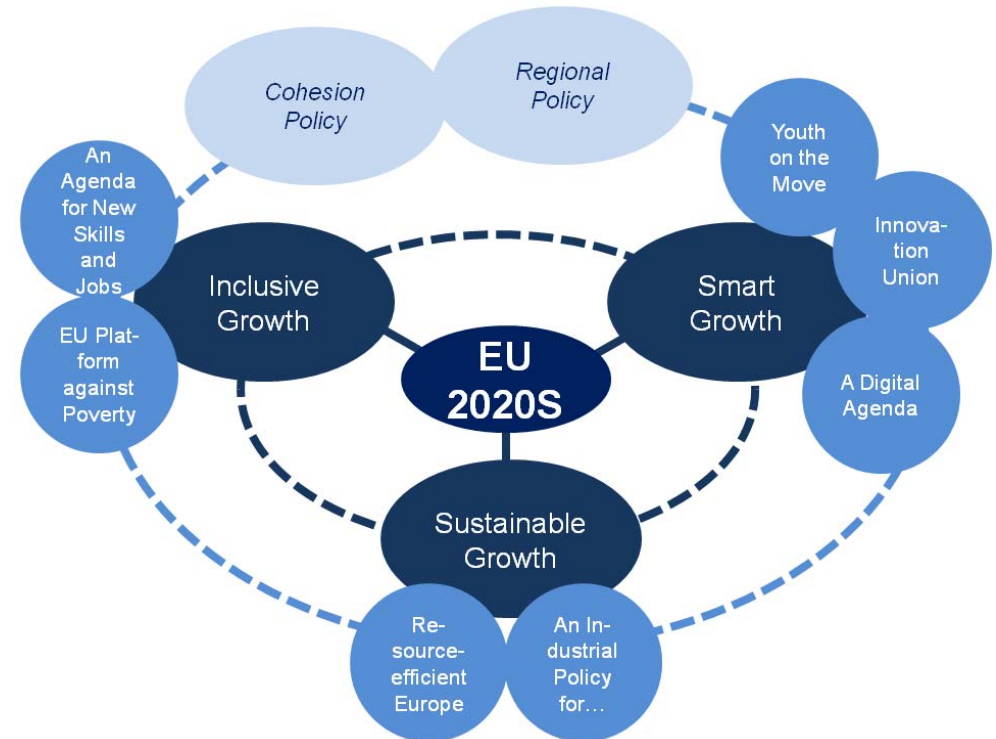
If the strategic document of the EU for the decade 2000-2010 was the so-called Lisbon Strategy (also known as the Lisbon Agenda or Lisbon Process), the intended strategic document for the decade 2010-2020 is the EU2020S. This has been particularly shaped by the context of the economic crisis.

The EU2020S has as meaningful subtitle “a strategy for smart, sustainable and inclusive growth”. The document contains a preface from the President of the EC stating that the context of “economic and financial crisis” has motivated the elaboration of this EU2020S for achieving “a sustainable future”, which is “about more jobs and better lives”, acknowledging that the EU “has the capability to deliver smart, sustainable and inclusive growth, to find the path to create more jobs and to offer a sense of direction to our societies”. These constitute the basic rationale of the EU2020S.

The EU2020S goes thematically beyond the previous Lisbon Strategy. The latter was focused on economic and smart growth (competitiveness and knowledge-based economy) and included several social issues (basically employment), but the former is more comprehensive.

The EU2020S consists of a double-folder of thematic organisation ([Graphic 1.1](#)): on the one hand, three priorities are launched; on the other, seven flagships are established. The [priorities](#) can be defined as the basic pillars or aims of the EU2020S, in an inter-related manner, as follows:

Graphic 1.1 The EU2020S from the perspective of the SIESTA Project



- **Smart Growth:** developing an economy based on knowledge and innovation.
- **Sustainable Growth:** promoting a more resource efficient, greener and more competitive economy.
- **Inclusive Growth:** fostering a high-employment economy delivering social and territorial cohesion.

These three themes are understood to be the very basic framework of the EU2020S, and are used in structuring this Atlas.

In order to catalyse progress towards each one of the priorities, seven [flagship initiatives](#) have been put forward. These are key programmes or tools to foster the achievement of the EU2020S. The seven flagships are as follows:

- Innovation Union.
- A Digital Agenda for Europe.
- Youth on the Move.
- Resource Efficient Europe.
- An Industrial Policy for the Globalisation Era.
- An Agenda for New Skills and Jobs.
- European Platform against Poverty.

The seven flagships are clearly linked to the three major themes ([Graphic 1.1](#)). Basically, the flagship initiatives are strategic programmes encouraged by the EC itself. These flagship initiatives are inter-related and are structured around the three reinforcing priorities, as represented in [Graphic 1.1](#). Each flagship has been established through as an official Communication from the EC.

In [Graphic 1.1](#) cohesion and regional policies have been included as part of the overarching framework of this Atlas. Although the territorial implications of the EU2020S are not evident beyond general statements about spreading the benefits of growth to all parts of the Union (indeed, this Atlas basically attempts to show this territorial dimension), it is important to note that cohesion and regional policies have several links with the EU2020S strategies and that means that they are referred to in this Atlas.

The EC has adopted two specific Communications on regional policy to support the EU2020S goals on smart growth (2010) and sustainable growth (2011). In addition, the Territorial Agenda of the European Union 2020 adopted in May 2011, part of the cohesion policy, is entirely coherent with the EU2020S.

Beyond priorities and flagship initiatives, the EU2020S consists of several [headline targets](#) that are set for achievement by 2020. In short, the EU2020S indicates the basic direction that the EU economy should follow and this track is intended to be measurable by means of some indicators, that is, the headline targets. Again, these targets are supposed to be inter-related. All these targets will be mapped in this Atlas, at the most detailed scale possible in each case. The Lisbon Strategy also set targets to be measured and indeed one target has been repeated in 2010. The official list of headlines is as follows:

- 75% of the 20-64 year-old population to be employed.
- 3% of the EU's Gross Domestic Product to be invested in R&D.
- The three targets known as "20/20/20": a 20% reduction (and even 30% if possible) in greenhouse gas emissions in relation to 1990 levels, 20% of energy from renewable sources and a 20% increase in energy efficiency.
- Reducing early school leavers to below 10%.
- At least 40% of 30-34 year-old population completing third level education.
- At least 20 million fewer people in or at-risk-of-poverty and social exclusion.

It must be said that the accomplishment of these targets is a controversial matter. Each country is establishing its own national headline targets by adapting the general orientations of the EU, but also each individual region is charged with achieving the national or the EU headline targets whether or not it makes sense. However, in late 2011 the EC, by means of the 7th Progress Report on Cohesion, acknowledged that it is not required that all the regions can or should reach the national 2020 targets, accepting that for some regions, the distance to the target is simply too great. The EC has also added in this respect that for some issues it is not realistic or desirable that all regions reach the same target.

The establishment of individual national targets derived from the EU target is in the EU2020S, but it is recognised that each member state has to take into account its different needs, different starting points and specificities so as to promote growth for all. However,

and this Atlas will illustrate this point, the national targets are sometimes very heterogeneous and their sum country per country does not guarantee the achievement of the overall EU targets.

The EU2020S is assessed each year through progress reports for the whole of the Union and for member states. This is officially called the [Annual Growth Survey](#) (to date, there are versions for 2011, 2012 and 2013 available). This survey is done in a consistent way following the EU2020S, typically consisting of three annexes, as follows:

- Annex 1: Progress Report on Europe 2020.
- Annex 2: Macro-economic Report.
- Annex 3: Draft Joint Employment Report.

Importantly, the first one is reviewing the EU and national headline targets yearly.

2. Sustainable Growth

The EU2020S deals firstly with promoting growth. The document is unambiguous in stating that this is crucial in order to emerge from the crisis and to get back on track. The EU2020S also states that it must be able to turn the EU into a sustainable economy, but it is clear from the Strategy itself that the very idea of *sustainable* is understood as a sustainable recovery of the path of growth. Sustainable growth is noticeably focused on strictly economic issues, rather than environmental topics.

Although the *sustainable growth* section of the EU2020S embraces some of the typically associated notions of *sustainable development* (resource efficiency, renewable sources of energy, etc.), in practice it means building an economy which leaves the crisis behind. Indeed, one of the two flagship initiatives associated with the sustainable growth section is based on manufacturing and states, word by word, that “Europe needs industry” and this industry not only should consist of green manufacturing but also, and quite obviously, of non-green industries. That clearly differs from the common understanding of the notion *sustainable* in popular, academic or policy terms, but it is the orientation of the EU2020S.

The basic point in this section is that the approach to overcome the crisis has to be based as far as possible on environmentally-friendly growth through the development of a low-carbon and resource-constrained economy preventing unnecessary use of resources. This direction is not only strategic in terms of promoting a competitive advantage for the EU and for meeting international commitments (for instance, in terms of greenhouse gas emissions), but it is also crucial for reducing dependency on foreign sources of energy, materials or commodities.

Basically, the sustainable growth pillar attempts to develop a more resource efficient, greener and more efficient economy. Taking into account that a greener economy must be necessarily resource efficient, these contents are located together in this Atlas, while the contents on competitiveness are in the subsection devoted to economic growth.

For this reason, this section on sustainable growth is two-fold. On the one hand, it discusses economic growth; that means that the first maps reflect on economic issues alone, under the particular EU2020S understanding of *sustainable growth*. On the other hand, the green economy is considered, including issues related to combating climate change and moving towards cleaner and more efficient energy production and consumption. This division is consistent with the fact that the EU2020S’ sustainable growth pillar embraces two flagship initiatives on industry (thus, economic growth) and on resource-efficiency (thus, green economy).

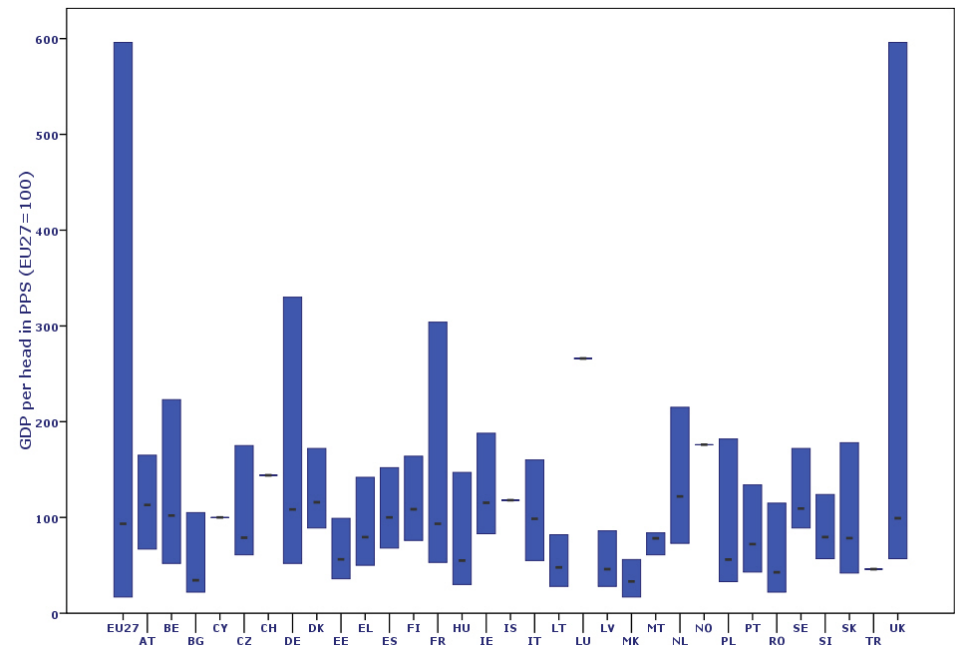
2.1. Growth and Competitiveness in a Crisis Differently Affecting the European Territories

Growth is the basic objective of the EU2020S. Recovering from the crisis is only possible through a return to the path of growth. In addition, growth is increasingly seen in the European civic and political arenas as the critical target for the future. In this respect, a basic aspect of this Atlas must be to consider the current performance of economies ([Map 2.1](#)) and the rate of change, to test if growth has taken place through time ([Map 2.2](#)), and especially in the current contraction period ([Map 2.3](#)). These three maps have been produced using the regional gross domestic product per inhabitant (allowing the comparison of different economies and regions in demographic size), computed in purchasing power standards (pps, thus eliminating differences in purchasing power due to different price levels) and expressed as a percentage of the EU average (which scores 100).

This indicator has a long tradition in the EU as it has been notably popularised in the last decades by scientific literature showing the economic and territorial imbalances of the EU. It is also the basis for the EU policies of cohesion, with the threshold of 75% of the average being used to classify regions with less than this percentage, entitling them to receive higher public funds. Importantly, the EU2020S focuses on this measurement, which is basic for grasping the geographical point of departure of a growth strategy. The EU2020S acknowledges that economic growth must spread to all parts of the EU, but obviously the economic situation of these parts differs geographically.

[Map 2.1](#) reports on the current imbalances on GDP per capita at the regional scale but substantial national differences also exist, especially marked in the United Kingdom (UK), Germany and France, but also in Poland and Slovakia ([Graphic 2.1](#)).

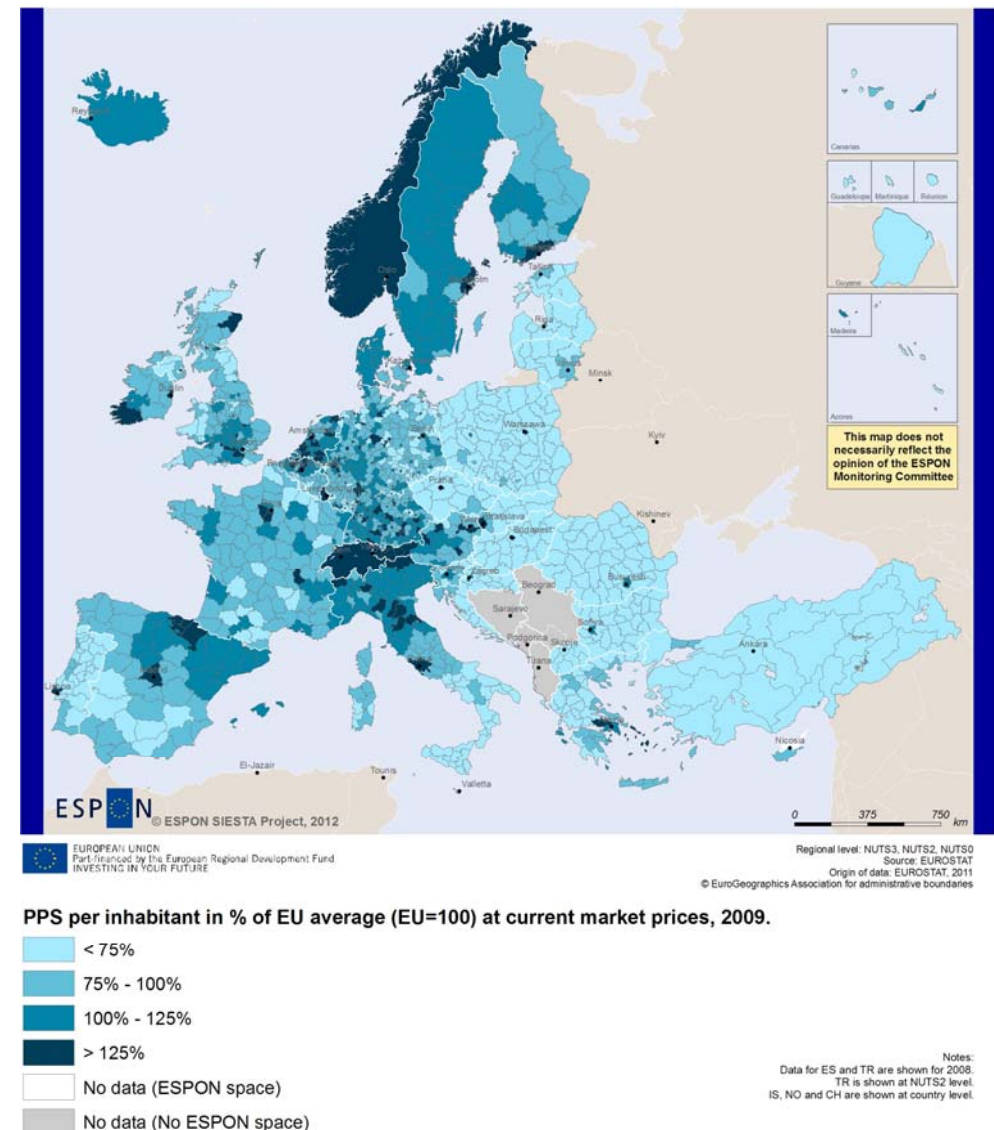
Graphic 2.1 Regional disparities (at NUTS3) in GDP per head in pps among member states. Source: Eurostat, SIESTA's calculation



[Map 2.4](#), on labour productivity, is especially important as it is widely acknowledged that labour productivity constitutes the main source of economic growth. This means that, according to the EU2020S and the mainstream literature, those regions in a better position in this respect are likely to be stronger in economic terms and first to emerge from the crisis.

Map 2.1 Regional GDP per head measured as purchasing power standard in percentage of the EU average (EU=100), 2009

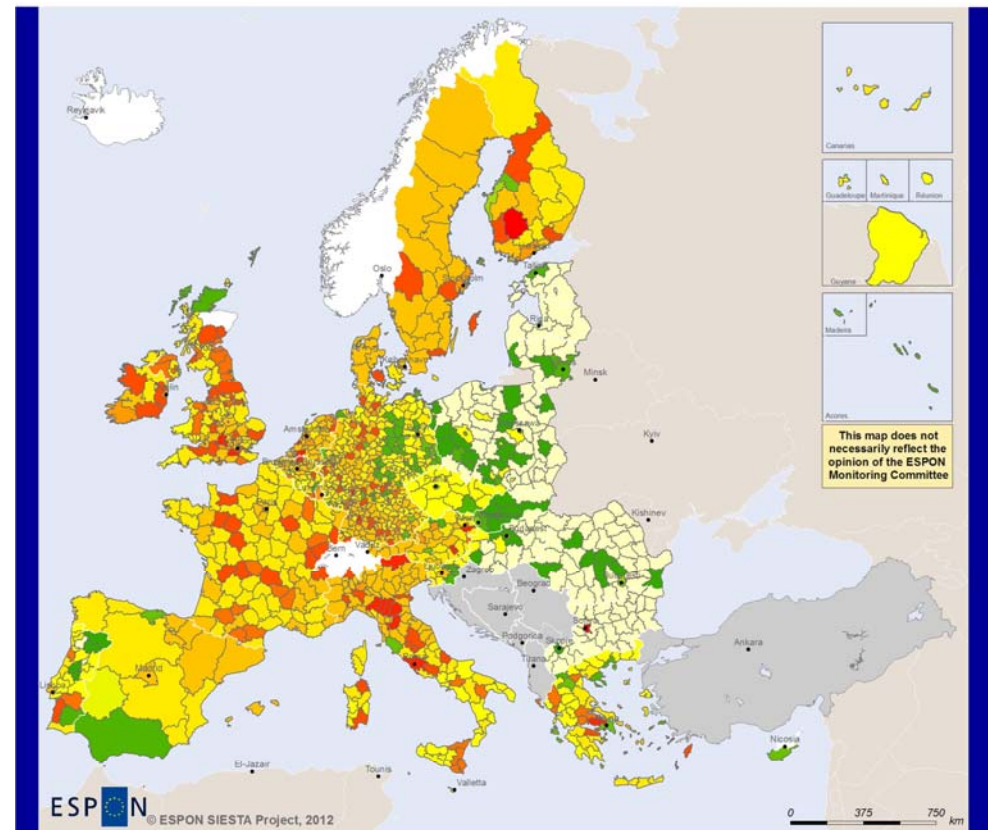
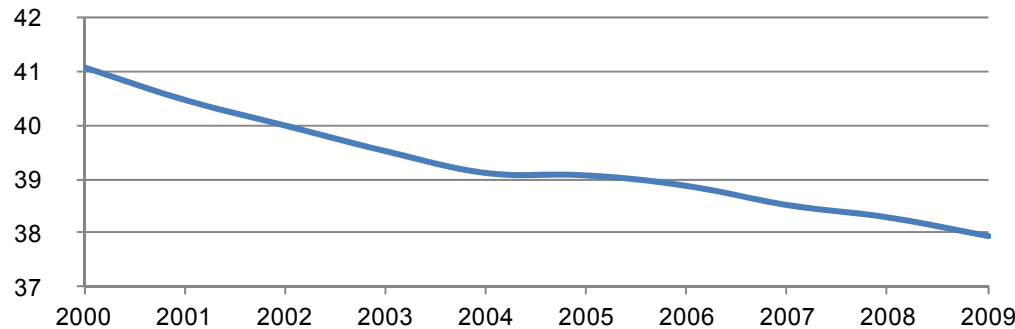
- A division is evident between the East and the West which remarkably follows the Iron Curtain pre-1989. The poorest regions are located in Eastern countries such as Bulgaria, Romania or Macedonia. The fact that most of these Eastern countries are now members or candidate countries of the EU provides an opportunity for closing the gap with Western Europe.
- In sharp contrast, the Western countries contain the wealthier regions, the top being located in Inner London, at almost 600 (exactly, 596%). That means that an average inhabitant of the highest studied region is 35 times richer than a person living in the regions most lagging. Such a gap constitutes a major challenge for the EU and has been the basic rationale of the long-term EU cohesion policy. Taking into consideration [Graphic 2.2](#), it can be said that cohesion policy is working, even at a modest pace, and is important for overcoming the current disparities.
- A concentration of richer regions lies in the Alpine Arc and the Rhine Valley, including several regions of Germany and the Benelux countries. The obvious extension of this macro-region to the London area and to Northern Italy has been the inspiration for the well-known metaphor of the “blue banana” or area constituting the core of the European economy.
- Capital cities, large cities and metropolitan areas are the regions where GDP per head is higher. This pattern clearly highlights some urban areas in relation to their respective rural counterparts in Eastern countries such as Romania, Bulgaria or the Czech Republic, but the same is applicable in Western countries (Sweden, the UK, Finland, France, Portugal, etc.).
- Significant and positive correlations can be traced between those regions being in a better situation in economic terms and a specialisation in scientific, technological, ICT and financial activities; this shows that the development of advanced services explains a wealthier status.



Map 2.2 Change in regional GDP per head measured as purchasing power standard in percentage of the EU average (EU=100), 2000-2009

- The status of a majority of regions remains static, showing stability. This situation is challenging for the regions lagging behind, for instance in Eastern Europe, where wide areas have remained under 50 points in relation to the EU average despite being the focus of EU cohesion and regional policy.
- Some Eastern regions clearly have improved their economic situation (especially in the former East Germany, Poland, Slovakia, Romania and Hungary) and the same is true for areas in Finland, Scotland, Spain, Portugal, Italy, Greece or Cyprus. In these cases there has been an increase in the rate, at least 25 points in relation to the average.
- Wide areas of the UK, France, Italy and the former West Germany have experienced a decline, at least 25 points in relation to the EU average. This variation is arguably a statistical effect rather than a real loss of economic performance.
- The clear trend of several of the regions in less developed member states to converge, together with the fact that disparities are slowly being reduced (**Graphic 2.2**), is an indicator that territorial cohesion is occurring. However, the uncertainty around the EU cohesion policy post-2013 poses major threats to this trajectory.

Graphic 2.2 Dispersion of GDP per head, EU27 NUTS2 regions through the coefficient of variation, 2000-2009. Source: Eurostat, SIESTA's calculation



ESPON
EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS3, NUTS2
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Change of GDP per capita, 2000 - 2009.

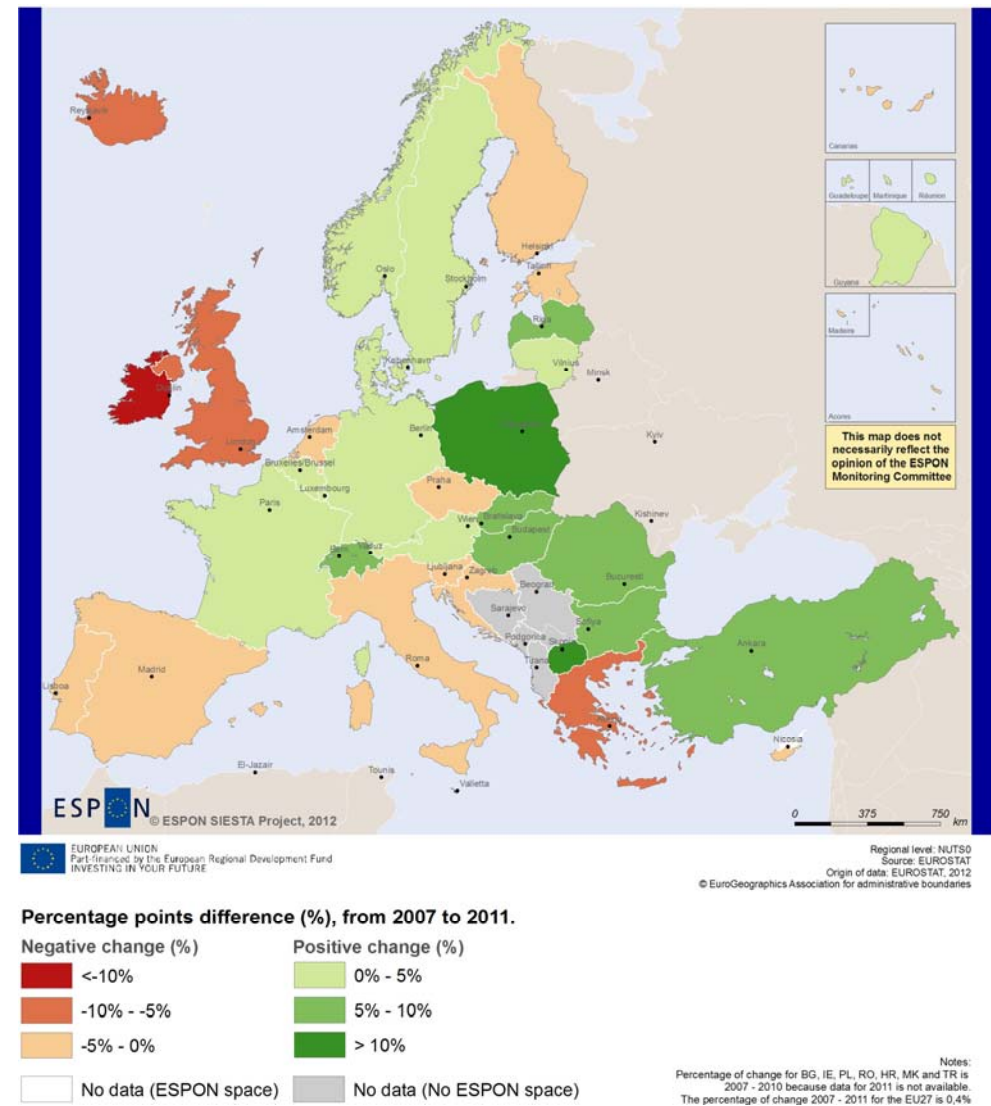
		2009				
		<50	50-75	75-100	100-150	>150
2000	<50					
	50-75					
	75-100					
	100-150					
	>150					

□ No data (ESPON space) □ No data (No ESPON space)

Notes:
DK change is shown for 1999 - 2009.
ES is shown at NUTS2 level.
Regional data are not available for NO, CH, IS, TR, MK, ME, XK, BA, AL, RS, UKM62 and UKM50.

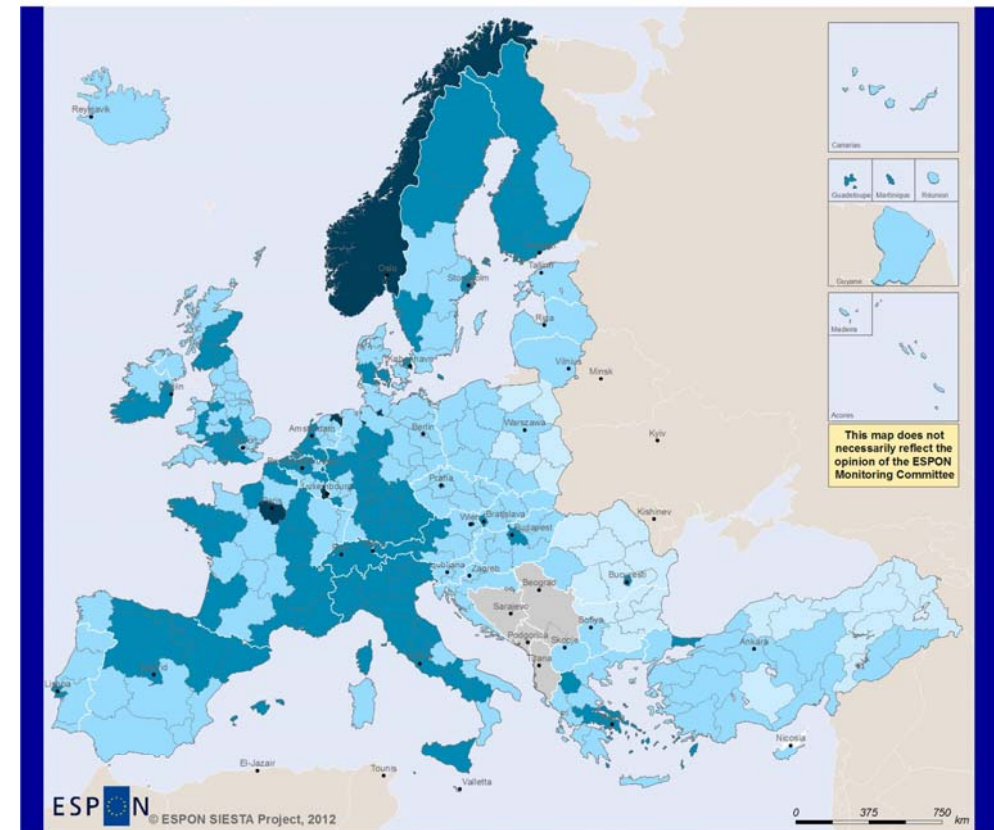
Map 2.3 Change in national GDP per head measured as percentage of change in pps in the years of the crisis, 2007-2011

- Unfortunately, data for the years of the crisis (2007-2011) is not regionally available. While some countries are improving in terms of growth and continuing with the general pre-crisis positive economic trend, others are experiencing huge constraints and indeed are clearly economically falling.
- The best performing countries are not only in Eastern Europe, including non-EU countries such as Macedonia and Turkey, but also in Central Europe, embracing old EU members (Germany or Austria) and non-EU nations (Switzerland or Norway).
- The extreme impact of the crisis is evident in the British Isles and Iceland and most of the Mediterranean countries (Greece, Italy, Portugal, Spain and Slovenia). In Eastern Europe there are also decreases in Estonia, the Czech Republic, Croatia and Slovenia.
- Most of the countries that were below the average in economic terms have experienced growth during the crisis, especially the highest increasing countries, which are Macedonia, Poland and Malta, followed by the positive growth experienced by Romania, Hungary, Bulgaria, Latvia and Turkey (in all this cases above 5%). This constitutes an opportunity for these countries in terms of cohesion.
- Those countries most dependent on the real estate and construction sectors (as in Spain and Portugal) are experiencing recession. That implies that these economic sectors should be considered with extreme caution in recovery strategies.
- Countries which have experienced a noticeable contraction of GDP per capita for 2007-2011 are also suffering from high unemployment, for instance in Spain, Ireland and Estonia, resulting in a major socio-economic territorial challenge.
- Countries sharing the euro are mainly located in the side of the 'losers' (10 out of 17) rather than the 'winners' (7 out of 17), while, on the whole, the countries being mapped are growing rather than decreasing (19 out of 34).



Map 2.4 Regional labour productivity expressed in relation to the EU27 average (EU27=100), 2008

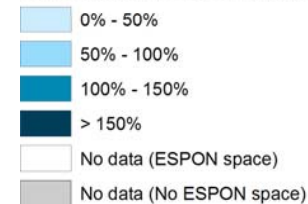
- In general, Map 2.4 is very similar to Map 2.1 because they both refer to GDP. Thus not surprisingly an overall East/West divide (with the former in a worse situation than the latter) is perceptible. In addition, both share higher levels in metropolitan and urban than in rural areas.
- However, several rural regions in Western Europe (in France, Spain, Italy, the UK, etc.) that in the GDP per capita cartography are situated under the limit (Map 2.1), on this map of labour productivity are above the 100 threshold; this might be caused by an inactive population (including pensioners) and also the unemployed population is not taken into account for the per capita calculation.
- The improvement of productivity in lagging regions (mainly located in Eastern Europe) should come by increasing the level of technological progress and improving the quality of human capital, which are closely related factors. In this respect, it is evident that advances in competitiveness are quite dependent on the pillar of smart growth (innovation and education).
- However, technological progress may increase labour productivity, at the same its associated reaction may be job losses. In this respect, there are complex relations between labour productivity and (un)employment.



ESPON
EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS3
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage of EU27 average (%), 2008.



Notes:
Labour productivity per person employed was calculated as the ratio of the regional GDP in millions of PPS between the total number of employees.

2.2. Territorial Dissimilarities in Energy and Climate Change

As it has previously been said, sustainable growth in the EU2020S primarily envisages that the European economy maintains its leadership in the world and its competitiveness, through the delivery of new processes and technologies. In the official documentation it is suggested that a focus should be on green technologies that allow combating climate change (by means of low-carbon technologies and the development of renewable sources of energy) and the achievement of energy efficiency. The EU2020S acknowledges that such an approach will prevent environmental degradation, biodiversity loss and unsustainable use of resources.

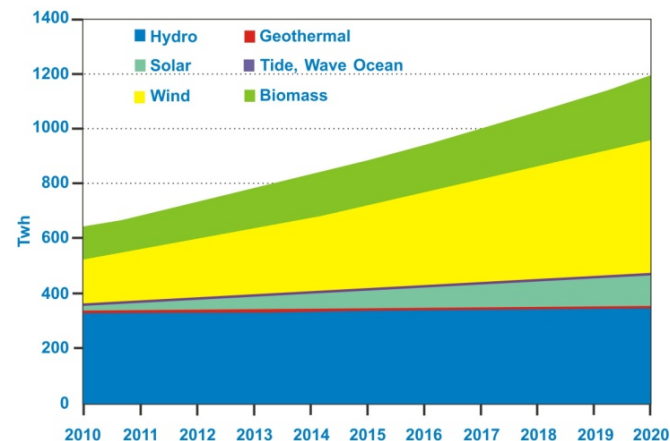
In addition, for the EU2020S resource efficiency, renewable energy developments and combating climate change are substantial directions for financial savings for companies, the public and governments. Moreover, there are obvious security and geopolitical implications that are repeatedly quoted in the official documentation (i.e. the need to reduce dependency on non-EU countries). Furthermore, they have a potential to create new jobs and this is also relevant in the context of an economic growth strategy. In short, these elements are significant for the environment, but they also carry current and potentially strong economic value.

This is the rationale to set three environmental headline targets which are based on a reduction of minus 20 under the sustainable growth pillar. In this subsection they are amalgamated: the first two are related to energy and are treated in point 2.2.1, while the latter is on the fight against climate change (point 2.2.2).

2.2.1. Territorial Heterogeneity on Renewable Energy Development and Reduction of Energy Consumption

The two targets on energy are focused on renewable sources and efficiency. On the one hand, the EU2020S seeks that the share of renewable energy in gross final energy consumption is 20% in 2020. On the other, this document aims for a reduction of 20% in the energy intensity of the economy.

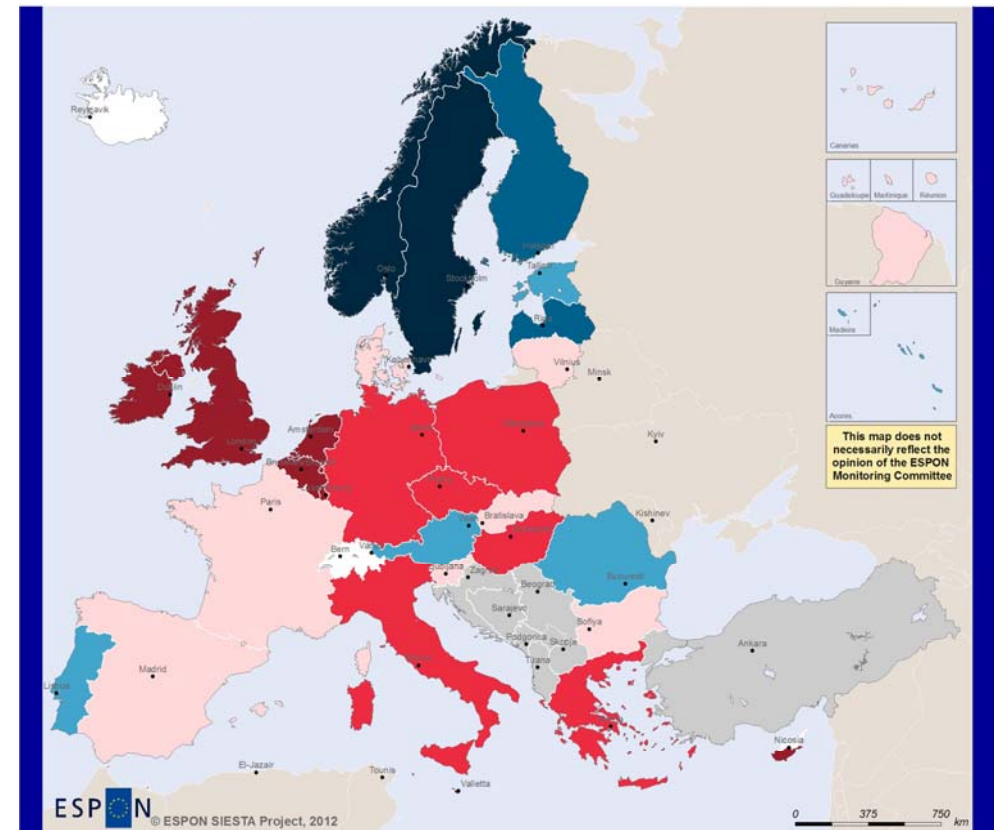
This two-fold distribution of issues on energy is developed through seven maps. [Map 2.5](#) represents the share of renewable energy in gross final energy consumption, while [Map 2.6](#) expresses this information as the distance to the different national targets. The next two maps are related to the above mentioned indicator by showing the regional potential for renewable energy production, as increased use and promotion of renewable energy technologies seem to be a viable solution for environmental problems but also present a clear economic opportunity for these regions with the appropriate natural assets. These maps are on wind energy ([Map 2.7](#)) and solar power ([Map 2.8](#)), both being peak sources for renewable energy at the European level ([Graphic 2.3](#)). The last two maps on energy relate to energy efficiency, using the indicator developed by Eurostat at state scale level ([Map 2.9](#)) and its distance to the national targets ([Map 2.10](#)).



Graphic 2.3 Planned European electricity production according to national renewable energy action plans. Source: JCR, 2011

Map 2.5 National share of renewable energy in gross final energy consumption represented as percentage, 2009

- Scandinavian and the Eastern Baltic republics (except Lithuania) are the most sustainable in energy consumption because of their higher shares of renewable energy sources. Above the EU2020S target, there are another three states in different parts of the continent (Austria, Portugal and Romania).
- The remaining countries are under the threshold, with extreme situations in island-states (Malta and Cyprus) and in small countries (Luxembourg, the Netherlands, Belgium), as well as the UK. Not surprisingly, islands are very dependent on imported fuels and they constitute a particular territorial challenge that should be especially targeted.
- The share of renewable energy in gross final energy consumption varies from 47% in Sweden to 0.2 % in Malta in member states.
- The resulting pattern for the EU expresses heterogeneous geographical endowments (for instance, Scandinavian countries have widely available hydroelectric and geothermal sources of energy), but also depend on the ambitions of their respective policies. Sweden, for instance, benefits from the high share of hydroenergy and biomass use in its energy generation, but also has an ambitious policy framework. For this reason, endowments in the northernmost countries or in the more mountainous nations can be understood as natural opportunities but of a limited extent.
- Since the 1990s, policies on renewable energy development have been implemented across the continent by states (and regions, depending on the country), through very heterogeneous initiatives, even within global frameworks by the UN. The 2001 EU Directive on Electricity Production from Renewable Energy Sources has been a milestone in this field.
- Pioneering schemes for promoting renewable energy are found in Denmark, Germany, Spain and the Netherlands, but have been modified through time. Of concern is that recent changes in countries such as Spain are not going to contribute to develop renewable sources of energy as they did in the past.

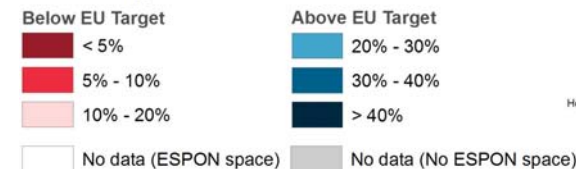


ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTSO
Source: EUROSTAT
Origin of data: EUROSTAT, 2011
© EuroGeographics Association for administrative boundaries

Percentage of gross final energy consumption (%), 2009. EU 2020 Target = 20%

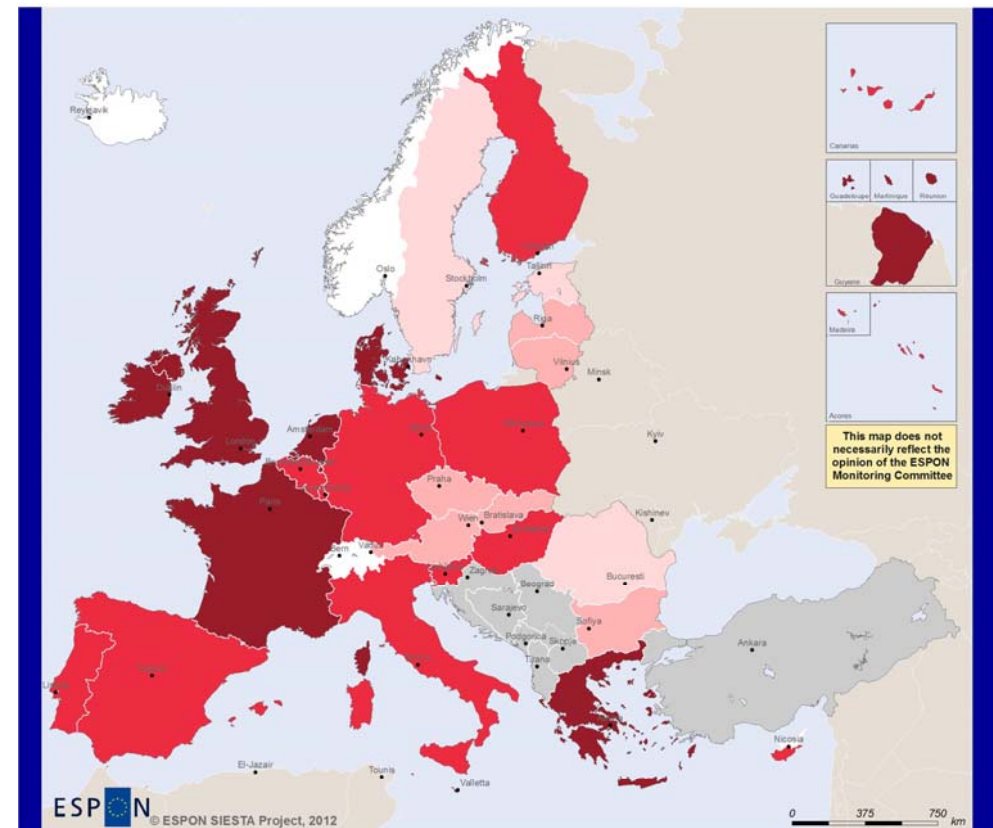


Notes:

This indicator is calculated on the basis of energy statistics covered by the Energy Statistics Regulation. It may be considered an estimate of the indicator described in Directive 2009/28/EC, as the statistical system for some renewable energy technologies is not yet fully developed to meet the requirements of this Directive. However, the contribution of these technologies is rather marginal for the time being. More information about the renewable energy shares calculation methodology and Eurostat's annual energy statistics can be found in the Renewable Energy Directive 2009/28/EC, the Energy Statistics Regulation 1099/2008 and in DG ENERGY transparency platform http://ec.europa.eu/energy/renewables/index_en.htm.

Map 2.6 National share of renewable energy in gross final energy consumption represented as distance to the 2020 national targets, 2009

- This Map 2.6 depends on the departure point of each individual country, but also on the national ambition set by each one. The countries which are in a worse situation are not necessarily those which have committed themselves to perform more (indeed, the correlation between the distance to the EU target and the distance to the respective national targets is moderate, not strong).
- The 2012 Progress Report on the EU2020S has stated that the 20% renewable energy target based on the legally binding national targets should be met by 2020 if member states fully act to implement them.
- The UK has the most ambitious target for share of renewable energy consumption (12% between 2009 and 2020), followed by Ireland and France (both with 11%) and Denmark (10%). These national ambitions represent an opportunity given that they are considered highly feasible (see Maps 2.7 and 2.8).
- In contrast, the countries which have committed less are typically those which already have a higher share of renewable energy and are conveniently above the 20% target. The exception is Slovakia, a country that although having a 10% current share, has only committed to making a 3.7% progress; this country is in a particular challenging situation due to its low national ambition.
- National targets on renewable energy development are heterogeneous and this diversity shows varying degrees of commitment in each country.



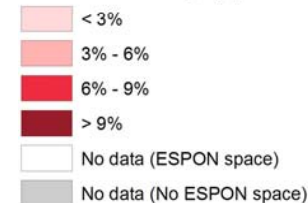
ESPON
 © ESPON SIESTA Project, 2012

EUROPEAN UNION
 Part-financed by the European Regional Development Fund
 INVESTING IN YOUR FUTURE

Regional level: NUTSO
 Source: EUROSTAT
 Origin of data: EUROSTAT, 2011
 © EuroGeographics Association for administrative boundaries

Distance in % to National 2020 Targets

Below National Target (%)

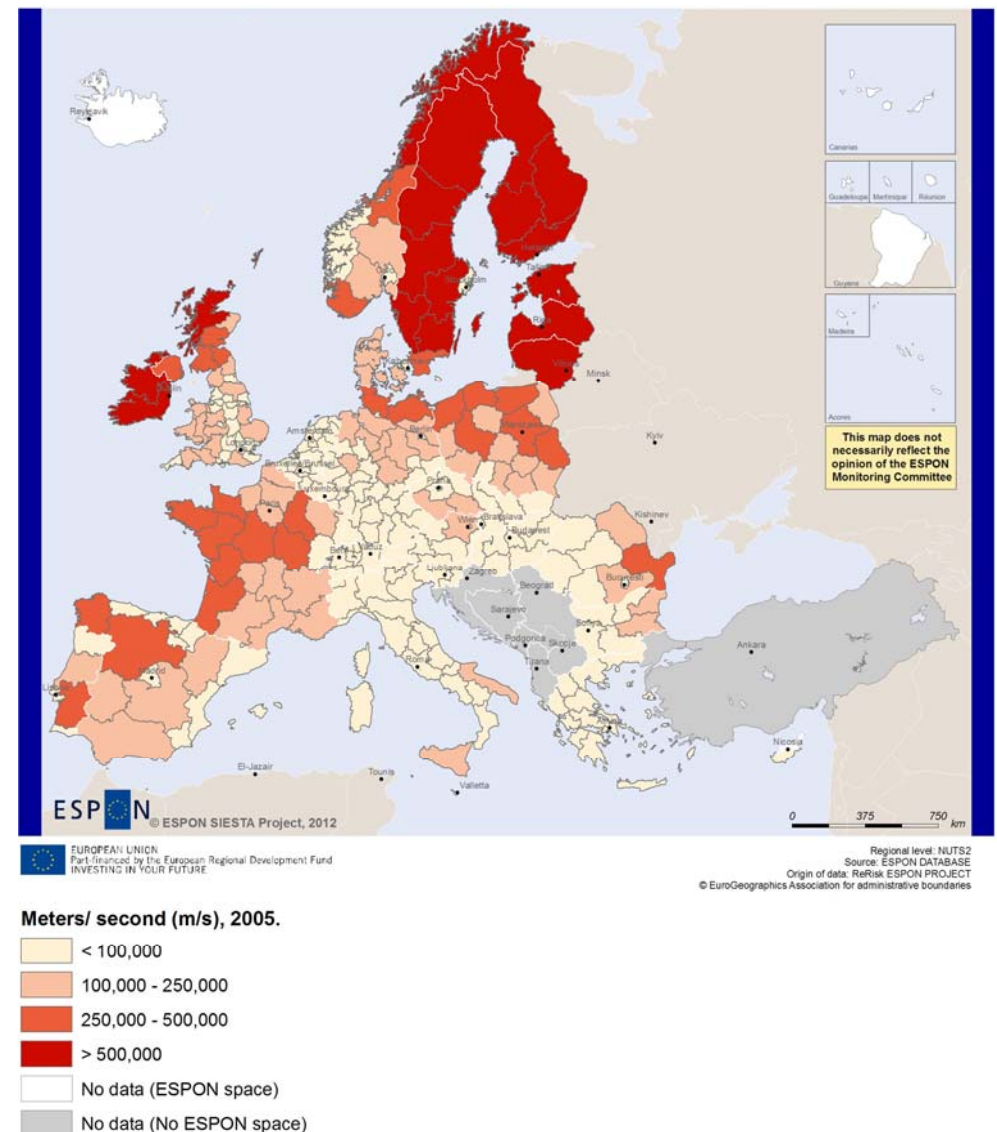


Notes:

This indicator is calculated on the basis of energy statistics covered by the Energy Statistics Regulation. It may be considered an estimate of the indicator described in Directive 2009/28/EC, as the statistical system for some renewable energy technologies is not yet fully developed to meet the requirements of this Directive. However, the contribution of these technologies is rather marginal for the time being. More information about the renewable energy shares calculation methodology and Eurostat's annual energy statistics can be found in the Renewable Energy Directive 2009/28/EC, the Energy Statistics Regulation 1099/2008 and in DG ENERGY transparency platform http://ec.europa.eu/energy/renewables/index_en.htm.

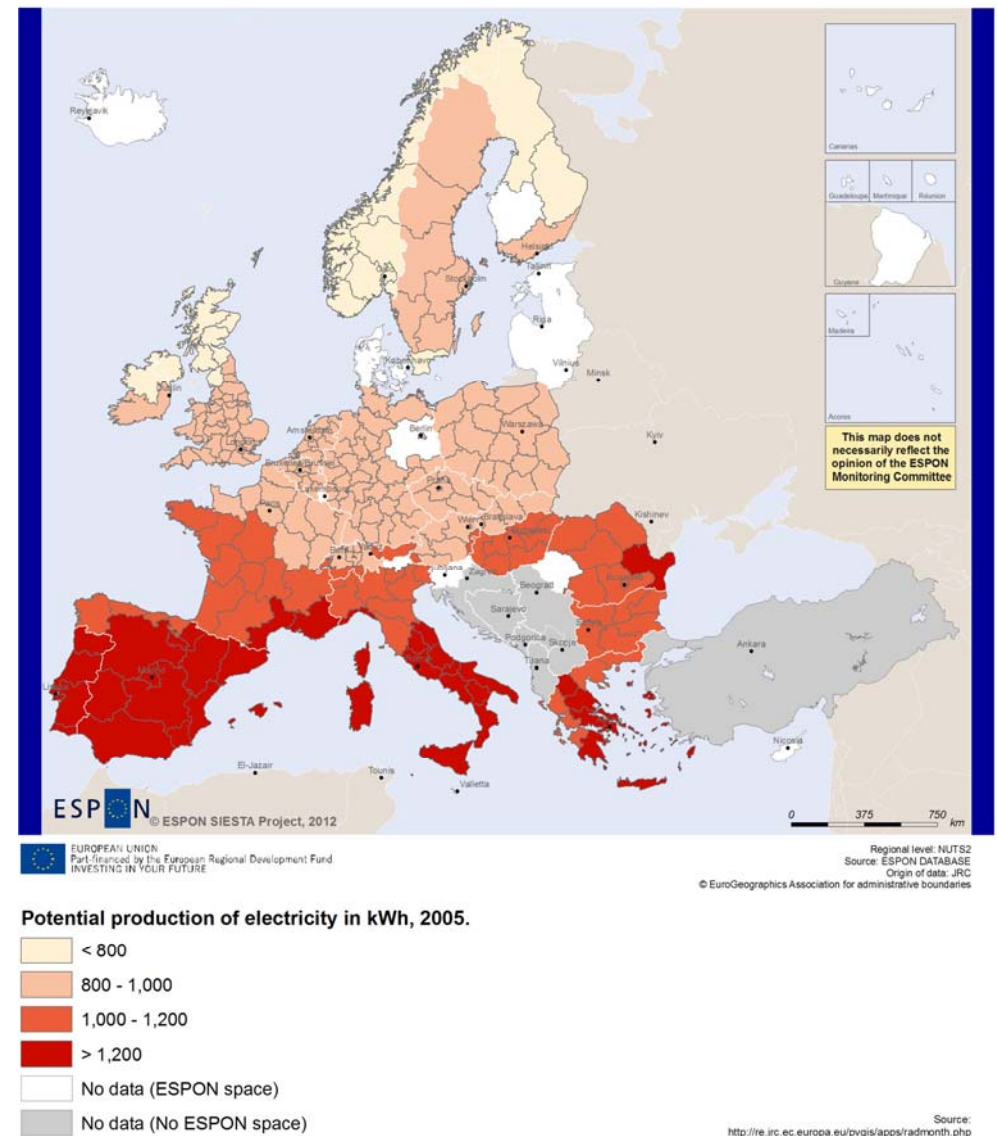
Map 2.7 Regional potential for electricity production from wind power stations represented in meters/second, 2005

- Regions exposed to the prevailing Westerly winds along the Atlantic coast of Europe, including the Baltic Sea Region, show the greatest potential for wind energy.
- However, the real contribution that these regions might provide to real renewable energy progress is somewhat doubtful. Evidently, not only 'raw' potential matters. Most of these regions are peripheral, low density and rural, which means that typically they are very interested in landscape and biodiversity conservation and wide turbines engage high levels of landscape and environmental effects, so the real contribution they might provide to real renewable energy progress is unlikely to be transformed into real growth. These considerations should be nuanced with complex issues on the uneven geographies of energy production and consumption, the combination with other (renewable and non-renewable) sources of energy, market conditions, funding availability, private capital interest in investing in the sector, environmental conservation, etc.
- The development of the wind energy industry is widely acknowledged as a smart opportunity to create jobs. Indeed, between 2007 and 2010 jobs in the sector grew around 30% in the EU, while unemployment increased.
- It is essential to invest in R+D research related to wind energy technology and to create integrated plans that will assure territorial added value associated with the development of wind turbines. These integrated plans must take account of the regional implication in all the phases of the development.
- Denmark is a benchmark of wind energy industry development since the 1970s, with an active role played by the government and the consolidation of a robust cluster of companies with specialised technologies.



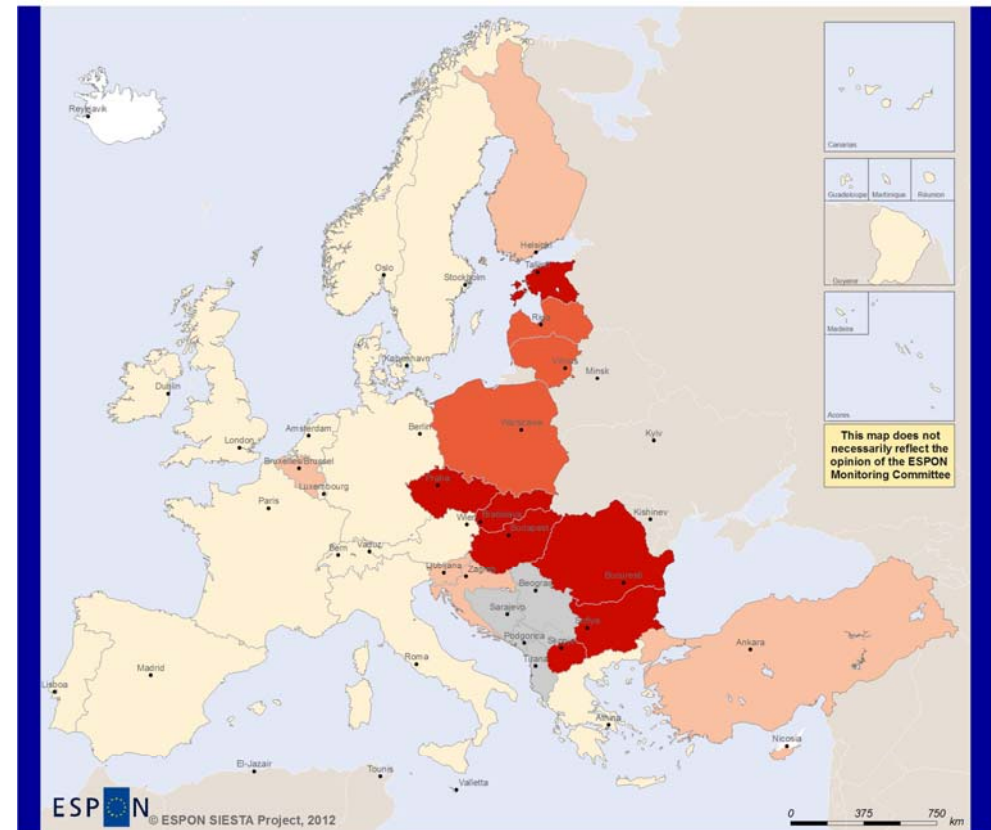
Map 2.8 Regional potential for electricity production from photovoltaic panels represented in kWh, 2005

- Southern regions of Europe are those with the highest potentials of photovoltaic energy production, including not only the Mediterranean Basin but also Atlantic regions in Portugal and some of the Balkan and Black Sea EU regions. This pattern is not only dependant on climate, but also on the degree of urban development, as only the built up areas are suitable for the installation of plants that can ensure substantial savings.
- It is unlikely that all regions with high photovoltaic energy production potential will directly benefit from actual developments. Several factors can prevent this development in some of these regions and, in contrast, can facilitate developments in regions that, apparently, are not particularly favoured in solar energy potential.
- Those regions showing high photovoltaic potential should implement policies to make the use of solar energy more profitable, especially in the case of self-consumption. At the moment, the price of the panels does not assure the cost-effectiveness of the investment. In this respect public granting must be considered especially in those regions where the photovoltaic potential is high enough to assure some return of energy form self-consumption systems to the electrical net.
- In spite of this economic and ecological potential, the expansion of the photovoltaic sector is suffering a retreat in countries with high potential such as Spain, where the sector was closely associated with the building sector. However, funding opportunities might enable the development of the sector in older buildings and detached houses.
- Spain has pioneered the development of solar energy production, namely through the Plataforma Solar de Almería.
- Among renewable sources of energy, solar energy is supposed to have lower environmental impacts, representing a clear opportunity. However, progressively the associated landscape effects are being seriously considered as a challenge to its sustainable development.



Map 2.9 Energy intensity of the national economy represented as gross inland consumption of energy divided by GDP, 2010

- There is a great divide between the Eastern countries which were officially socialist economies prior to 1989 and the Western part of Europe. The most inefficient countries are Bulgaria, Estonia, Romania, Czech Republic and Slovakia. In contrast, the most efficient are Denmark, the UK, Ireland, Italy or Austria.
- Denmark rates 105 kgoe per €1,000, close to the situation of Japan or Switzerland (90), the average levels to which recommendations might aim. This is the direction that the EU countries should follow.
- Bulgaria, rating 854, is eight times more inefficient than Denmark. In this respect the situation in these countries lagging behind is especially challenging and needs major attention.
- There is no direct correlation between greenhouse gas emissions and energy efficiency. Some countries that have higher levels of emissions are quite efficient (Germany or the UK), while others show high levels on both (especially, the Eastern bloc). Moreover, energy efficiency does not correlate as well with renewable energy consumption.

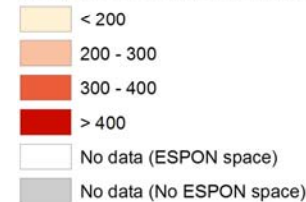


ESPON
 © ESPON SIESTA Project, 2012

EUROPEAN UNION
 Part-financed by the European Regional Development Fund
 INVESTING IN YOUR FUTURE

Regional level: NUTS0
 Source: EUROSTAT
 Origin of data: EUROSTAT, 2012
 © EuroGeographics Association for administrative boundaries

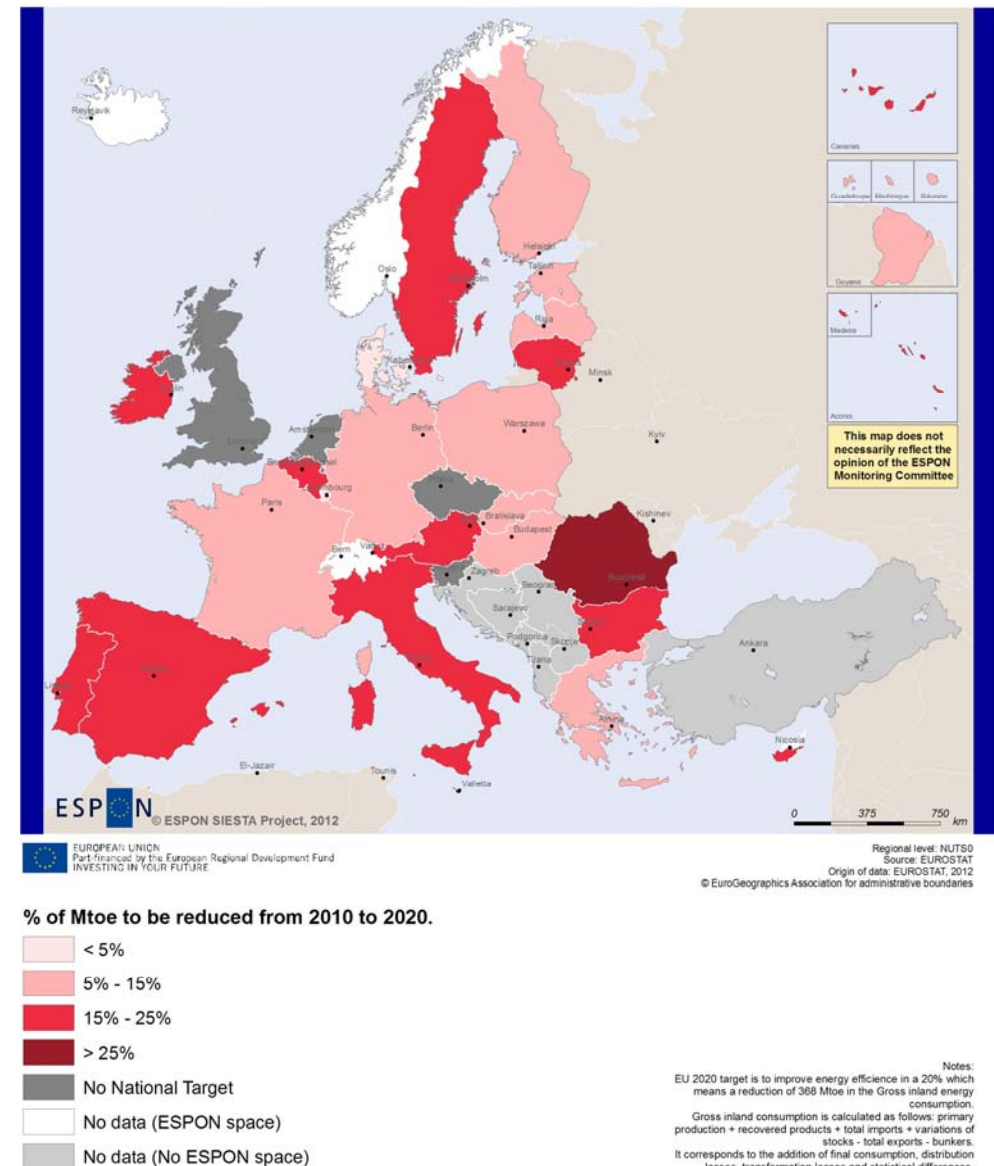
Kilogram of oil equivalent per 1000 Euros, 2010.



Notes:
 EU27=167.99
 This indicator is the ratio between the gross inland consumption of energy and the gross domestic product (GDP) for a given calendar year. It measures the energy consumption of an economy and its overall energy efficiency. The gross inland consumption of energy is calculated as the sum of the gross inland consumption of five energy types: coal, electricity, oil, natural gas and renewable energy sources. The GDP figures are taken at chain linked volumes with reference year 2000. Since gross inland consumption is measured in kgoe (kilogram of oil equivalent) and GDP in 1000 EUR, this ratio is measured in kgoe per 1 000 EUR. The EU 2020 target is to improve the energy efficiency in 20%, i.e. a reduction of energy consumption in 368 Mtoe (million tonnes of oil equivalent).

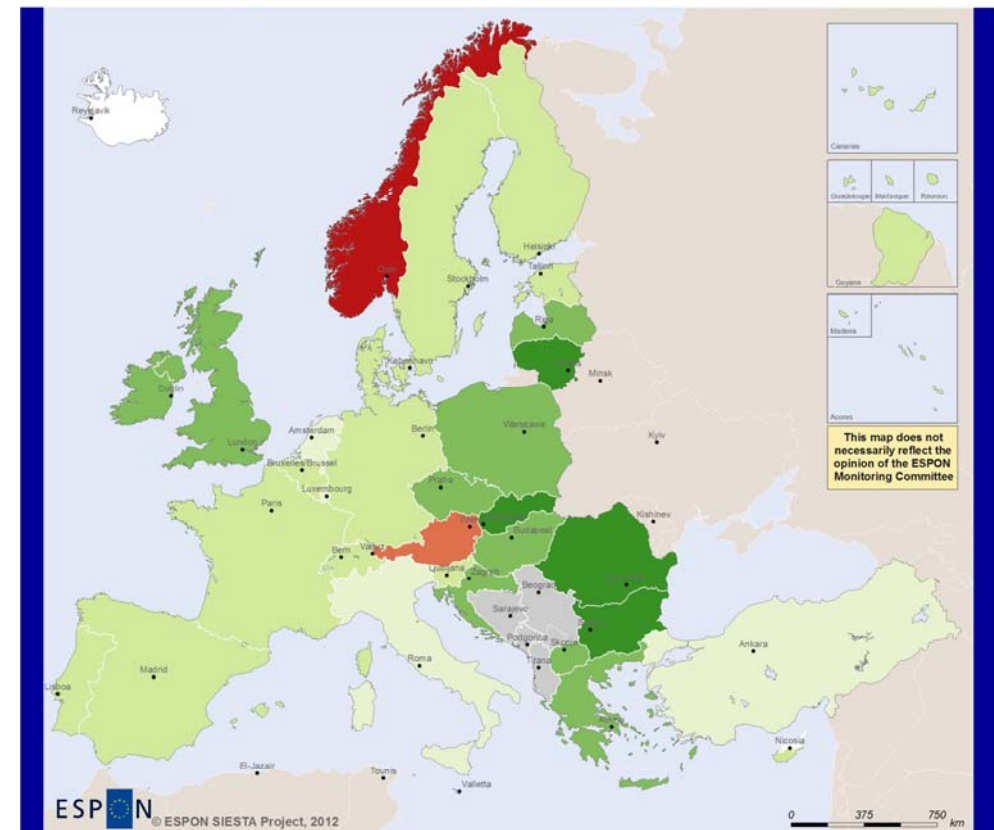
Map 2.10 Energy intensity of the national economy represented as distance to the 2020 national targets, 2010

- This pattern is politically sensitive in the sense that it is shaped by government decisions. The five members with a lower distance on current figures to the national targets are Luxembourg, Denmark, Slovakia, Greece and Finland, while the five members with highest distances are Romania, Malta, Portugal, Sweden and Austria. Romania is especially challenged taking into account the current bad situation on energy intensity in the economy and its low political commitment.
- In general, the Northern countries have lower distances to the national targets since they have tended to set lower targets, while in Southern and Eastern countries distances are higher; however, there are exceptions, such as Sweden and Greece.
- National compromises regarding the improvement in energy efficiency must be revisited in order to attain a feasible 20% increase in this indicator. The European Commission has stated in the reports on the EU2020S progress that member states have taken limited ownership of this target (indeed, some of them do not provide their national targets) and that targets set by countries are worrying as they are completely below expectations (i.e. some countries set targets under 10% while the EU target is to reduce by 20%).
- The EU Energy Efficiency Plan and the proposal for a Directive on Energy Efficiency emphasise the need for actions that would embrace investment in the following sectors: energy infrastructure, energy transmission networks, renewable energies and energy efficiency of buildings. In particular, the Directive proposal requires member states to establish national energy efficiency obligation schemes and adopt national heating and cooling plans making sure that spatial planning regulations at the local level are in line with these plans.



Map 2.11 Change in energy intensity of the national economy represented as percentage of change, 2000-2010

- Is there an effective way towards energy efficiency or not? [Map 2.17](#) shows that, generally speaking, Europe is making progress in the correct direction, but not at the adequate pace. From 2000 to 2010 progress was not above minus 20, so it is difficult to expect that this progress will take place for 2010-2020.
- The change occurring in new member states is on average far higher than that occurring in older ones. In fact, countries showing most improvement are typically Eastern countries (for example, Slovakia, -38.4; Lithuania, -37.4; etc.), but they are also low scoring. This may be a sign of innovation and modernisation processes taking place in energy issues in the new EU countries, related to the improvements or closure of heavy manufacturing industries. That constitutes an opportunity in the sense that countries that need to improve more are doing well.
- As it has been reported, the commitment from different countries to change can be considered weak ([Map 2.10](#)). Technological improvements provide critical opportunities in this respect and would integrate the sustainable growth and smart growth pillars of the EU2020S.

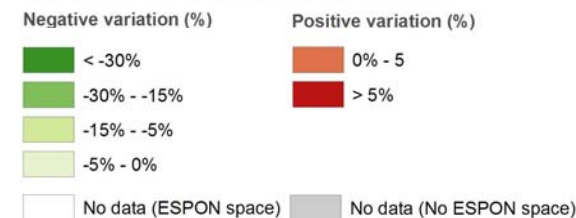


ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTSO
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage of change (%), from 2000 to 2010.



Notes:
Energy intensity of the economy is defined as the Gross inland consumption of energy divided by GDP (Kg of oil equivalent per 1000 euros).

2.2.2. Speed of the European Territories in the Transition towards a Low Emissions Economy

The target of reducing 20% of greenhouse gas (GHG) emissions by 2020 compared to 1990 (Kyoto base year), including a possible reduction of 30% if the conditions are right, is one of the three EU2020S headlines in the sustainable growth pillar. This is consistent with the overall rationale of the EU2020S that positive economic growth has to be based, as far as possible, on a low-carbon basis. Again, it is clear in the EU2020S that GHG reduction is not only an aim with an environmental motivation, but also it has an obvious socio-economic dimension in the sense that there is increasing economic potential for new technologies (i.e. carbon capture and sequestration possibilities) to generate growth and employment.

The numeric goals on GHG come from the international commitments made by the EU in the Kyoto and post-Kyoto negotiations. The reduction of GHG emissions is a critical issue reacting against the fact that climate change is becoming stronger because of human impact and that GHG are artificially generated. Climate change, including global warming, is a huge challenge being faced by all Europeans. The EU countries emit differently and that means that the departing points in the track towards fewer emissions are heterogeneous (Table 2.1).

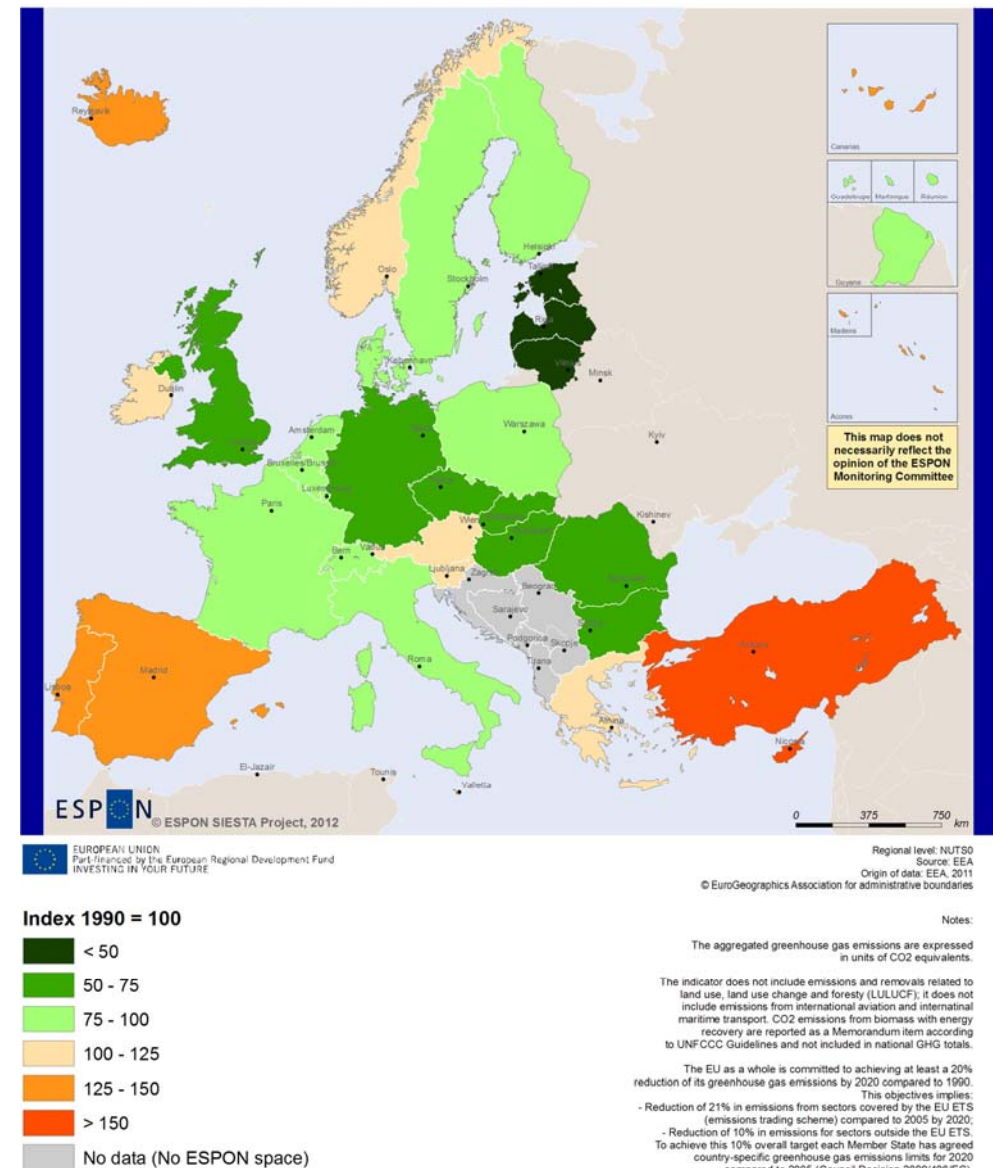
The following three maps show the territorial dimension of GHG emissions across Europe. Map 2.12 represents GHG emissions in Europe compared to 1990 level. Map 2.13 is the change (2005-2009) in GHG emissions represented as distance to the 2020 national targets. Finally, Map 2.14 is a regional (NUTS 3) estimation of GHG emissions excluding LULUCF (emissions and removals related to land use, land-use change and forestry) for 2008. This latter cartography has been elaborated by SIESTA following the methodology designed by the ESPON CLIMATE project.

Table 2.1 GHG emissions, 2009. Source: EEA, SIESTA's calculation

	<i>GHG emissions (1,000 t in CO₂ equivalent)</i>	<i>GHG emissions per capita (t in CO₂ equivalent)</i>
Luxembourg	11,515	23.33
Iceland	4,700	14.72
Cyprus	11,103	13.93
Ireland	61,741	13.87
Czech Republic	134,722	12.87
Finland	66,119	12.41
Estonia	16,391	12.23
Netherlands	198,931	12.07
Belgium	125,187	11.64
Germany	911,802	11.12
Greece	124,693	11.07
Denmark	60,683	11.01
Norway	51,470	10.72
Poland	381,770	10.01
Slovenia	19,469	9.58
Austria	79,739	9.54
United Kingdom	572,338	9.29
EU27	4,609,880	9.23
France	514,568	8.24
Italy	491,528	8.19
Slovakia	44,191	8.16
Spain	366,266	7.99
Bulgaria	58,895	7.74
Malta	3,016	7.29
Portugal	74,372	7.00
Liechtenstein	249	7.00
Switzerland	52,461	6.81
Hungary	66,864	6.67
Sweden	59,671	6.45
Lithuania	19,959	5.96
Romania	123,382	5.74
Latvia	10,962	4.85

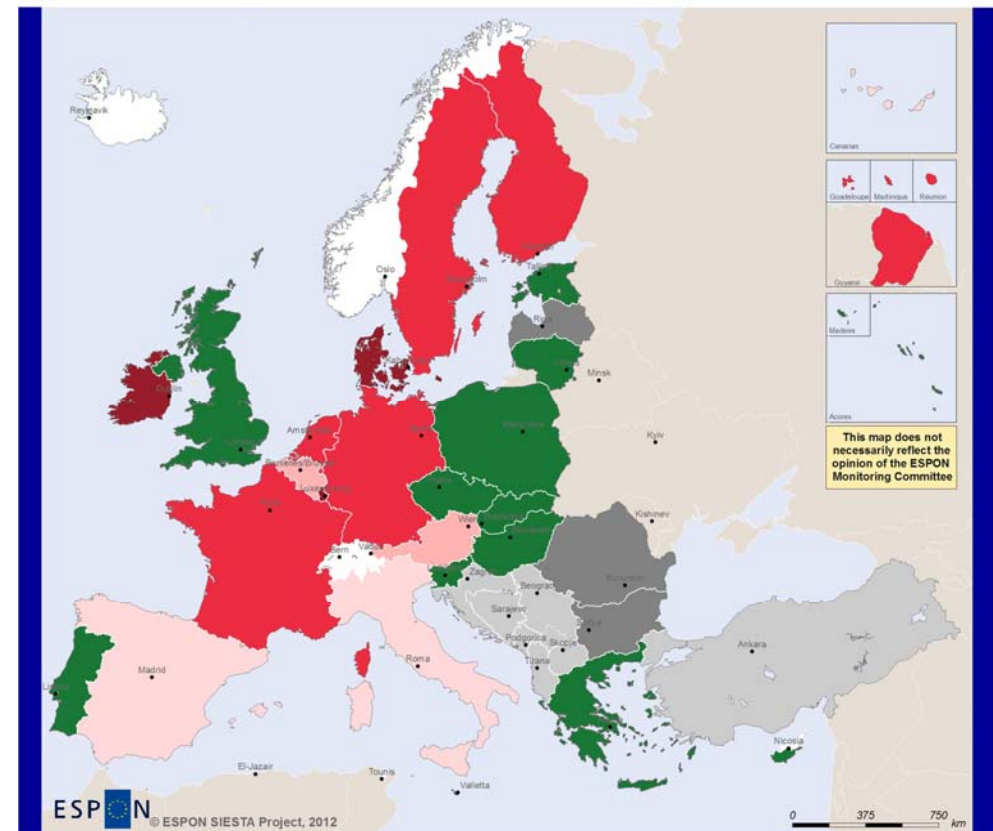
Map 2.12 National GHG emissions, 2009, compared to 1990

- GHG gas emissions have approximately halved between 1990 and 2009 in each of the Eastern Baltic republics, where Latvia and Estonia have recorded the largest decrease, respectively -59.6% and -58.9%. There have also been significant reductions in Lithuania, Romania, Bulgaria and Slovakia. The main reason for these great reductions in the Baltic Sea and Danube Space macro-regions has been a decline in emissions from heavy manufacturing industries that have been either closed or modernised as a result of restructuring measures.
- In contrast, significant levels of GHG emission expansion have been recorded in the islands of Cyprus, Malta and Iceland, and also in Turkey and the Iberian Peninsula. Although most of them are legally allowed to increase their GHG emission quota, the climate change challenge should result in smaller increases to meet global goals.
- Germany and the UK have substantially decreased their GHG emissions, but they are both the countries that most emit GHG (Table 2.1). One reason may be that the UK benefited by switching from coal to natural gas which is now largely in place while Germany has certainly invested in GHG emission reductions. This may also be a statistical effect of German reunification (East Germany has experienced the same transition than the old Eastern bloc).
- More efforts need to be undertaken by the majority of member states to increase energy efficiency and renewable energy development to decrease the amount of fuel burned in power plants, other industries, commercial buildings and in homes.
- The implementation of policy guidelines on GHG reduction should take into account not only the state level, but also the local and regional scales. Changes at the local and regional spheres, for instance focusing on land use planning and management, actively contribute to the overarching aims.



Map 2.13 Change in national GHG emissions represented as distance to the 2020 national targets, 2005-2009

- Countries in green are those that have already reached their national target; in these cases there are two situations: those countries that are required to reduce GHG emissions for 2020 and have already reached the objective of reduction (particularly, the UK, but also Greece and Cyprus) and those countries that were allowed to increase emissions but have increased less than allowed (Malta, Poland) or even have decreased them (Hungary, Slovakia, etc.).
- Countries in different tones of red are those that have to reduce their emissions and that, despite having effectively reduced them, have still not reached their national target.
- Countries which are further from their respective national targets than desired are Ireland, Luxembourg and Denmark. These are more than 10 points in percentage terms of reduction away from their targets and have some of the highest rates of emissions per capita (Table 2.1).
- The emission reduction target will be met and, indeed, it is even feasible (and ambitious) to state a minus 30% of GHG reduction in the 8 years until 2020, taking into account the reduction of economic activity because of the crisis. Indeed, this is probably the only target which is going to be achieved everywhere in the EU but will be the consequence of the economic contraction.
- In this sense, the crisis might be interpreted as an opportunity for a more sustainable economy and policy direction should encourage this trend as far as possible.
- Possibly, more ambitious EU and national goals are feasible for 2020 and 2030 and they might actively contribute to the global reduction of GHG emissions that is essential for the future of the Earth.



ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTSO
Source: Seventh Report on Economic, Social and Territorial Cohesion.
Origin of data: EEA, 2011
© EuroGeographics Association for administrative boundaries

Distance in percentage of GHG emissions in relation to National Targets (%)

Below National Target (%)



No data (ESPON space)

No data (No ESPON space)

Notes:

This indicator shows the distance to reduction targets in the total man-made emissions of greenhouse gases by sectors included in the so-called 'Effort Sharing Decision' that includes the following sectors: transport, buildings, agriculture and waste. These gas emissions are outside the EU Emissions Trade Scheme.

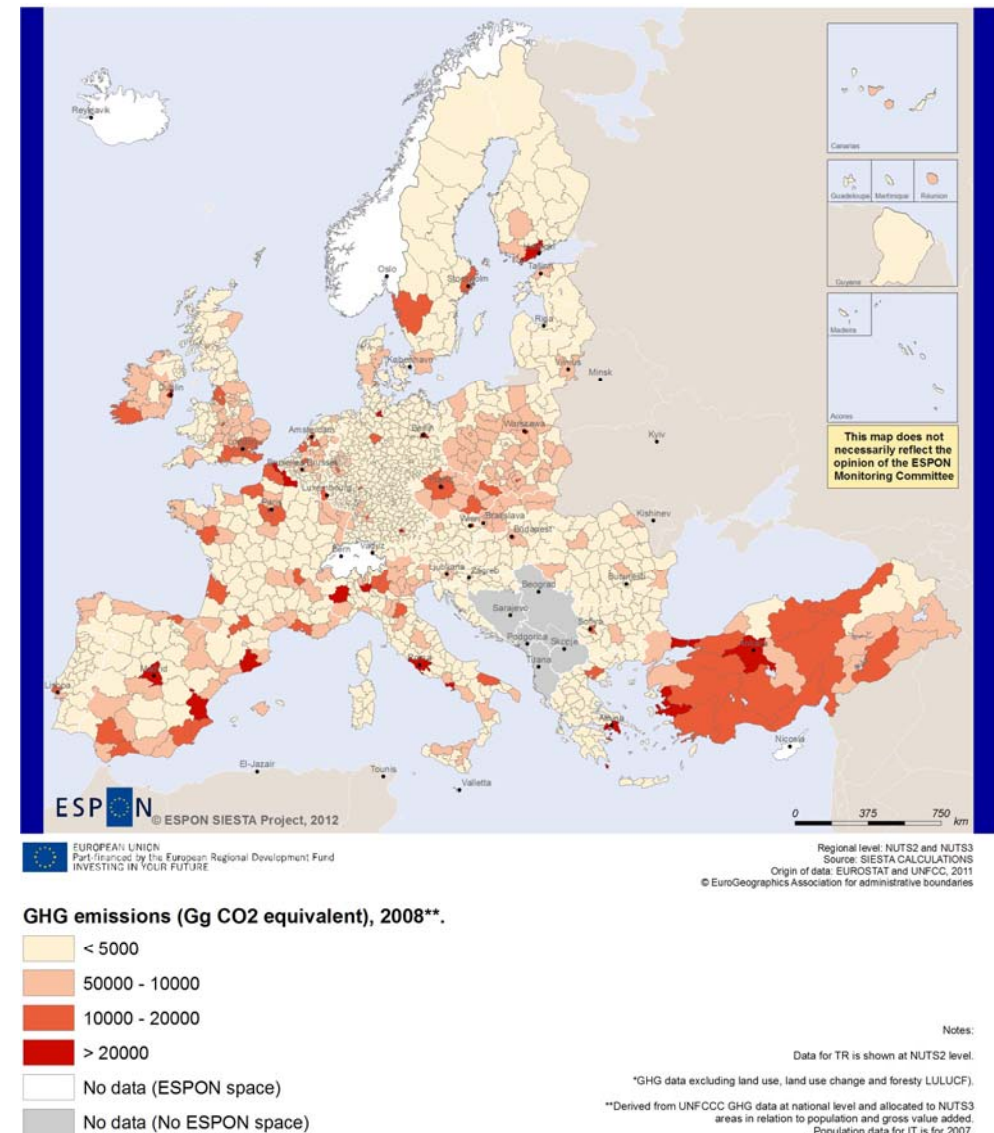
The EU as a whole is committed to achieving at least a 20% reduction of its greenhouse gas emissions by 2020 compared to 1990. This objective implies a 21% reduction in emissions from sectors covered by the EU emission trading scheme (ETS) compared to 2005 by 2020, and a reduction of 10% in emissions for sectors outside the EU ETS. To achieve this 10% overall target each Member State has agreed country-specific greenhouse gas emission reduction or limits for 2020 compared to 2005 from sectors included in the 'Effort Sharing Decision': transport, buildings, agriculture and waste. The distance to these targets on the reduction of sectors included in the Effort Sharing Decision is the indicator showed in this map.

Data Source: The share of GHG emissions outside ETS was based on data on the total emissions and missions within ETS from the European Environmental Agency. Calculations have been developed by the European Commission and are included in the Seventh report on economic, social and territorial cohesion.

BG and RO no data

Map 2.14 Estimated regional GHG emissions excluding LULUCF, 2008

- The basic underlying reason for the pattern shown in this map is the division between urban and metropolitan regions, on the one hand, and those that are rural, low-density and depopulated, on the other. Map 2.14 demonstrates that GHG emissions have an important urban and regional dimension.
- The main metropolitan areas generate top GHG emissions. This is explained by the fact that one of the variables that are taken into account in the model for regionalisation of GHG emissions is population, but it is obvious that GHG emissions are concentrated in the regions that are most populated. However, literature states that livestock is substantial for GHG emissions; this has not been accounted for by the model but logically it would increase the GHG emissions contribution of some rural areas specialised in intensive primary industries. In any case, previous research has quantified that cities generate around 75% of all CO₂ emissions, implying that challenges in this respect are territorially concentrated in these areas, but also may possibly affect other specific rural areas.
- The lowest levels of emissions are in the Mediterranean islands and the small urban areas of Germany, Austria, the UK and Denmark. This can be easily explained by saying that those are less density areas. In fact, Map 2.14 probably undervalues the contribution of GHG emissions made by several regions in countries where NUTS3 are undersized, like Germany. For the same reason (but in an opposite sense) it is possible that Turkish regions are over-estimated.
- Regional strategies for mitigating climate change are highly recommendable. Considering that metropolitan areas show concentrations of GHG emissions, it is clear that particular urban strategies are desirable. All this has direct implications for spatial and urban planning, for instance the need to reduce sprawl and to favour a compact urban model.



3. Smart Growth

The *smart* approach is at the very heart of the EU2020S. Indeed, it is placed at the forefront of the document. In this sense, it is very clear that economic growth is the basic aim of the EU2020S but this growth must be first and foremost smart. Indeed, *smart* is an expression that has been widely popularised over the last few years, for instance through the concepts of *smart cities*, *smart mobility* or *smart regions*, which have been applied in many contexts. In fact, it is quite obvious that there is an evident urban and regional dimension of the *smart* conception.

According to the EU2020S, smart growth deals with developing an economy based on knowledge and innovation, implying action in education, R&D promotion, innovation itself and digital society. Such a combination of hotspot fields is the driver of the EU's future growth and it is envisaged to positively contribute to the EU economy, favouring higher productivity and increasing its global market share. In addition, it is argued that smart growth will help to fuel employment and, in parallel, to improve jobs quality.

This section of the Atlas is divided into three inter-related subsections that are coherent with the internal division existing in the EU2020S. The first is related to research performance and the promotion of innovation and knowledge transfer, in the sense that innovative ideas are effectively turned into new products and services. The second is focused on the quality of education, embracing issues of educational outcomes and education institutions at different learning levels. The third deals with the digital agenda, which is basically orientated to making full use of information and communication technologies. Together, these three subsections are related to the three flagship initiatives which are amalgamated under the Smart Growth pillar. Firstly, Innovation Union, followed by Youth on the Move (chiefly focused on higher education institutions) and finally A Digital Agenda for Europe.

3.1. Research, Development and Innovation across the European Territories

3.1.1. Territorial Disparities in Research and Development

The EU2020S underlines the essential role of research and development (R&D) in boosting job creation and economic growth. The common indicator which is used in this respect is the percentage of GDP expended on R&D, or GERD (general expenditure on R&D). This measure expresses the resources devoted to R&D. Importantly, it amalgamates public and private expenditures; in general, the latter is more significant than the former, but the public sector plays a crucial role, notably by supporting fundamental research, and is territorially significant, in those regions that do not have a solid private sector interested in R&D.

The EU2020S sets a headline target of bringing GERD to 3% of GDP by 2020. In context, the EU is below other developed countries and ahead of the developing countries ([Table 3.1](#)); this is a disquieting situation, especially because some countries like the BRICS are rapidly improving their performances, while the EU is not making progress and scores modestly. That means that the EU must act urgently if it aims to promote a smart economy.

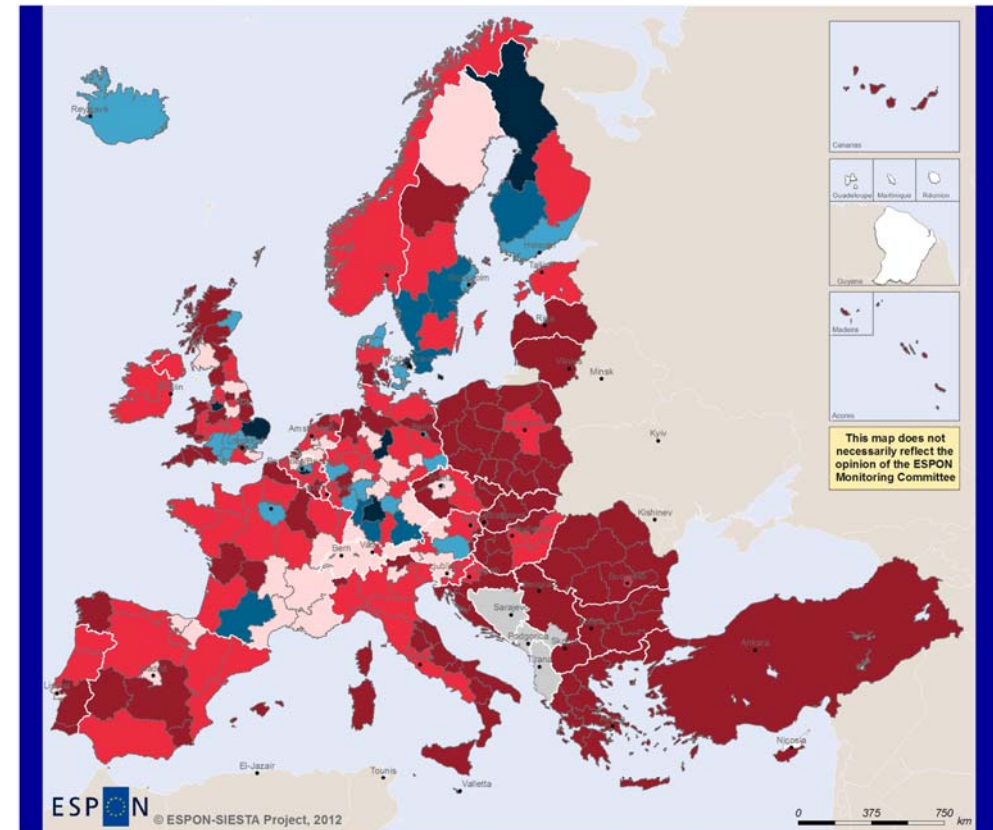
Table 3.1 GERD as % of GDP and its change. Source: Eurostat

	<i>R&D expenditure as % of GDP (2008)</i>	<i>Change in R&D expenditure as % of GDP (2001-2008)</i>
Japan	3.45	0.33
South Korea	3.36	0.89
United States	2.79	0.08
EU27	1.92	0.05
China (except Hong Kong)	1.47	0.52
Russia	1.24	0.06

In order to illustrate the regional distribution of GERD across Europe, [Map 3.1](#) to [Map 3.3](#) are elaborated departing from the EU2020S headline expectations, turning to the distance of current regional figures to national targets and then showing the regional variation. Finally, [Map 3.4](#) represents the regional human force working in science and technology activities.

Map 3.1 General expenditure on R&D as percentage of regional GDP, 2009

- Only 37 out of 272 considered units meet the 3% target. That casts a shadow of doubt on the overall target, even more so if the current crisis context is considered.
- If the threshold is 2%, three high-performing corridors become apparent: Midi to Bavaria, Styria to England and Denmark to Finland; they are transnational corridors being noteworthy in terms of economies of agglomeration and cooperation.
- Although most of the outstanding regions in a better position are urban, they are not necessarily first-ranked metropolitan areas or capitals. For instance, in Spain not only Madrid ranks highly, but also the Basque Country or Navarra. In these latter regions, the financial autonomy is critical for developing specific R&D specialisations.
- Midi-Pyrénées (i.e. the concentration of a specific manufacturing sector, aerospace and aviation) or Styria (where low spin-off levels are recorded and, indeed, this region is to be found under the Austrian average in GDP per capita) are other high-performing areas which are not first-ranked metropolitan areas.
- Some areas of very high R&D investment directly border areas of the lowest investment. In the UK for example, Shropshire and Staffordshire directly borders a region of very high investment in Cheshire. This may be a result of either effective clustering which puts neighbouring regions at a significant disadvantage or it may be that these areas are predominantly rural areas acting as buffers.
- Regions especially lagging behind are mainly not only located in Eastern Europe, but also in Southern parts of Italy, Portugal and Spain; other individual regions show particularly poor scores: Galicia, the Scottish Highlands, etc. Some areas invest less than 0.2% of GDP in R&D, especially in Bulgaria, Poland and Romania, extending to non-EU regions.
- Although it is unlikely that all the European regions reach 3%, those regions ranking so poorly should be especially targeted through *smart specialisation strategies*. Research is important for all regions, whether they currently be leaders.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTSO and NUTS2
Source: EUROSTAT, 2012
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

R&D in Regional GDP (%) 2009.
EU 2020 Target = 3%

Below EU 2020 Target



Above EU 2020 Target



No data (ESPON space)

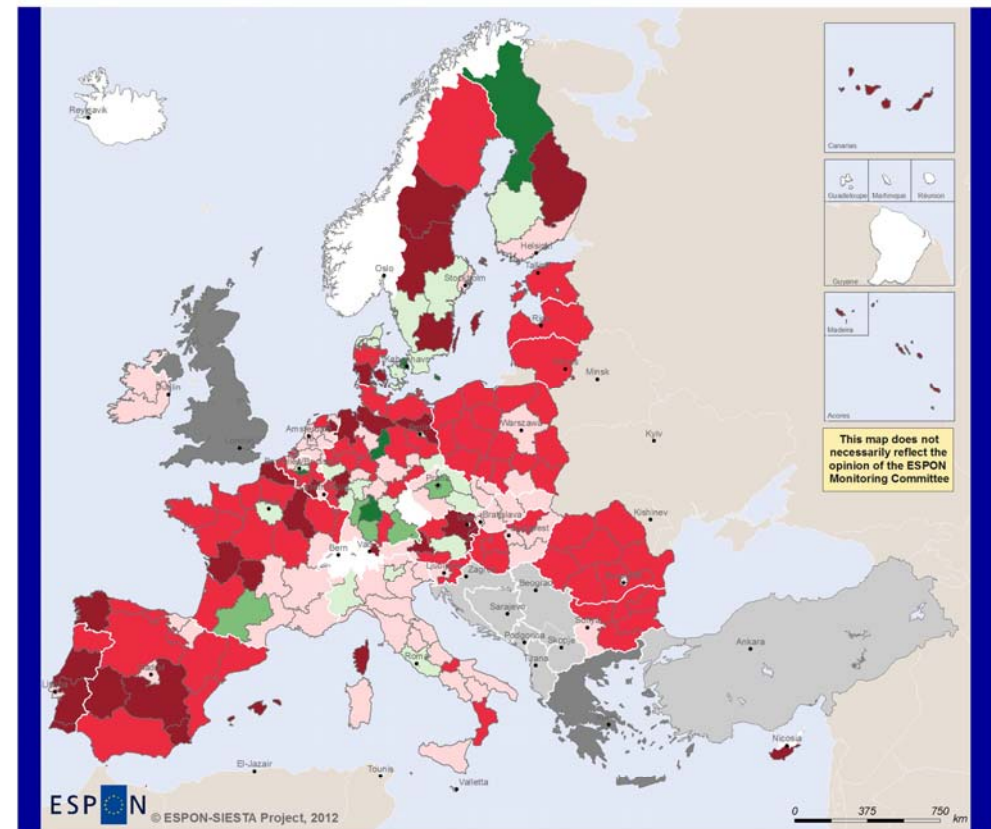
No data (No ESPON space)

Notes:
Research and experimental development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

Data for RS were provided by the Statistical Office of the Republic of Serbia.
Data for TR, CH and NO are all available for country level.
Data for MK are shown for 2007 at country level.
Data for EL are shown for 2005 and RS is shown for 2010.

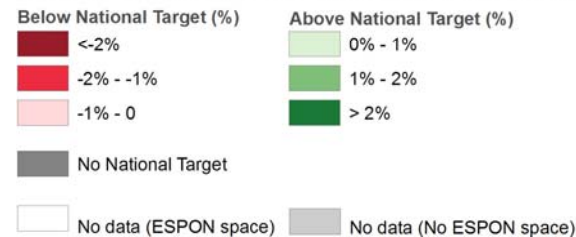
Map 3.2 General expenditure on R&D as percentage of regional GDP represented as distance to the 2020 national targets, 2009

- Some countries like Germany or Denmark have set a national target identical to the EU. Others have been ambitious by targeting over 3% (Austria, Sweden and Finland), being clearly the leaders in this respect by aiming to perform beyond the required. But in general countries have set targets below the EU headline (Cyprus, for instance, is the lowest with 0.5%). Of most concern is that several EU countries have not established a target.
- Given that this map is directly based on individual national decisions, it tells little about the European-scale territorial behaviour of R&D.
- Significantly, the official overall estimations of the EC state that, by amalgamating current national targets, the EU target will not be achieved and that is quite worrying in terms of the global competition which is being played out in this issue (Table 3.1). For this reason, national targets are disappointing.
- Regional *smart specialisation strategies* can provide means of achieving the EU ambitions on smart growth, and specifically on R&D, at the regional arena. For each individual region, the 3% headline needs to be understood as a direction, not necessarily a fixed target.
- It is important that a regional policy focused on increasing the R&D investment should take account of the strong heterogeneity across European regions and the need to adopt place-appropriate policies. In some cases, regions might win by cooperating in order to attain agglomeration economies.



ESPON
 EUROPEAN UNION
 Part-financed by the European Regional Development Fund
 INVESTING IN YOUR FUTURE
 © ESPON-SIESTA Project, 2012
 Regional level: NUTS2
 Source: EUROSTAT
 Origin of data: EUROSTAT, 2012
 © EuroGeographics Association for administrative boundaries

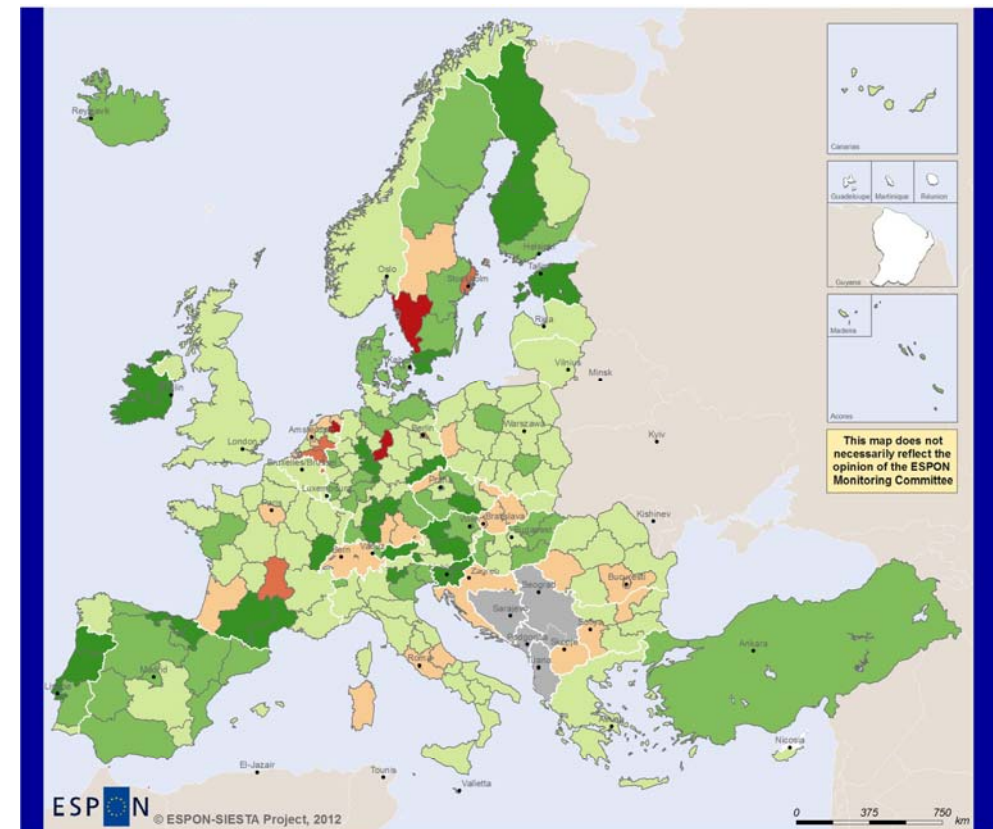
Distance in percentage of GDP invested in R&D in relation to National Targets (%)



Notes:
 Research and experimental development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

Map 3.3 Change in general expenditure on R&D as percentage of regional GDP, 2003-2009

- The behaviour in R&D change of the EU as a whole is worrying: although it is increasing, the pace at which the change is occurring is comparatively lower than other countries and regions of the world (Table 3.1). The territorial expression of this modest overall increment is heterogeneous, but the immense majority of regions have experienced a tiny progress, consistently with the general miniscule EU variation. That represents, both as a whole and territorially, a major challenge for the transition towards a smart economy as envisaged by the EU2020S.
- 17% of the regions have no progress or, even worse, a contraction, in a very unclear scattered pattern; this dynamic is quite shocking in the buoyant context of the years 2003 to 2008.
- Some of the regions that are currently especially well ranked (Map 3.1) have improved their situation, especially Pohjois-Suomi and Länsi-Suomi in Finland or Midi-Pyrénées in France. This is related to the fact that returns from R&D are likely to accrue in those regions where a critical mass of R&D efforts is already concentrated.
- Ireland is a case in point as it has experienced a great progress in its both two regions. In spite of the depression, Ireland is an example of how the investment in R&D activities can reinforce the economical framework. Cork and Limerick are examples of where the biotechnology/NBIC investment has paid massive dividends drawing on the universities and institutes of technology as well as FDI.
- Another benchmark is Pohjois-Suomi in Finland where there has been a significant concentration on activity driven in part by the capabilities at the University of Oulu in collaboration with private investment.



ESPON
EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS0 and NUTS2
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage points difference (%), from 2003 to 2009.

Negative change (%)	Positive change (%)
■ <math><-0.5\%</math>	■ 0% - 0.25%
■ -0.5% - -0.25%	■ 0.25% - 0.5%
■ -0.25% - 0%	■ > 0.5%

No data (ESPON space) No data (No ESPON space)

Notes:

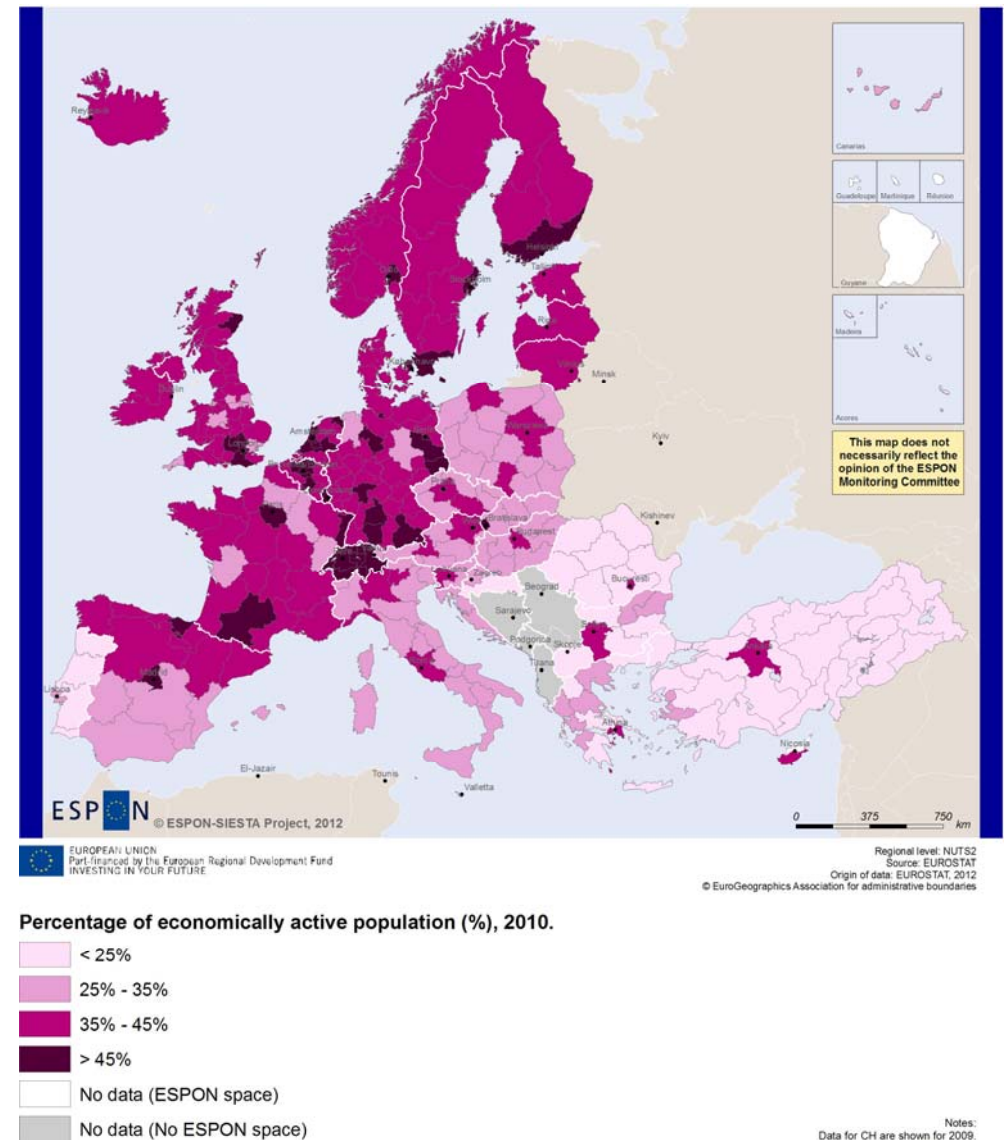
Research and experimental development (R&D) comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

Change in CH is 2004 - 2008
Change in AT is 2004 - 2009
Change in MK is 2003 - 2007

NO, IS, DK, BE, UK, TR, MK and EL are shown at country level.

Map 3.4 Human resources in science and technology as percentage of regional active population, 2009

- There is a concentration of scientists and technologists in North West Europe and Scandinavian countries, in close correlation with the pattern of the [Map 3.1](#).
- At the very top of Europe there are basically urban areas, in the first-rank (namely London) or inferior levels of the urban system (Zürich, Utrecht, Bratislava, etc.), but almost all the capital cities contain high percentages of human resources in science and technology (HRST).
- Large areas of Europe (including EU and non-EU countries), especially in Eastern Europe, the South-East and the Mediterranean Basin have regional economies with low levels of human resources in R&D, coinciding with a small percentage of GERD; in general, these macro-regions are heavily dominated by agricultural production and tourism. Indeed, in countries such as Bulgaria, Greece, Portugal, Romania or Turkey only the region where the national capital is located has a high rate of human resources in science and technology.
- Some specific regions in Europe contain quite a high percentage of HRST, but their proportion of GDP invested in R&D is low; this is an important socio-economic imbalance that should be addressed in regions such as Northern Spain, Eastern France, Eastern Baltic states, etc. and that might reveal an over-supply of human resources that constitutes a territorial challenge.
- The Innovation Union flagship is particularly insistent in the fact that stemming human 'brain power' is fundamental for R&D and innovation development and indeed it is concerning to wonder if the EU truly acts as a magnet for talented researchers compared to competitor countries, which seem to be more attractive. In the 'over-qualified' regions without associated R&D investment possibilities of attraction seem very limited.
- Encouraging and supporting concentrations of HRST to sustain agglomeration economies in strategic places in Europe should be a priority to develop and strengthen the innovation aspect of the Smart Growth pillar of the EU2020S.



3.1.2. The Extreme Territorial Concentration of Innovation

Innovation tends to emerge from R&D. Although the precise definition of innovation in relation to R&D has been debated, there is a consensus that R&D is a kind of pre-condition, but the practical advance in terms of new or almost-new products and processes is called innovation. However, innovation can also occur without R&D, emerging from practice. This means that, when referring to innovation, good ideas and scientific and technological improvements that have taken place within R&D are translated to the market.

As recognised in the Innovation Union flagship, there are no specific indicators for innovation at the state scale level available, and even worse when referring to regions. Indeed, this flagship suggests measuring innovation through indicators on R&D as they give an indication; this has been done already with the previous maps. Moreover, it recommends developing an aggregate indicator on innovation (still pending) and proposes some provisional indicators, including business expenditures in R&D or BERD (Map 3.5) and patent applications (Map 3.6).

Importantly in territorial terms, it has to be mentioned that Innovation Union urges that the benefits of innovation reach across the EU, clearly stating that an innovation divide between the strongest innovating regions and the others has to be avoided.

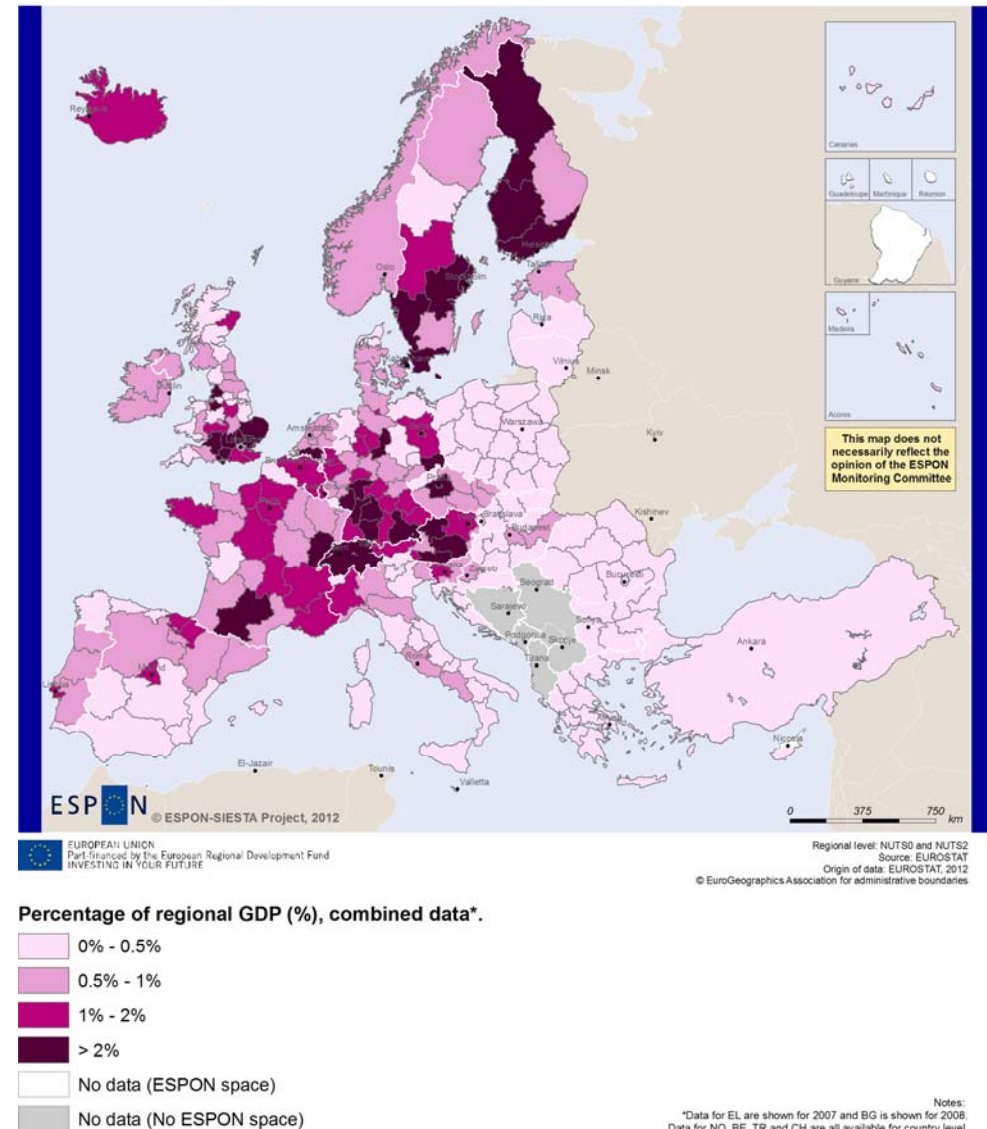
As with GERD (Table 3.1), with BERD the EU scores modestly and the pace at which the variation is occurring is comparatively lower than other countries and regions of the world (Table 3.2).

Table 3.2 BERD as % of GDP and its change. Source: Eurostat

	<i>Business expenditure in R&D as % of GDP (2008)</i>	<i>Change in business expenditure in R&D as % of GDP (2001-2008)</i>
Japan	2.70	0.40
South Korea	2.53	0.65
United States	2.02	0.06
EU27	1.21	0.00
China (except Hong Kong)	1.08	0.51
Russia	0.65	-0.18

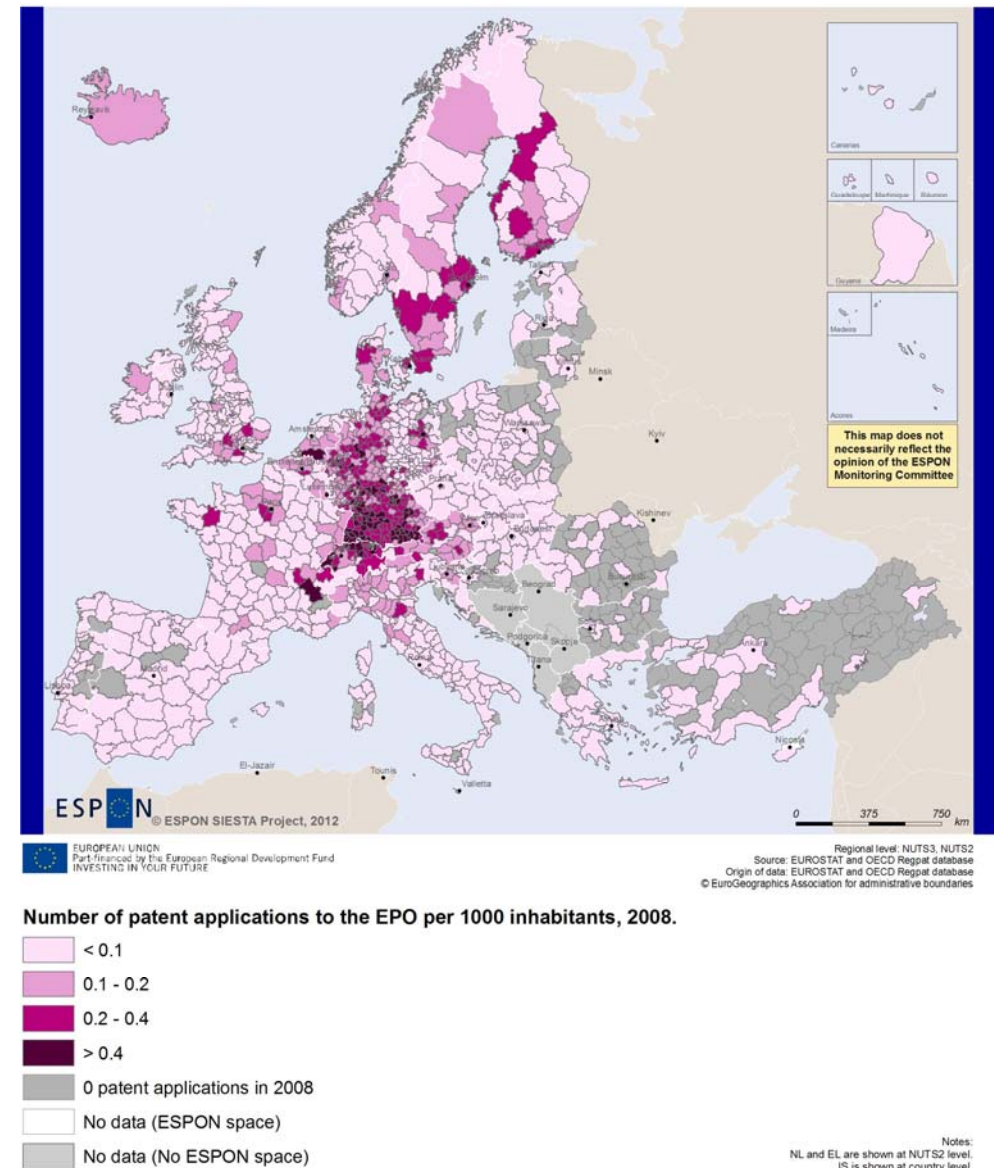
Map 3.5 Business expenditure on R&D as percentage of regional GDP, combined years from 2007 to 2009

- The Lisbon Strategy (2000) stated that the target in BERD should have been 2% of the GDP in 2010. Taking into account that only 34 out of 274 considered regions met in 2009 this Lisbon target a decade later, it can be said that the Lisbon Strategy has not really been fulfilled and this poses a logical open question as to whether the EU2020S will be followed, especially in the context of an economic depression. Be that as it may, it is evident that the EU as a whole needs to rapidly increase the proportion of BERD in order to regain competitiveness in a globally highly competitive economic environment.
- The three corridors illustrated in [Map 3.1](#) are also perceptible in [Map 3.5](#), especially the Midi to Bavaria and the Copenhagen to Pohjois-Suomi, while the corridor from Austria to England is less clear in this map.
- Some of the outstanding regions of Germany are the 'cradle' of the automobile (Stuttgart and Braunschweig) and in the case of South-East England the proximity to tertiary institutions such as the University of Cambridge bears witness to the importance of spin-off effects. Thus, universities are pivotal opportunities for BERD if spin-off effects do occur.
- Almost all Eastern Europe (except the Czech Republic) has very low BERD standards and the same is applicable to Greece, Turkey, Southern Italy or Southern and North-Western Spain.
- GERD ([Map 3.1](#)) strongly correlates with BERD ([Map 3.5](#)) demonstrating that for the most innovative regions in terms of R&D business expenditure is the key driver. However, there are some regions which have quite a big gap between them both. If the EU average distance between them both is 0.77 percentage points, there are some regions where the distance is more than two-fold and in these cases arguably the public sector is leading R&D, rather than businesses; therein governmental investments are substantial and, notably, that is the case of some national capitals (Berlin, Wien or Madrid) and Southern France, and also in some regions in Germany, Sweden or the Netherlands.



Map 3.6 Patent applications to the EPO per 1,000 inhabitants by inventor's region of residence, 2008

- There is a high concentration of high-performer territories within a tightly delimited part of Central Europe, basically including Germany and Switzerland, with piecemeal extensions to particular regions of Austria, Northern Italy or France. Indeed, in the top performing regions (100 out of 1,352 for which there are data) only 11 are not German: 10 are Swiss and 1 is located in Austria.
- 187 out of 1,352 geographical units do not have a record of filling out a patent application. Most of these regions are in Turkey, Romania, Bulgaria, Croatia, Poland and Spain, all of them with more than 10 geographical units without patent applications. Service and primary sectors are not particularly important in the generation of patents and these are the economic sectors dominating these arguably non-innovative areas.
- This ostensible territorial concentration seems to be related to the economic history of the countries. Indeed, as reported by the KIT Project, the US has a smoother territorial distribution of patents, while developing countries such as China or India suffer a concentration; in this respect, the opportunity for the EU is to follow the US model, being the only way to accomplish the EU2020S indication urging that the benefits of innovation are reached across the EU.
- It is necessary to consider the role of regulation, in particular differences in national and/or regional tax legislations —including the existence of tax havens— in understanding the geographical distribution of patent applications, and its possible disconnect with other indicators relating to 'inventiveness', R&D, and, more generally, the knowledge economy.
- The Innovation Union flagship initiative highlights the urgent need to reform the patent system in Europe, which is costly and fragmented, to create a single innovation market. The absence of a cheap and simple EU patent is a tax on innovation. The EU Patent has become a symbol for Europe's failure on innovation.



3.2. The Territorial Dimension of Education

The EU2020S is very explicit in stating that “A quarter of all pupils have poor reading competences, one in seven young people leave education and training too early. Around 50% reach medium qualifications level but this often fails to match labour market needs. Less than one person in three aged 25-34 has a university degree compared to 40% in the US and over 50% in Japan. According to the Shanghai index, only two European universities are in the world’s top 20.” The assumption derived from these sentences is that the EU education system as a whole has major weaknesses that have to be managed.

The problems seem to be present at all educational levels, but the EU2020S focus more on tertiary education because of its obvious connections with the economy, growth, research, innovation and competitiveness. It has to be acknowledged that education receives quite a particular attention in the EU2020S documentation as the transition towards a more knowledge-intensive economy will only be possible by increasing levels of education. In this respect, human capital is critical for growth.

In this section of the Atlas, education is considered from a range of perspectives from lower secondary to tertiary level.

3.2.1. Territorial Polarisation in Basic Educational Achievement

The headline target that has been set for compulsory levels of education is to reduce the share of early school leavers (measured as a percentage of the population aged 18 to 24) to less than 10%. In order for all citizens to participate fully in society and economy, to prevent poverty and to improve employability, a basic level of education is required.

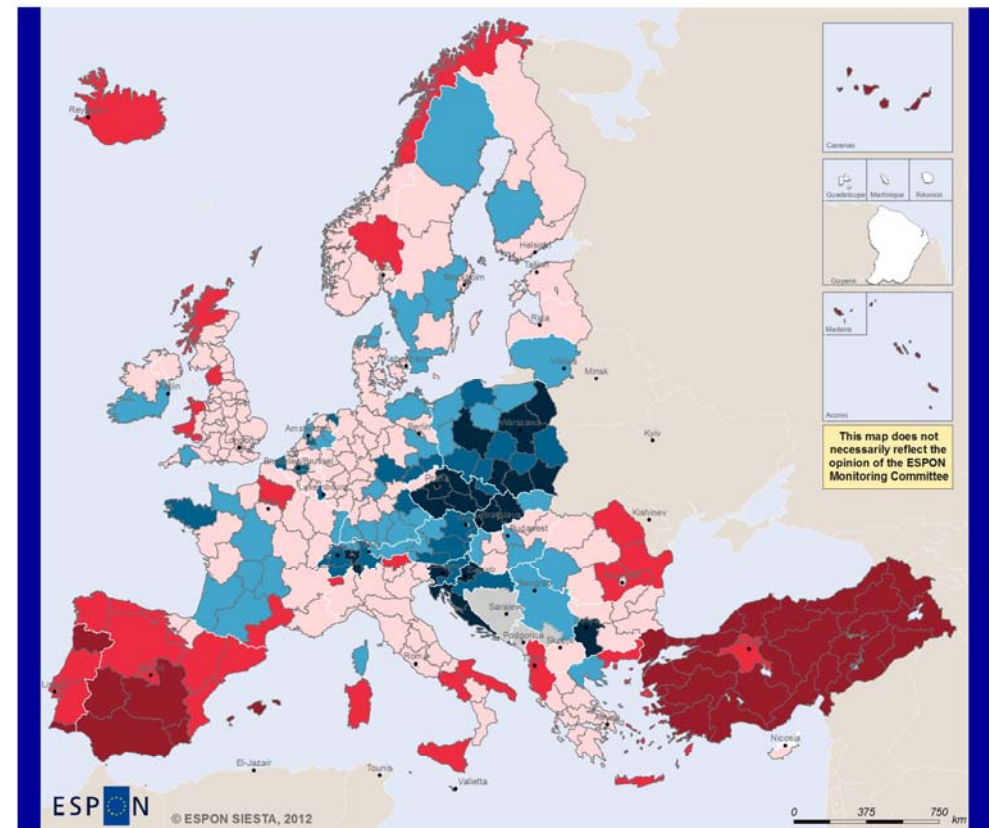
Importantly, compulsory education varies enormously from country to country, but fortunately there is a dataset for this indicator which amalgamates the statistics from different countries on a regional scale; typically, the educational level under examination is lower secondary education.

It is worthwhile mentioning that this was already a Lisbon target in 2000 and the fact that a decade later it is clearly repeated indicates that it has not succeeded: the EU has still a figure of 15%.

In order to illustrate the regional dimension of basic education achievement in Europe four maps are presented below. [Map 3.7](#) shows the geographical pattern of early school leaving across European NUTS2 regions in 2010. [Map 3.8](#) expresses the distance that particular regions have in relation to national targets, while [Map 3.9](#) informs about the change in early school leaving patterns between 2008 and 2010. Finally [Map 3.10](#) reveals the expression of the same indicator at urban scale.

Map 3.7 Regional early school leavers from education and training as percentage of population aged 18 to 28 (drop-out rate), 2010

- Several regions in Eastern Europe have already successful standards, especially in the band of regions from Croatia to Poland. In general, the countries of the former Eastern bloc perform better. Education policy outputs in these countries might be taken into account to improve the situation in other countries.
- Portuguese, Spanish and Turkish regions are in a particularly worrying situation. They are clearly challenging the EU2020S implementation in this specific issue, thus compromising the ability of Europe to emerge from the recession and to make the shift towards a smart economy.
- Taking into account that this is a structural indicator whose pace is very slow, structural policies are required in those regions with a particularly dreadful situation. In Turkey schooling has to expand to fulfil the EU standards, especially in rural areas, and in Spain the current decrease of the demand of unskilled jobs constitutes an opportunity to reduce the high proportion of people leaving school early.
- Some Northern Periphery regions, from Wales and Scotland to Northern Norway and including Iceland have also bad scores that have to be addressed. The underlying reasons for such a bad situation are different than those in the Mediterranean regions.
- Several countries such as Norway (Practice Certificate), Ireland (Youthreach) and Denmark (Youth Guidance Centres) have put in place programmes to combine educational, social and employment services. The EVOKE Project of the European Commission is also enhancing the improvement of drop-out rates.
- E-learning constitutes an opportunity to improve this indicator, particularly in rural and outermost regions.
- Those regions experiencing high unemployment levels and high drop-out rates, especially in Southern Europe, have to strengthen the links between compulsory education improvement and employability, in a context of labour market contraction.



Percentage of population aged 18-24 (%) 2010. EU 2020 Target = 10%

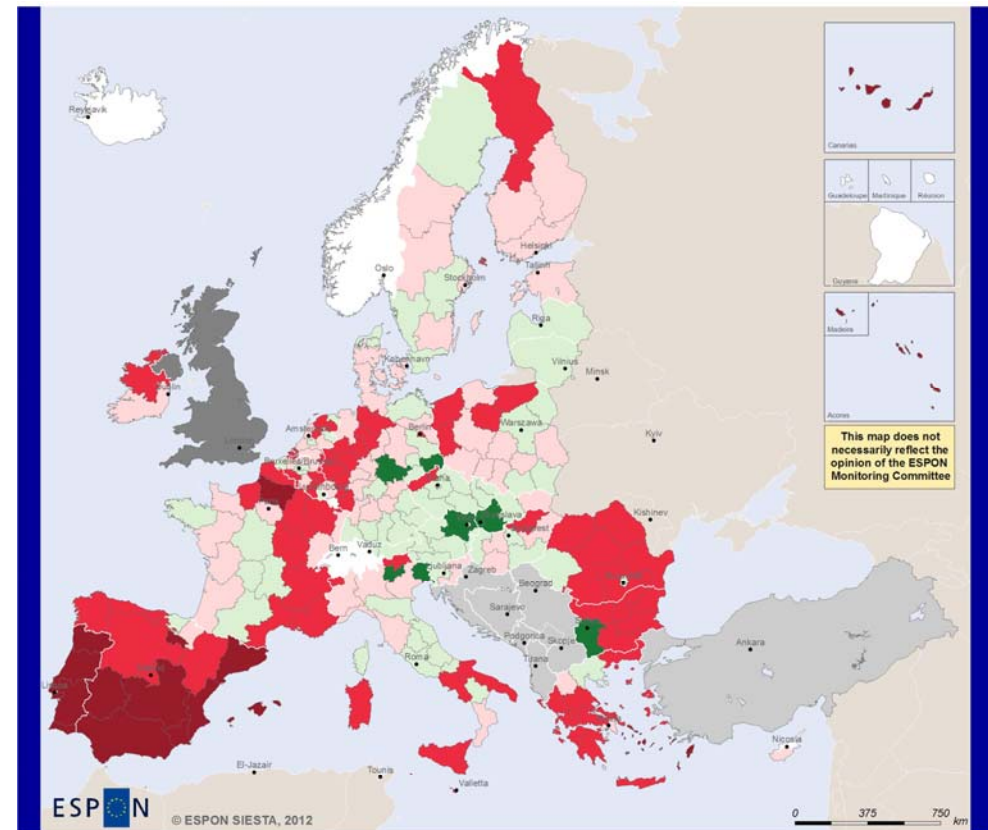
Below EU 2020 Target		Above EU 2020 Target	
	< 5%		10% - 20%
	5% - 7.5%		20% - 30%
	7.5% - 10%		> 30%
	No data (ESPON space)		No data (No ESPON space)

Notes:
Early leavers from education and training refers to persons aged 18 to 24 fulfilling the following two conditions: first, the highest level of education training attained is ISCED 0, 1, 2 or 3c short, second respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions "highest level of education or training attained" and "participation to education and training".

Data for RS, AL, and MK are shown at country level.
*Data for AL are for 2009

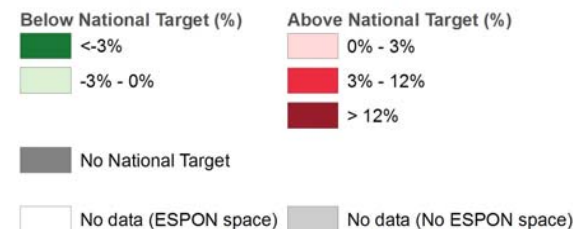
Map 3.8 Regional drop-out rate represented as distance to the 2020 national targets, 2010

- This [Map 3.8](#) correlates well with the previous map but relates specifically to distance to national targets. Some national targets have been set quite far away from the EU target (Malta, 29%; Italy, 15%; Spain, 15%; Latvia, 13.4%), while others are the European target itself (for instance, Cyprus, Hungary or Portugal). The majority, however, are below the EU target and some Eastern countries are even targeting rates below 5.5% (the Czech Republic, Poland or Slovenia). In this regard, the map reflects the different national ambitions and they are blatantly heterogeneous.
- Some regions will need a very strong effort in order to improve, especially in the Iberian Peninsula and in the South-East of Europe; specific interventions are essential in both these areas and the national targets do not always show the necessary commitment in this respect.
- The big distances to the targets of other particular regions such as Eastern France, Northern Germany or Northern Finland depend on national decisions on this issue as they are not scoring too badly at the EU level but the respective countries have set ambitious aims.
- Poland is a case in point because of its ambitious national target (with a set target of 4.5%). Although scoring very well at the EU level ([Map 3.7](#)), in [Map 3.8](#) Polish regions seem to be forced to perform even more. This governmental ambitious attitude can be seen as an inspiration for other countries and regions in Europe in this specific issue, but also for the EU2020S as a whole.



ESPON
 © ESPON SIESTA, 2012
 EUROPEAN UNION
 Part-financed by the European Regional Development Fund
 INVESTING IN YOUR FUTURE
 Regional level: NUTS2 and NUTS0
 Source: EUROSTAT, MS NRPs, DG REGIO, Seventh Report on Economic, Social and Territorial Cohesion
 Origin of data: EUROSTAT, 2011
 © EuroGeographics Association for administrative boundaries

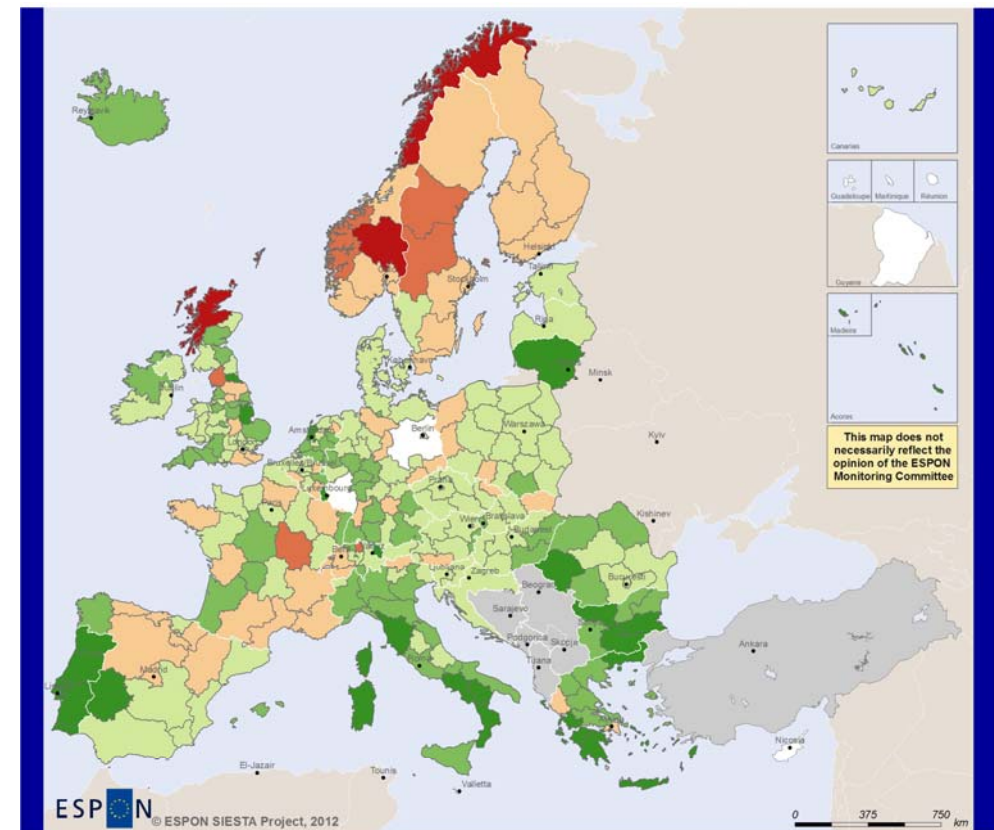
Distance in percentage of early leavers in relation to National Targets (%).



Notes:
 Early leavers from education and training refers to persons aged 18 to 24 fulfilling the following two conditions: first, the highest level of education training attained is ISCED 0, 1, 2 or 3c short, second respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions "highest level of education or training attained" and "participation to education and training".

Map 3.9 Change in regional drop-out rate, 2000-2010

- In general terms the EU27 is improving: from 17.6% in 2000 to 14.1% in 2010. However, the momentum is not as quick as necessary, thus the change needed is not likely to take place in the 2010-2020 decade. More effort will be needed to meet the target.
- Although the geographic pattern is unclear, it seems that some of the regions with high early school leaving rates are experiencing a positive change, for instance not only in Portugal, Romania, Bulgaria, Greece or Italy, but also in Corse, France (the best performing region, with -31% change of the rate in one decade). This trend can be read as a territorial opportunity to meet the set target.
- Spain shows a positive but moderate change in the last decade, although several Northern Spanish regions have indeed worsened. This evolution, together with a poor starting point in 2010 (Map 3.7), situates Spain in a particularly challenging position. The need of a structural change of the educational model in this country seems obvious, together with improving its links with the labour market needs.
- Scandinavia is a region where the drop-out rate seems to have deteriorated, especially in Norway and Sweden, together with particular regions of the UK, France, Poland or Germany; in these areas the distance to the EU target is increasing.
- Most of the Eastern regions which are well ranked on Map 3.7 show a static behaviour on Map 3.9, meaning positive stability for those territories.



ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS0 and NUTS2
Source: Eurostat, 2012
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage points difference (%), from 2000 to 2010.

Positive change (%)

- < -8%
- 8% - -4%
- 4% - 0%

Negative change (%)

- 0% - 4%
- 4% - 8%
- > 8%

No data (ESPON sapce)

No data (No ESPON sapce)

Notes:

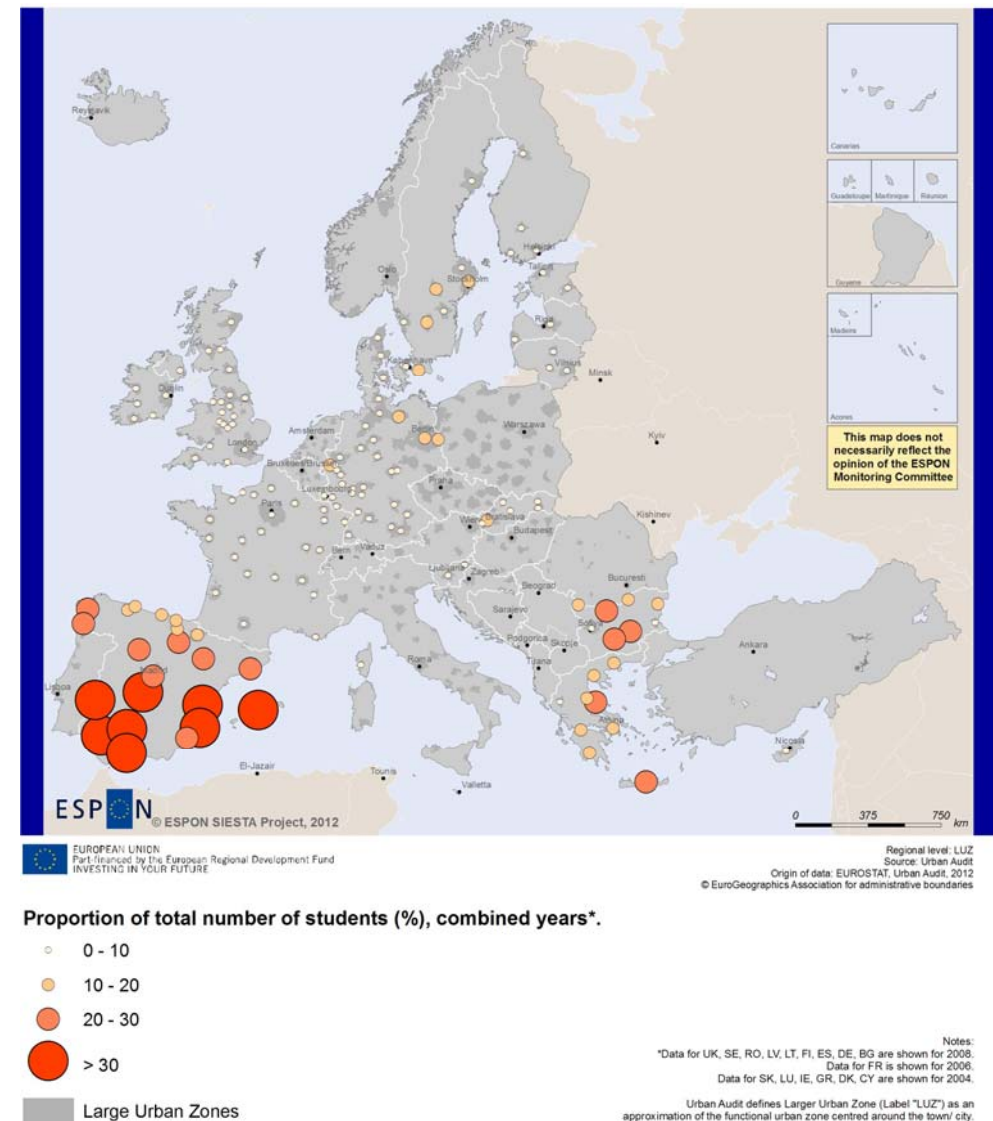
EU 2020 Target: 10%

Early leavers from education and training refers to persons aged 18 to 24 fulfilling the following two conditions: first, the highest level of education training attained is ISCED 0, 1, 2 or 3c short, second respondents declared not having received any education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding no answers to the questions "highest level of education or training attained" and "participation to education and training".

Data for CH, DE30 and SI are shown for 2001 - 2010.
Data for HR are shown for 2002 - 2010 at country level.
Data for BG are shown for 2003 - 2010.
DK is shown at country level.

Map 3.10 LUZ drop-out rate, combined years from 2004 to 2008

- In general, urban areas show better values than regional averages as seen on [Map 3.7](#). For instance, Bratislava is better than its region, or Ljubljana and Maribor are better than Slovenia, Irish cities are performing better than Irish regions, etc. That means that non-completion of mandatory education is typically not an urban phenomenon, but a particularly rural and regional issue.
- The best performing cities for which we have data are in Finland and Ireland, with non-completion rates of less than 0.5% in the five Finnish cities and rates of between 0.6%-1% in the five Irish cities.
- In contrast to the general European pattern, in Spain some particular cities score worse than their regions. That is particularly the case of LUZs of València and Alacant, scoring 37.3% and 36.9% respectively, while the Valencian Region scores 29.2%; in these cases a key explanatory factor might be immigration, with not only lower educational profiles, but also lower-skilled job opportunities offered by the pre-crisis economy in these cities (especially construction and tourism), luring students from schools.
- The rural-urban divide has sense with regard to the drop-out rate, although heterogeneously, depending on each region and each urban area.
- Ireland is an example of the urban-rural divide with regional early school leaving rates ten times the magnitude of the city only rate. These top performing cities are also important European centres for NBIC, high-tech and knowledge-intensive economic activities, suggesting that a link exists between attitudes and behaviour to secondary schooling and perceived future employment prospects. In short, smart growth has to be promoted as a whole as its different elements seem to be inter-related.



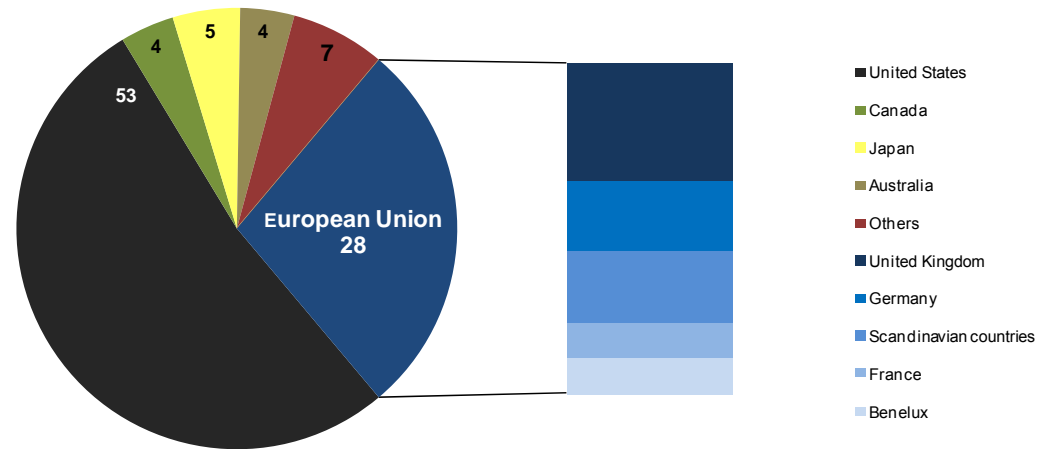
3.2.2. Territorial Contradictions in Tertiary Education

Within the EU2020S documentation, correlations are constantly drawn between high levels of higher education and productivity. Indeed, it is true that there are direct and positive correlations between regions with a high tertiary educated population and high scores of human resources dedicated to science and technology, the ICT sector, broadband penetration and advanced services development, according to SIESTA's calculations.

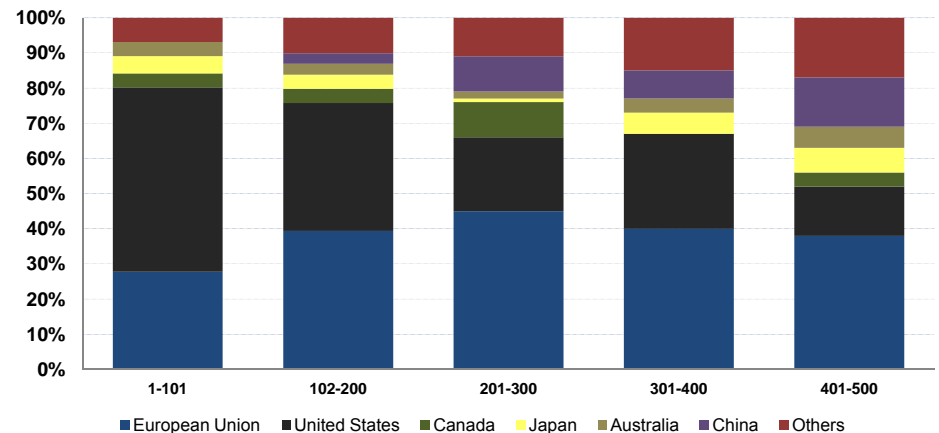
The EU2020S quotes the under-performance of the EU universities as a particular issue constraining smart growth. A specific indicator of this poor situation of the EU tertiary education institutions is the Shanghai index. [Graphics 3.1](#) and [3.2](#) show that EU universities score poorly in comparison to the US and that a country such as France scores worse than Canada or Australia. The EU improves a little bit when looking at the lower quartiles of the index. Be that as it may, university performance is very important for regional development, but it does not guarantee *per se* that the talented youth remains in place as graduates can move to regions which are more attractive.

The EU2020S is concerned about the lower percentage of people having completed tertiary education. If this rate is over 40% in the US and over 50% in Japan, the EU sets the 40% official headline target, based on the fact that it is estimated that by 2020 35% of all jobs will require high-level qualifications. The average rate in 2010 for all the EU is 33.6% and that makes the overall target very ambitious for the 2010-2020 decade. However, it is very important to note that this average masks a much more complex territorial picture and a very uneven European geography, as shown in [Maps 3.11](#), [3.12](#) and [3.13](#). They examine the percentage of population aged 30-34 with a tertiary education at regional (NUTS2) level.

Graphic 3.1 Shanghai index's 100 top universities of the world per countries, 2011. Source: ARWU, SIESTA's calculation

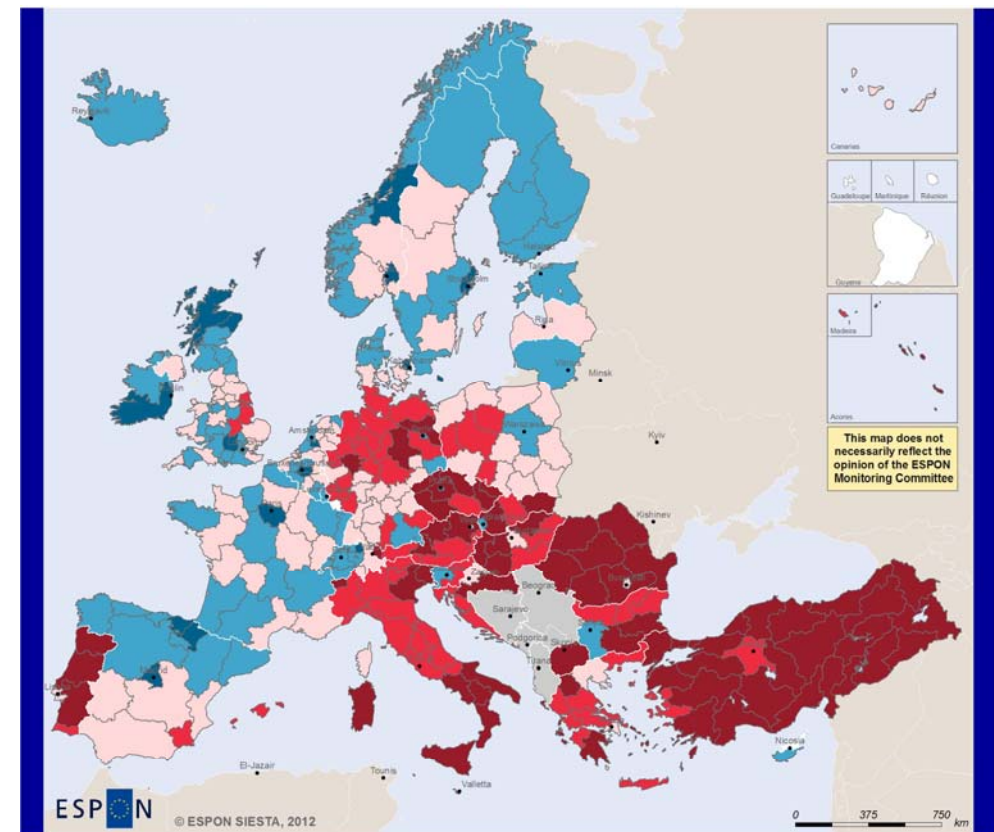


Graphic 3.2 Shanghai index's 500 top universities of the world per quintiles and countries or groups of countries, 2011. Source: ARWU, SIESTA's calculation



Map 3.11 Regional population aged 30 to 34 with tertiary education, 2010

- 86 NUTS2 regions (out of 311 regions with available data) have rates of tertiary education attainment above 40%. Most of these regions are located in Western Europe, but in a scattered pattern.
- One region even scores 66% (Inner London). The outstanding position of London is explained by the significant number of graduates produced by the numerous universities within the city, but also by the attractiveness of the British capital generally for highly talented graduates. Although being an extreme case, it demonstrates the potential ability of regions and cities to be a magnet for tertiary educated population, a clear opportunity for lagging regions.
- Quite surprisingly, outperforming economies such as Germany or Austria, or a typically considered Western European country like Italy, score very low and their regions are generally quite far away from the EU target. In the German and Austrian cases, this might be related with its educational system and that might imply that there are no real challenges at all in these areas with regard to tertiary education attainment.
- Typically, a great number of university graduates stay in the region where they have studied after completing their studies because there are professional opportunities; that is the case of the capital regions (Copenhagen, Oslo, Stockholm, Brussels, Paris, Madrid, etc.) that in addition attract tertiary educated population from elsewhere. There is also the case as well of regions such as the Basque Country and Navarra, Utrecht or Scotland, where regional universities together with adequate job opportunities play a crucial role. This indicates potential for territorial polycentrism in this respect.
- Some areas scoring particularly well are being affected by the crisis (i.e. Northern Spain, Ireland) and predictably they might suffer a 'brain drain'.
- South-East Europe and the Danube Region (plus Portugal and Turkey) experience in general low rates of tertiary education attainment. They should be especially targeted in order to cope with the basic smart growth economy requirements.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2
Source: Seventh Report on Economic, Social and Territorial Cohesion
Origin of data: EUROSTAT, 2011
© EuroGeographics Association for administrative boundaries

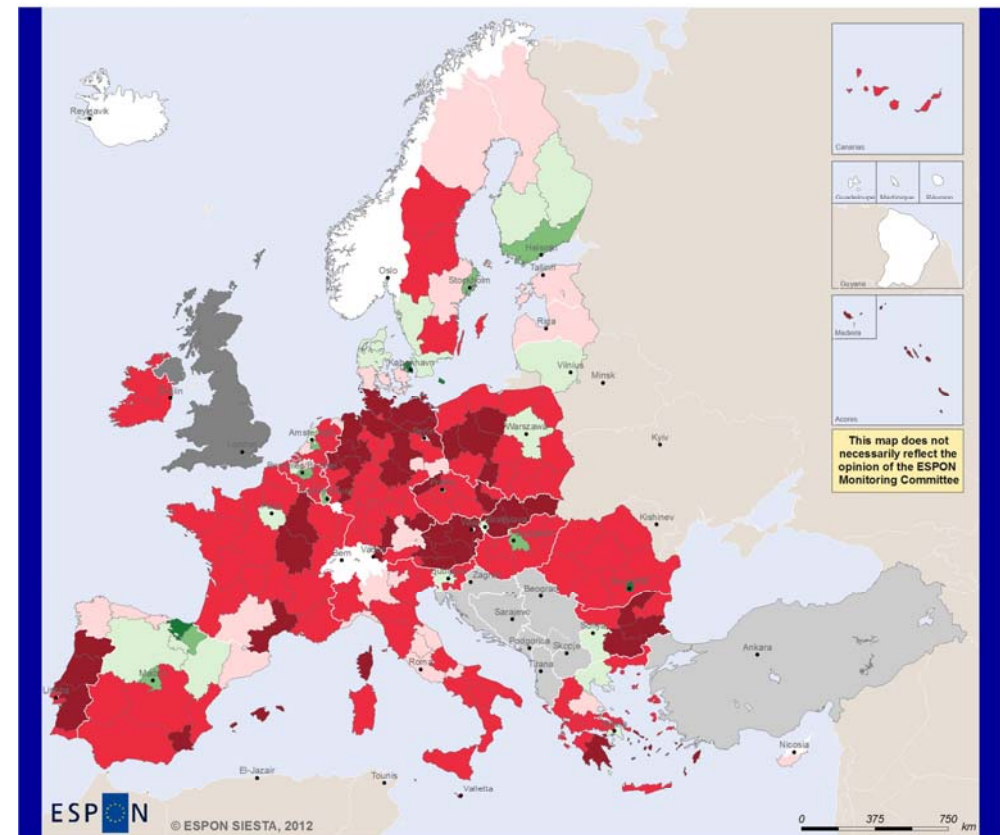
Percentage of total population aged 30-34 (%) 2010.
EU 2020 Target = 40%



Notes:
The share of the population aged 30 - 34 years who have successfully completed university or university-like (tertiary level) education with an education level ISCED 1997 (International Standard Classification of Education) of 5-6. This indicator measures the Europe 2020 strategy's headline target to increase the share of the 30 - 34 years old having completed tertiary or equivalent education to at least 40% in 2020.

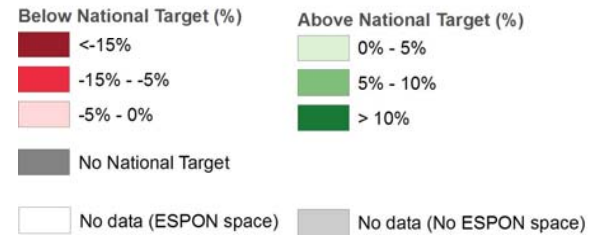
Map 3.12 Regional population aged 30 to 34 with tertiary education represented as distance to the 2020 national targets, 2010

- The range of national targets dramatically varies from 60% in Ireland to 26.7% in Romania and, typically, countries reaching or already reaching the EU target have set ambitious national targets, while countries farther away have set targets below the 40% threshold. Although there are valid reasons for setting up different national targets, they are not necessarily satisfactory indicators as how, and by whom, they are defined is a very political issue. In general, almost all the European territory has to make a big effort to cope with the national targets, whose achievement is consequently challenging.
- There are specificities such as Germany and Austria, countries which include post-secondary and non-tertiary levels for the datasets calculation on this target, making this [Map 3.12](#) partially inconsistent.
- According to the Commission, the current national commitments expressed for countries' targets do not favour the achievement of the overall EU target because, as a whole, this would result in 37.5 by 2020, below the EU2020S target.
- How likely territories are to reach both European and national targets is highly dependent on —both enabled and constrained by— particular geo-historical and, crucially, legal and institutional contexts which vary a lot. For instance, the existence of scholarships and fees for access to higher education must be taken into account.
- Beyond the national targets, the regional scale matters, especially in those countries highly decentralised (with devolved powers on tertiary education), where the educational model is not decided at the national level and that makes a member state target quite meaningless. The Basque Country is a clear example in this respect, 16% above the Spanish target.



ESPON
 © ESPON SIESTA, 2012
 EUROPEAN UNION
 Part-financed by the European Regional Development Fund
 INVESTING IN YOUR FUTURE
 Regional level: NUTS2
 Source: Seventh Report on Economic, Social and Territorial Cohesion
 Origin of data: EUROSTAT, 2011
 © EuroGeographics Association for administrative boundaries

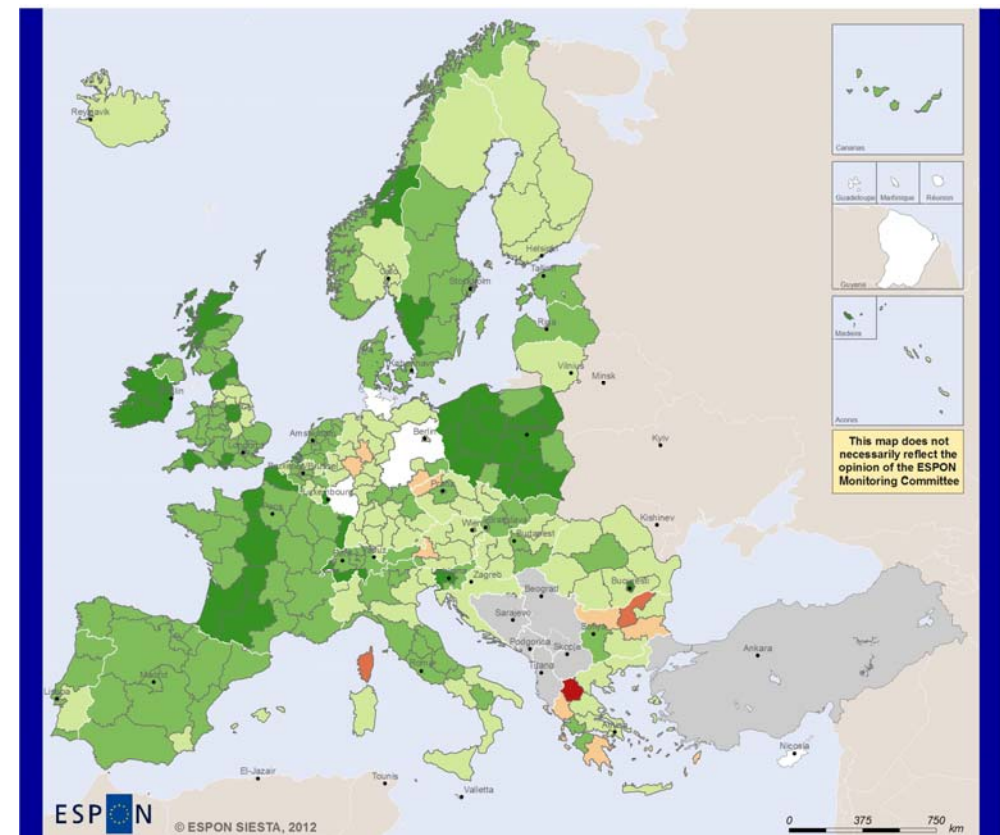
Distance in percentage of population with tertiary education in relation to National Targets (%)



Notes:
 EU 2020 Target: 40%
 The share of the population aged 30 - 34 years who have successfully completed university or university-like (tertiary level) education with an education level ISCED 1997 (International Standard Classification of Education) of 5-6. This indicator measures the Europe 2020 strategy's headline target to increase the share of the 30 - 34 years old having completed tertiary or equivalent education to at least 40% in 2020.

Map 3.13 Change in regional population aged 30 to 34 with tertiary education, 2000-2010

- In general terms, the EU27 is improving in the direction of increasing tertiary education attainment for the 30-34 years old group: from 22.4% in 2000 to 33.5% in 2010. This means that, although the national targets mentioned above do not guarantee that the EU target for 2020 of 40% is reached, if the increase of more than 10% in the decade 2000-2010 is projected for the following decade, the EU target might be achieved by 2020.
- In several regions of some countries the trend has been positive or very positive (France, Poland, Sweden, Ireland, etc.), following the general pattern of the EU. These progresses are opportunities for the current decade.
- A positive case in point is Poland, where 4 regions have increased more than 20%, especially the Warsaw region of Mazowieckie (+30%, from 18% to 48% in 10 years, which constitutes an impressive increase that probably implies an attraction of talent from elsewhere). For those regions still lagging behind that might be a benchmark to be actively considered.
- In other areas the change has been modest and indeed some regions have decreased the indicator; the latter is particularly the case of five regions in Greece, particularly the case of Dytiki Makedonia. Beyond these regions experiencing negative change, there are regions whose low rates are low but in addition are not making progress (Maps 3.11 and 3.13), especially in Central Europe. In general, all these regions are in a challenging position that compromises the ability to meet the smart growth objective of the EU2020S.

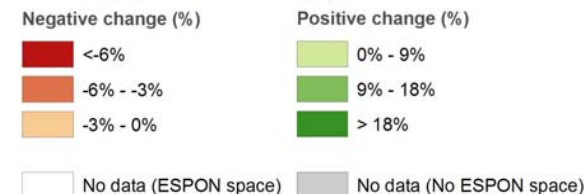


ESPON
© ESPON SIESTA, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage points difference (%), from 2000 to 2010.



Notes:
EU 2020 Target: 40%
Data for CH, DE30 and SI are shown for 2001 - 2010.
Data for HR are shown for 2002 - 2010 at country level.
Data for BG are shown for 2005 - 2010.
DK is shown at country level.

3.3. Persisting Digital Society Territorial Divides

The digital society agenda is basically understood by the EU2020S as the promotion of information and communication technologies (ICT) in general and, especially the Internet, specifically through high-speed and high-quality connections (broadband). Both aspects are assessed as weaknesses of the EU in comparison to other countries or regions of the world where the Internet works better or the ICT sector is stronger.

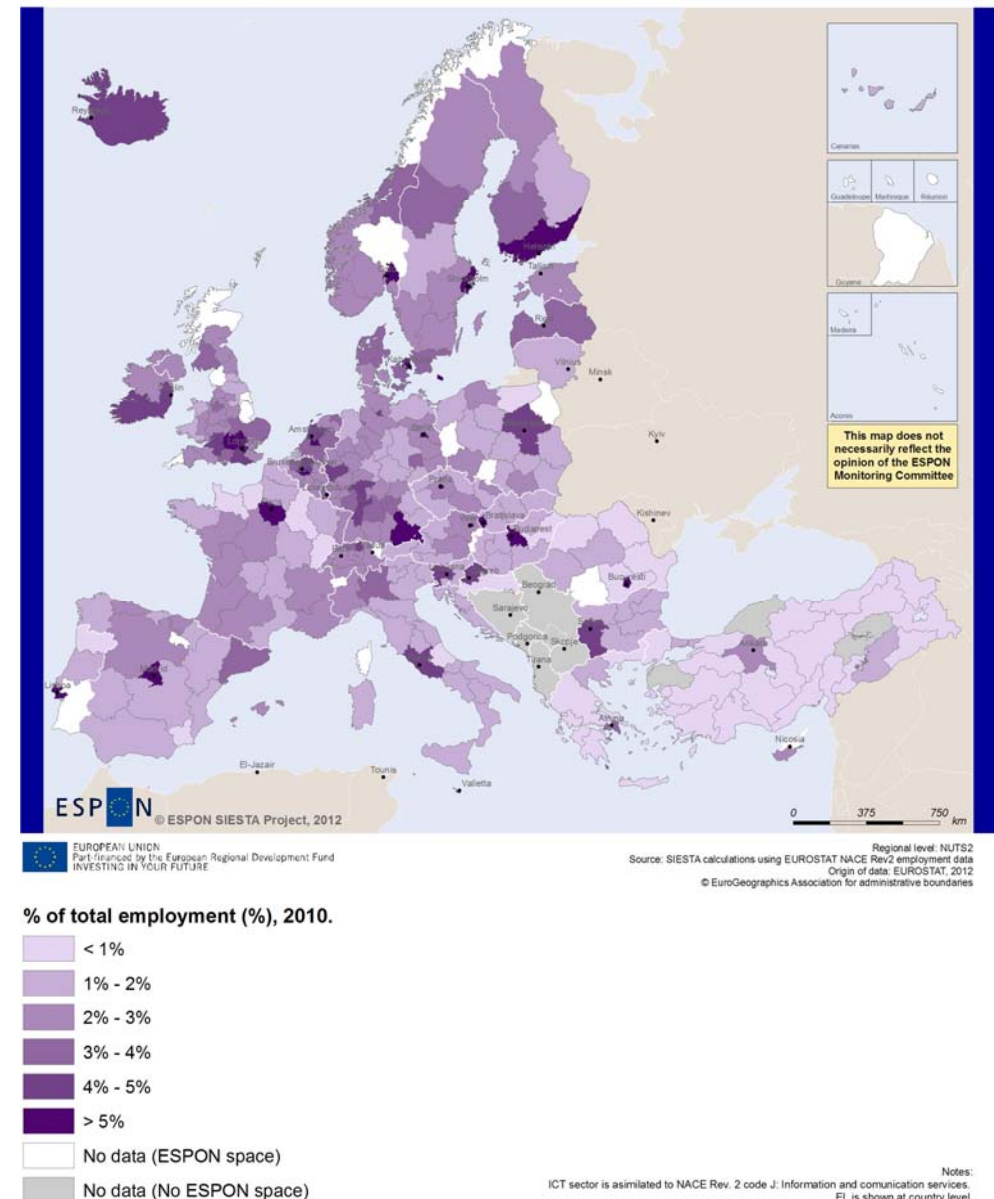
Thus, the digital society is perceived as a crucial topic for European competitiveness where there is room for improving the current situation. Importantly, the territorial dimension is specifically discussed in the EU2020S documentation, as rural and remote regions and some particular countries of the EU are understood as areas especially lagging behind in terms of coverage, speed or utilisation of the digital networks. The territorial divides in digital society issues have been previously identified by several researchers and the maps that are shown herein demonstrate how these divides are still in force.

Four maps have been considered with regard to digital society:

- [Map 3.14](#) is on workers in the ICT sector. In the flagship A Digital Agenda for Europe it is said that a large amount of ICT practitioners will be required in the coming years, acknowledging that in the EU there is a shortage in this respect, thus constituting a potential job niche.
- [Map 3.15](#) informs about the broadband penetration rate. Internet access is directly quoted in this flagship document as a necessary social development in order to grow strongly, to create jobs and prosperity and to ensure citizens access the contents and services they want.
- [Map 3.16](#) reveals the distribution of e-commerce (individuals who ordered goods or services over the Internet), that indirectly informs whether the Internet is being used for commercial purposes, that is, how it is effectively penetrating in businesses in different territories.
- [Map 3.17](#) shows the individuals who have never used a computer. This is a major measure of digital literacy, which excludes many citizens from the digital society and economic progress.

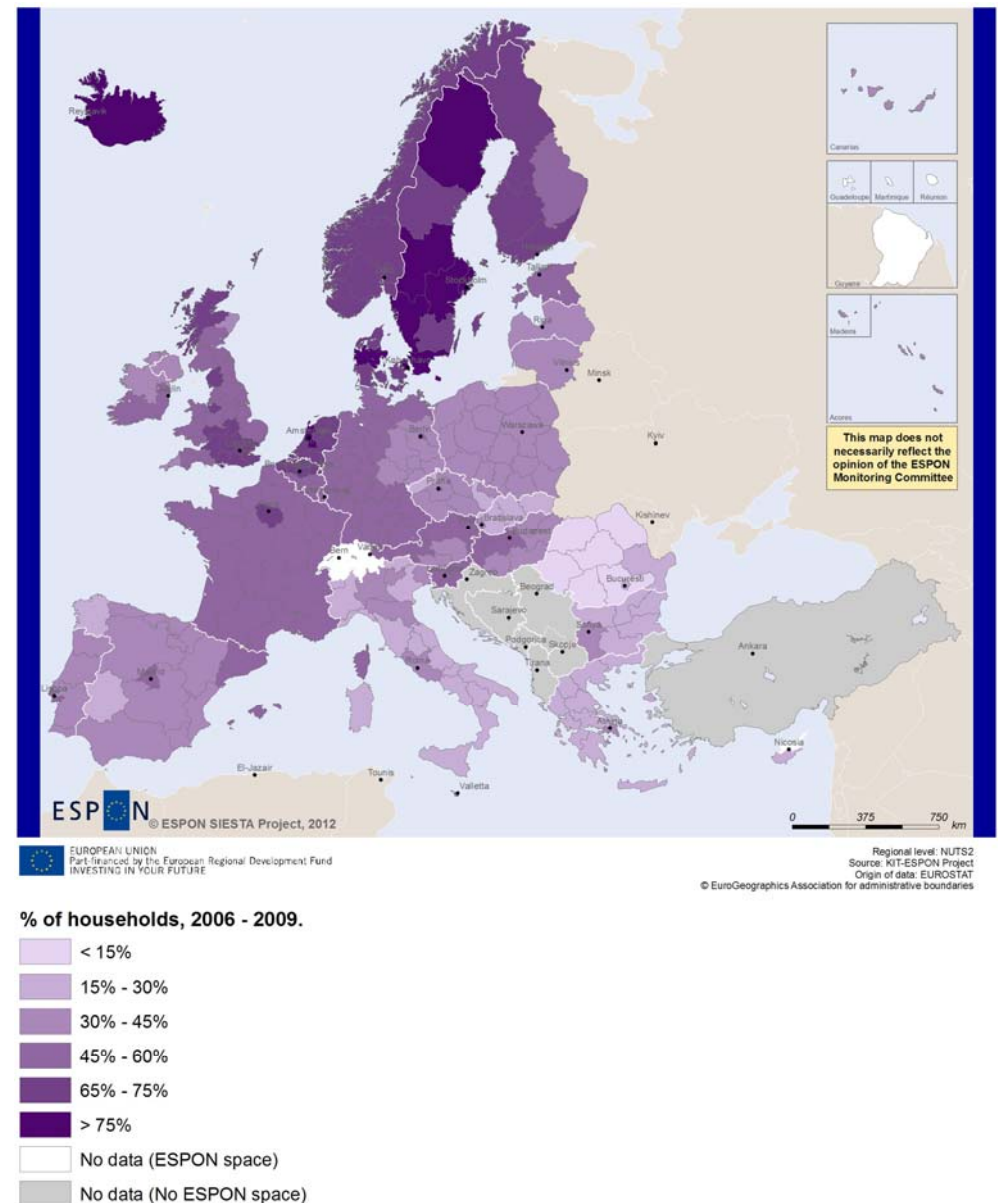
Map 3.14 People working in the ICT sector as percentage of total regional employment, 2010

- The distribution of ICT employment is highly uneven, with certain regions, many of them around large capital cities, exhibiting high values and other regions, mostly rural and particularly in the European Eastern and Southern areas, lagging behind. Thus, in general the rural-urban divide is evident and constitutes an outstanding territorial challenge
- 2 out of the 3 corridors repeatedly used for showing the concentration of innovation and R&D are also seen on this map: England to Switzerland (extending to Northern Italy) and Denmark to Finland. Thus, the ICT workers are concentrated in more innovative areas where economies of agglomeration occur.
- New ICT growth poles (as for example, Cork) are very important for promoting ICT expansion beyond the current concentration. Indeed, there are particular regions such as Attica-Athens or the wider Zagreb area where important though insufficient ICT employment already exists and this should be encouraged. Consequently, there are strategic opportunities for the expansion of the ICT employment in quite a polycentric pattern.
- For the promotion of ICT technologies in rural, remote and peripheral areas those initiatives developed in Ireland (around the so-called Ireland's Information Society Commission), Finland (Learning Upper Karelia) or Scotland (the Highlands and Islands Enterprise created by the Scottish Office) in the late 1990s are of particular interest. In these cases there was a clear strategic goal of creating employment in the ICT sector. In this respect, the notion of "learning region" applied to rural areas is particularly pertinent.
- An extra effort must be made in Turkey and Western Balkans to promote ICT technologies, which in a positive feedback will contribute to overcome their distance to central regions and will act as an opportunity for new employment niches.



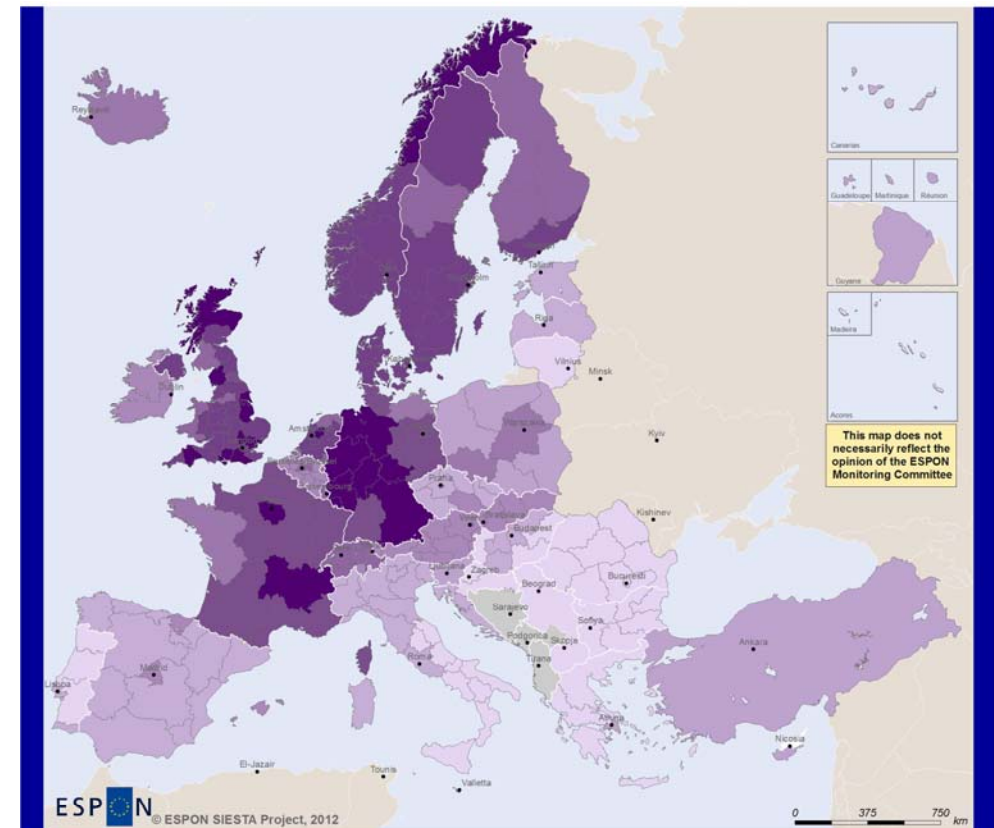
Map 3.15 Broadband penetration rate as percentage of total regional households, combined years from 2006 to 2009

- The territorial differences are considerable. They range from some Swedish regions and Iceland above 75% of broadband penetration to less than 15% in some Romanian regions. The divide between the Northern Periphery (including Iceland), Scandinavia and the North-West, on the one hand, and the rest of Europe, on the other, is tangible.
- The South-East scores particularly low: less than half of the households in Bulgaria, Romania or Greece do not have the Internet and that obviously implies that broadband is not widely in use.
- In most performing countries both rural and urban areas are well covered by broadband facilities. That implicitly means that national frameworks are critical on this [Map 3.15](#) and, for this reason, it makes sense that there is a strong EU initiative to encourage further broadband penetration. In fact, in the worse scoring countries there are sometimes big disparities between regions (for instance, in Spain or Italy) and that might mean a poor policy approach in this issue and an excessive market-dependency.
- According to A Digital Agenda for Europe flagship targets, by 2013 broadband should reach 100% of EU citizens and high-speed in 2020. This constitutes an overall opportunity but, according to [Map 3.15](#), this is far from being feasible.
- More effort needs to be made to ensure the roll-out and take-up of broadband for all, at increasing speeds, through both fixed and wireless technologies, and to facilitate investment in the new very fast open and competitive Internet networks that will be the arteries of a future economy. Critically, the orientations of the flagship A Digital Agenda for Europe must become compulsory for member states if the information society is really understood as fundamental for the EU2020S development, thus the future of the EU.



Map 3.16 Individuals (aged 16 to 74) who ordered goods or services over the Internet for private use as percentage of regional population, 2010

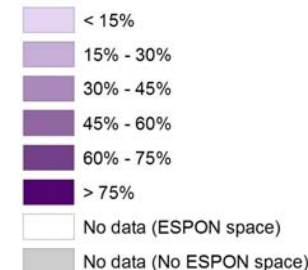
- E-commerce regional differences are relatively lower within the national framework, at least when compared to the differences between different countries. That again means that the country level is critical, not only in terms of legislation (for instance on intellectual property, security or privacy rules), but also on national patterns of behaviour (including people's confidence).
- In relative terms, e-commerce use is low across the regions of the Mediterranean countries (Greece, Spain, Portugal, Italy, etc.) but also in Eastern Europe, especially the South-East (countries like Bulgaria, Romania, Serbia or Macedonia score particularly low). In these cases the intra-national variation tends to be low as well. In any case, in these territories lagging behind the expansion of the digital economy is now limited.
- Potentially, e-commerce could offer a radical transformation of everyday movements and commuting, virtually minimising the gaps between spaces of work, recreation, consumption and living, and contributing to a more sustainable pattern of regional development. However, it does not appear to be a political priority beyond the general statements of overall European documents.
- The UK has the leading e-commerce market of the planet when measured by the amount spent per capita, which might be considered as a possible benchmark when comparing with more limited markets in other countries and regions of the EU. Factors such as a positive regulation or consumers' general behaviour in the UK are likely to be the explanatory factors.



ESPON
 EUROPEAN UNION
 Part-financed by the European Regional Development Fund
 INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS1 and NUTS0 Source: Eurostat
 Origin of data: EUROSTAT, 2012
 © EuroGeographics Association for administrative boundaries

% of individuals aged 16 to 74, 2010.



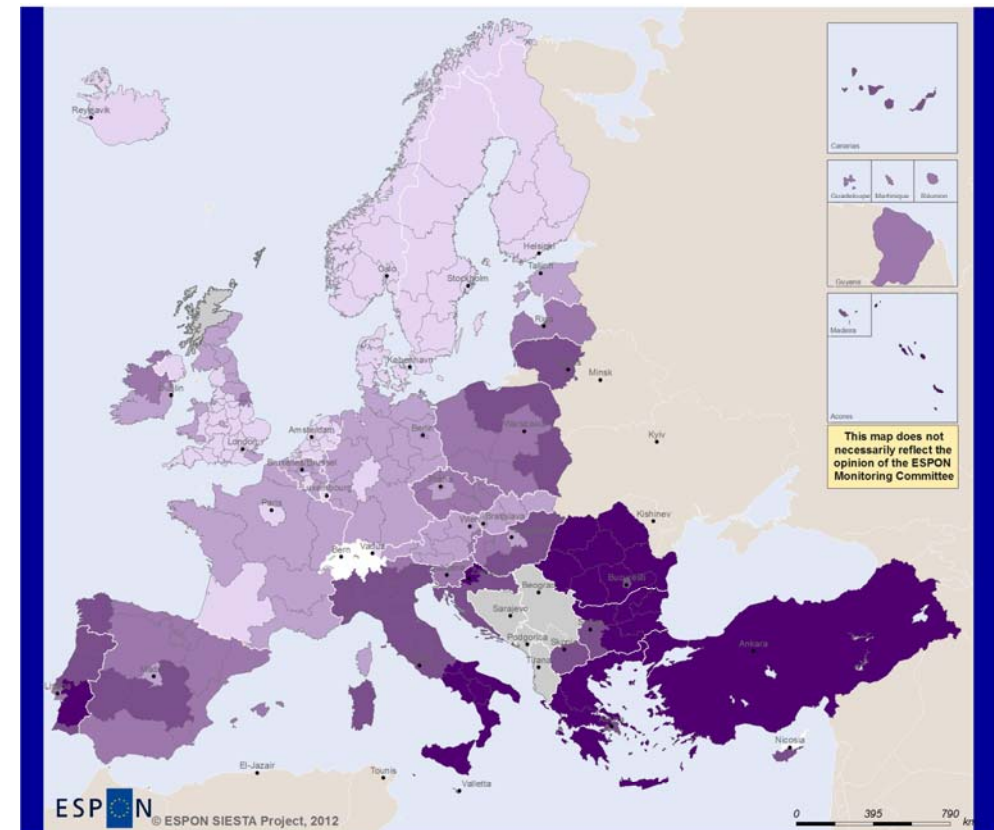
Notes:
 DE, FR, EL, RS and PL are shown at NUTS1 level.
 TR is shown at country level and data for this country were provided by Turkstat.
 Data for CH was provided by Swiss Statistics web site: <http://www.bfs.admin.ch/bfs/portal/en/index.html>

Data for BH11, BG12, BG13, BG21, BG22, BG23 and FI2 are not available for 2010.
 These regions are shown for 2007.

TR data corresponds to 2011.
 UKE1 data are not available for 2010 and are shown for 2009.

Map 3.17 Individuals who have never used a computer as percentage of regional population, 2011

- The most computerised populations are located in the Northern portion of Europe, especially Scandinavian countries plus Iceland.
- Computer illiteracy is particularly challenging in South-Eastern countries, plus Turkey, Southern Italy and Alentejo in Portugal. In most of these regions more than half the population have never used a computer and it is evident that a full digital society is impossible if there is a large number of people who have never used a computer.
- Digital illiteracy needs to be clearly targeted as economic development is hampered and social exclusion is likely to remain.
- It is true that digital literacy is not only dependant on computer literacy as digitalisation expands through PDAs, cell phones or other specially designed devices, but computers remain pivotal in the digital society.
- It is doubtful that the improvement of high-speed broadband connections will boost demand for the Internet (Map 3.15), nor can this be created by educating people who are “digitally illiterate”. Rather, the EU should encourage across the European territory the activation of interest and involvement of individuals by supporting activities presupposing interaction through computers and within the Internet (i.e. e-government, e-learning).

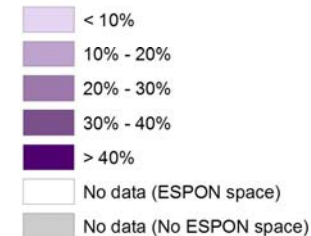


ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS1 and NUTS0
Source: Eurostat
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

% individuals who have never used a computer, 2011.



Notes:
IE, UK, SE, FI, NO, EE, LV, LT, BE, NL,
PT, ES, CZ, AT, HU, HR, PL, RO are shown at NUTS2 level.
FR, DE and EL are shown at NUTS1 level.
IS, MK, SI and TR are shown at country level.
BO, HR, TR, MK, DK, NL, SE, UK, ES63 are shown for 2010.
BG is shown for 2007.

4. Inclusive Growth

The third pillar of the EU2020S deals with employment creation, skills and labour market reform, the reduction of poverty and social exclusion. The basic intention is to increase employment rates and improve the quality of jobs, especially for those groups in particular need (women, young people, migrants, older workers, etc.), thus contributing to social cohesion. This is expected to result in building and maintaining a cohesive society that ensures access and opportunities for all throughout the lifecycle.

Ultimately, the emphasis on these issues is based on an economic rationale: Europe needs to make full use of its labour potential to face the challenges of an ageing population and rising global competition. In this sense, there is a strong risk that people detached from or poorly attached to the world of work lose ground concerning the labour market. Taking into consideration the longer working lives that have been achieved because of increased life expectancy, lifelong learning is essential in order to develop new skills throughout the lifetime.

In relation to poverty, the prediction is that the number of poor people will increase because of the crisis, and particularly because of unemployment. Structural unemployment is recognised as a problem that has to be reduced to avoid higher levels of poverty. Importantly, under the inclusive growth priority is the only time when the EU2020S acknowledges territorial dimensions as it states that economic growth must deliver territorial cohesion, beyond social cohesion; however, no clear indication is given as to how this is to occur.

The section focused on inclusive growth is divided into two subsections: the first is dedicated to employment, whereas the second is focused on poverty and exclusion. This is consistent with the thematic organisation of the EU2020S, but it is also correlated with the two flagship initiatives under this pillar: An Agenda for New Skills and Jobs, and European Platform against Poverty. Furthermore, the two headline targets set for inclusive growth correspond with both subsections.

4.1. The Territorial Configurations of Employment and Lifelong Learning

4.1.1. The Contrasting Territories of Employment and Unemployment

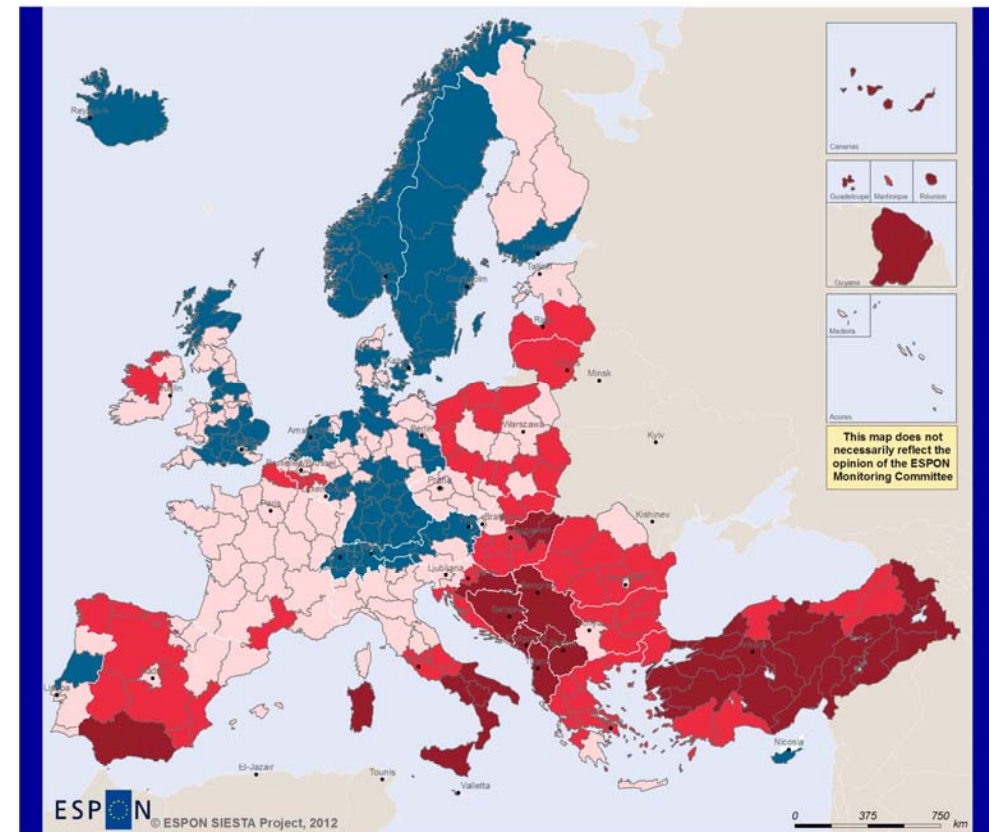
Employment is intended to improve the economy, to reduce poverty and exclusion and to address the cost of ageing through the pension system. The commitment to the headline target of an employment rate of 75% for the 20-64 year-old age group by 2020 is ambitious, but it is critical for the sustainability of Europe's social model, welfare, growth and public finances. Taking into account that in 2011 the EU scored 68.6%, the achievement of this target is not an easy task, especially in the current economic context, where employment loss is severe in several countries and unemployment is becoming increasingly worrying.

The presence of an unskilled workforce is particularly problematic in several countries and negates against an appropriate transition towards a competitive, sustainable and innovative economy according to the EU2020S. Indeed, although the link might seem blurred, according to SIESTA's calculations for the whole of the regions considered, there is a moderate correlation between employment (of those aged 20 to 64) and human resources in science and technology, on the one hand, and between employment and broadband penetration, on the other; that means that in general smart growth takes place when employment is high.

All these questions are examined, with a particular focus on the analysis of employment and unemployment for particular social profiles targeted by the EU2020S (women and youth, being mapped in [Map 4.4](#) and [Map 4.6](#), respectively), but the analysis begins with the territorial dimension of the headline target on employment ([Map 4.1](#) for the current figures; [Map 4.2](#) represented as distance to the 2020 national targets; and [Map 4.3](#) as a variation for the last decade). The obvious opposite to employment is unemployment, which is regionally mapped in [Map 4.5](#). However, it has to be clearly stated that maps on employment and unemployment are not strictly opposite as statistics differ.

Map 4.1 Regional employment rate as percentage of active population aged 20 to 64, 2010

- In general terms, the headline target is exceeded by regions in Scandinavia, Iceland, the UK, the Netherlands, Germany and the Alpine Arc. The rest of the territory (except Cyprus and the Centro Region in Portugal) has not achieved the target, with the worst situations in regions of Turkey, Serbia, Kosovo and Italy, whose rates are below 50%. The situation in these extreme regions is particularly challenging, with regions such as Campania in Italy scoring only half the EU target, making it impossible that the EU target will be achieved by 2020.
- In general there are no significant variations within states, with the exceptions of Italy or Spain, where there is a dramatic internal disparity: their Northern regions are very near the EU average but, progressively towards the South, the rate worsens.
- There is no clear correlation between the rural and the urban/metropolitan character of regions and employment rate: rural areas in Scandinavian countries score very well, while urban areas in Eastern Europe have low values. Regional employment seems to be a function of heterogeneous economic circumstances and national policies.
- Because of the territorial variation, a territorial consideration of this issue is crucial. Thus, the EU must consider the issue of labour mobility generally, but also regional strategies (i.e. regional jobs pacts).
- Beyond the territorial cohesion implications, there is also a social cohesion derivative of this Map 4.1. According to SIESTA's calculations for all the regions with data, when the employment rate is lower, NEET (those young people who are not in work, education or training) and long-term unemployment are higher. That means that employment supports social cohesion and it has to be understood as strategic in this respect.



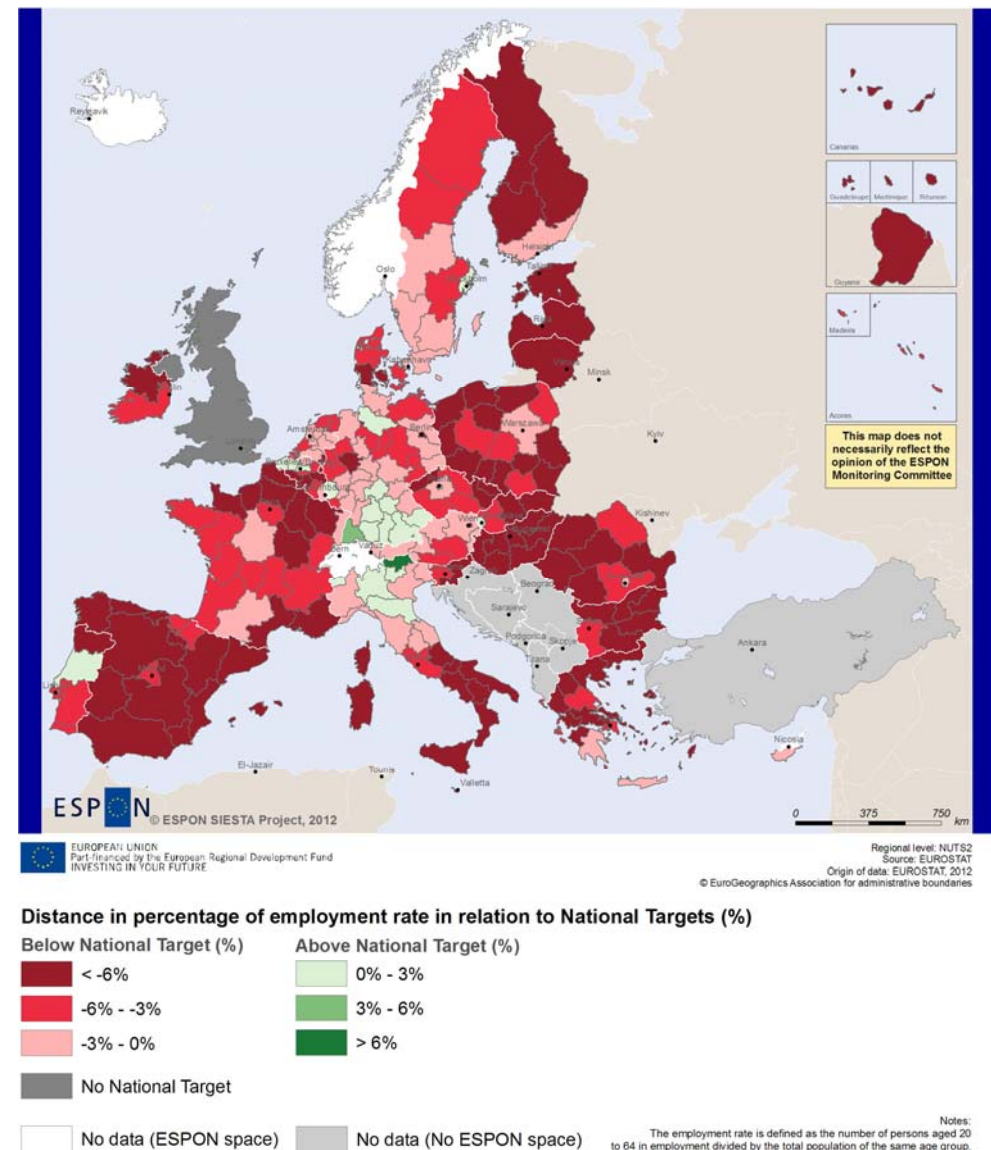
Percentage of active population (%), 2010.
EU 2020 Target = 75%



Notes:
The employment rate is defined as the number of persons aged 20 to 64 in employment divided by the total population of the same age group.
The EU27 target is to reach a 75%.
EU27= 68.5%
Data for XK and AL are shown for 2009.

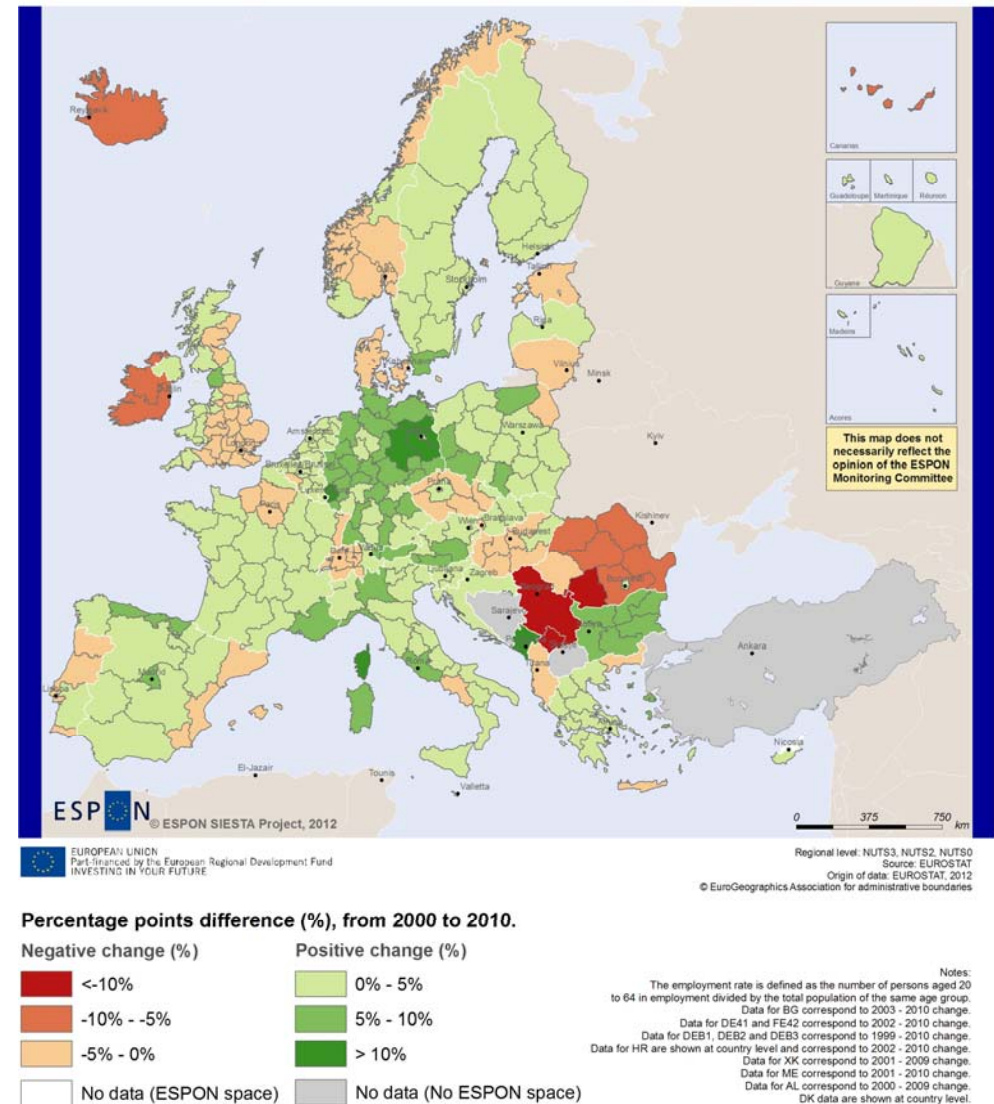
Map 4.2 Regional employment rate (percentage of active population aged 20 to 64) represented as distance to the 2020 national target, 2010

- National targets are very heterogeneous, ranging from 80% in Denmark, Sweden and the Netherlands to 62.9% in Malta. These targets depend basically on the starting point of each country, but also result on a map where variations are politically driven.
- The EC has calculated that, by amalgamating national targets, the EU target of 75% as a whole will not be achieved and would result in an estimated 73.7-74%. Bearing in mind that the situation has worsened in 2011 and is worsening in 2012 because of the crisis, the achievement of the EU target is increasingly difficult and the same is the case for many national targets.
- The regions most distant to their respective national targets are two French outermost regions, four Southern Italian regions, two Hungarian regions and the Spanish enclaves in Africa: Melilla and Ceuta. Because of their challenging situation, specific regional strategies mainly managed by the respective member states (the administrative level that has set the national target) are essential.
- Internal variations in countries (beyond Spain and Italy) are noticeable on this map and this makes it still more evident than in [Map 4.1](#) that regional strategies are crucial and that national approaches cannot necessarily address internal disparities.
- One of those countries that has been most successful is the Netherlands. They have set an overall employment target of 80% for 2016 and announced new policies, like an action plan to reduce unemployment of older workers and a new tax on pensions —in case of retirement before the statutory retirement age of 65.
- Flexicurity policies are opportunities for the whole of the EU with regard to job creation and management and should be prioritised.



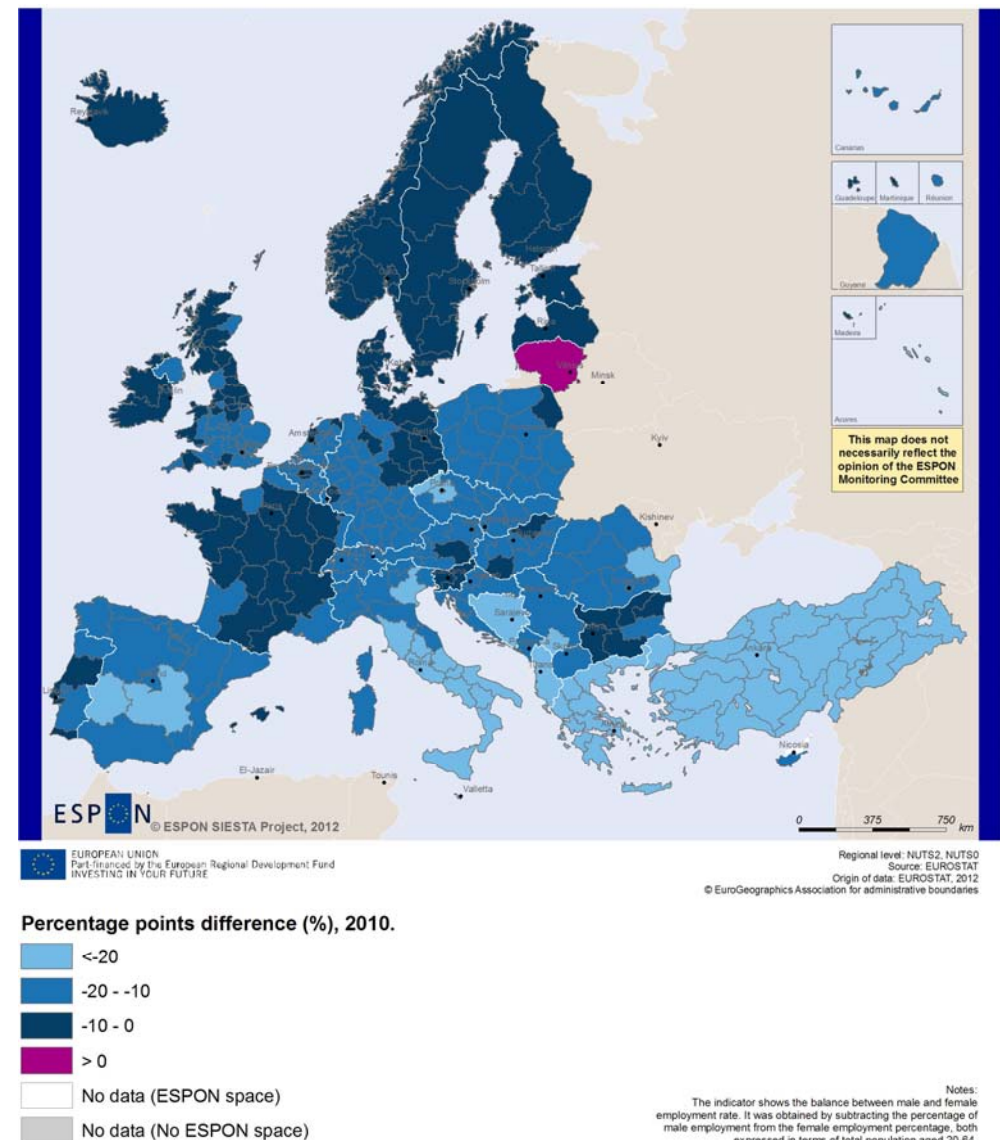
Map 4.3 Change in regional employment rate (percentage of active population aged 20 to 64), 2000-2010

- Taking into consideration that this indicator is at the same time structural and short-term, the interpretation of this map is particularly complex. For instance, the high rates of employment creation experienced in the old East Germany might be related to structural changes in the economy of this area, while the performance of several regions in Eastern Spain (and the whole of Ireland or Iceland) in employment creation from 2000 to 2008 is clouded as the map reflects the period until 2010 and we know that the employment reduction from 2008 to 2010 (and ongoing) has been severe. Indeed, one of the problems associated with the interpretation of this map is the fact that there are different dynamics in this decade for every single region of Europe.
- The country whose regions have significantly improved their employment rate is Germany, especially the Eastern part, but it has to be mentioned that in this area unemployment remains high (Map 4.5). Bulgaria and Montenegro have also experienced appreciable growth in the employment rate. In general, most of the countries have had increases, but at a moderate rate, showing that structural factors are important or that the last 2 years of crisis in the studied period are counterbalancing the previous positive trend; exceptionally there are regions with expansion of the employment rate (for instance, Corsica with the highest expansion, 26.6%).
- In contrast, Northern Periphery countries have experienced a contraction in employment; the decrease in Iceland has been -9% but the rate was still 80% in 2010, that is, above the EU headline target and indeed the modest population size of this nation (over 300,000 inhabitants) partially explains high fluctuations in its statistics. Another area of Europe which is particularly worsening in employment rate is Eastern Europe; in particular, Serbia, Kosovo and Romania show an extreme diminution of the rate in 10 years; for instance, the Romanian region of South-Vest Oltenia has had a contraction of -12% in this period of time, possibly related to emigration flows.
- A critical issue related to this territorial distribution of the employment dynamics is migration. Thus, it is evident that policy-making on employment should occur in parallel with both intra-EU and extra-EU migration policies.



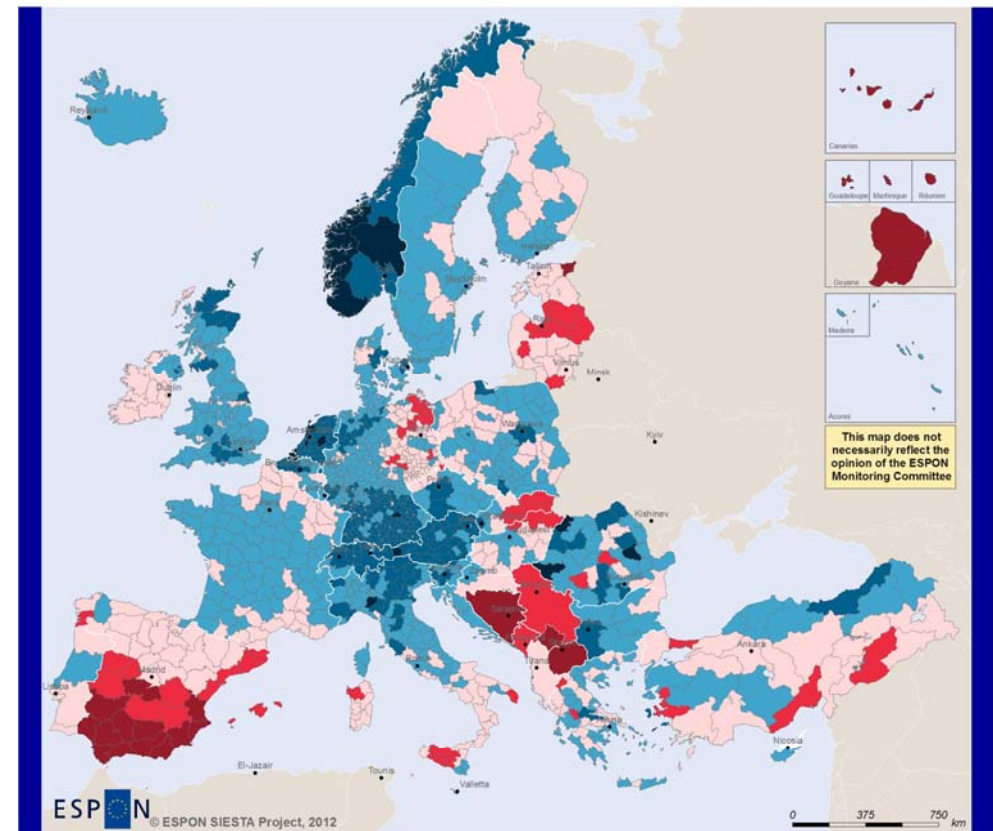
Map 4.4 Gender balance in regional employment rate (percentage of active population aged 20 to 64), 2010

- The current gap is -13% at EU27 level, which reveals significant inequality. Although important progress has been made, in many regions women are still disadvantaged due to education, career paths, working arrangements, religion or social issues.
- There is only one territory in Europe where women have a higher employment rate than men: Lithuania. The other Eastern Baltic republics have slight gender inequality, but unfortunately these countries are far from reaching the 75% headline target (Map 4.1) and most of their regions have poor employment opportunities (Map 4.5).
- The gender gap is also very small in Scandinavian regions and in the Northern Periphery. French regions, Slovenia and the old East Germany *Länder* also have slight gender inequalities, plus other individual regions across Europe (for instance, in Bulgaria or in Portugal).
- The vast majority of European regions contain severe imbalances. The situation is particularly worrying in the Mediterranean Basin, including two inland regions of Spain, Bosnia and Herzegovina, Kosovo and all Turkish regions, with the worst gap of all the studied regions in Mardin (-59.3%), where female employment is only 10.6%. These severe cases are specifically challenging and require a rigorous policy approach to remove gender barriers.
- The gender gap is still in force in Europe and it can be argued that only when there is a clear strategy for assisting women in work-life balance and childcare facilities that it might be overcome, together with zero tolerance for the unequal salaries between the genders that still remains. In Scandinavia or France, where there are unambiguous and sustained policies in this respect, Map 4.4 clearly shows the results.



Map 4.5 Regional unemployment rate (percentage of active population aged 15 to 74), 2010

- Unemployment particularly affects 3 groups of regions: (i) the Balkans, with the record of Kosovo (45.4%), because of the transition from centrally planned to market oriented economies and probably the effects of the war in some of these countries; (ii) Southern and Eastern Spain, extending to the Canary Islands; in these regions there used to be structural unemployment but now the situation is critical because of the impact of the crisis in the more important job sectors (construction and basic services); Spain has 1 out of 4 unemployed people in the EU (Graphic 4.1); (iii) the Eastern Baltic States, although unemployment seems to be dropping, possibly because in some case of strong emigration.
- Moreover, several regions in the old Eastern bloc have high rates of unemployment, probably because of the long-term effects of manufacturing restructuring. The French outermost regions and some Greek regions score badly as well.
- Unemployment correlates with poverty, long term unemployment and lower levels of economic growth.
- Taking into account the fact that current policies are not reducing unemployment (indeed, in countries such as Greece or Spain policies themselves are causing more unemployment), the EU2020S is not implemented by the institutions that should be committed to its effective development. A radical shift in employment policies is required to generate new jobs and prevent further job losses.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

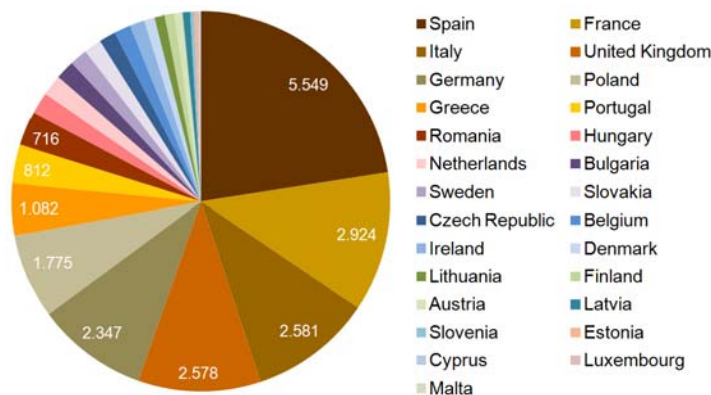
Regional level: NUTS2, NUTS1, NUTS0 Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

% of active population, 2009 (EU average =9.6%).



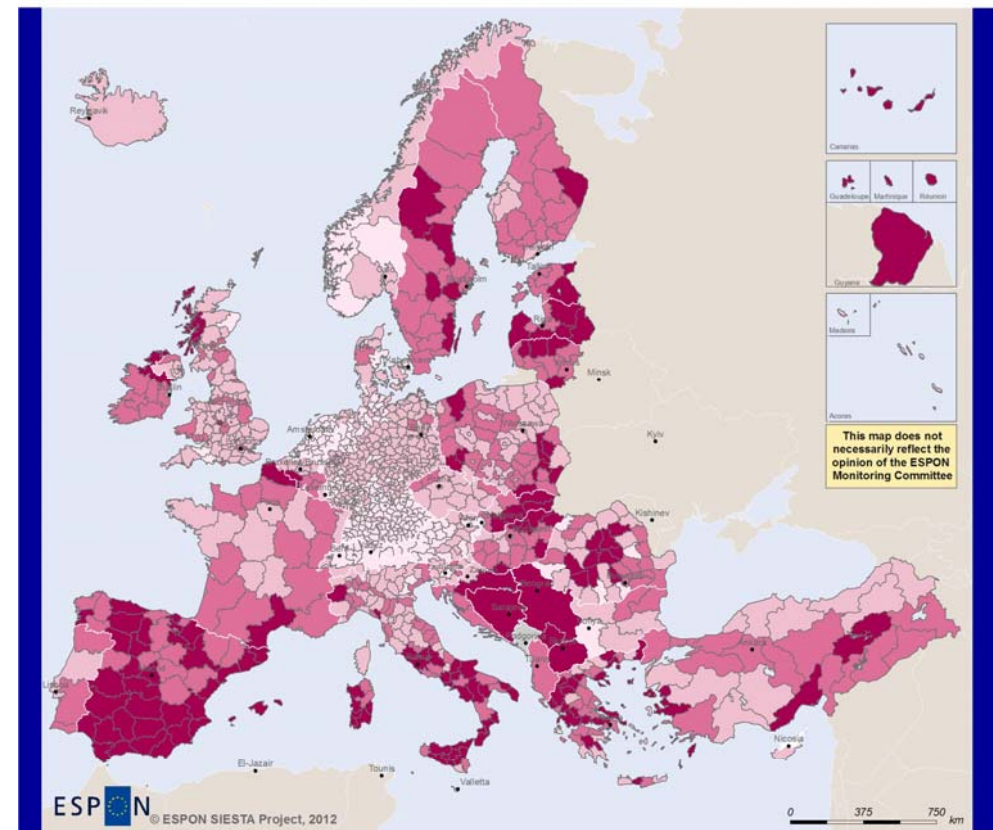
Notes:
PT, NO, CH, BG, BE and TR are shown at NUTS2 level.
RS, XK, ME, MK, BA and AL are shown at country level.
EU 27 average = 9.6%
Red regions are over EU27 average.

Graphic 4.1
Unemployed people per country of the EU in March 2013 (not seasonally adjusted) in thousands of persons. Source: Eurostat, SIESTA's



Map 4.6 Regional youth unemployment rate as percentage of total labour force aged 15 to 24, 2009

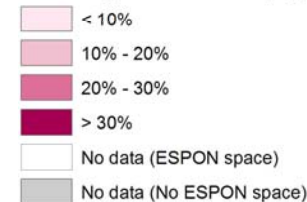
- Youth unemployment is low in German, Austrian, Swiss, Norwegian and Dutch regions, but also in the capital regions of the Czech Republic, Slovenia and Slovakia and in other scattered areas in Eastern Europe. These regions have developed a specialisation of young people in technical skills allowing labour enrolment.
- In contrast, the Baltic Sea Region (including Sweden and Finland) and, especially, Southern Europe and the Balkan countries have high youth unemployment rates. Within the EU, the highest values of this indicator are to be found in some regions of Spain (especially in the South and South-East), Greece and Portugal. However, this high unemployment rate in the Northern most regions and in the Southern shows sharp contrasts: in the former it is the comprehensive support from the universalistic state which is underneath, while in the latter the delayed transition of young people is based on the “long family” tradition and the absence of state mechanisms to truly support youth. In addition, in these Southern regions the situation is particularly challenging.
- The EC is worried for youth unemployment and for this reason it has launched a specific Communication (Youth on the Move), that constitutes a specific opportunity for young people given that it is targeted concretely for them. In fact, young people are more likely to be unemployed than adults, even in economies with strong economic growth.
- Some countries have developed actions which are considered successful in order to support the young people entering to the labour market, particularly Germany, Norway and France with approaches such as institutionally involving employers in vocational training, personal coaching, career counselling, specific up-to-date information on vacancies, jobseekers and required qualifications, etc.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS3, NUTS2, NUTS0
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage of total active population aged 15-24 (%), 2009.



Notes:
NO, BG, FR, HR, TR and PT are shown at NUTS2 level.
AL, BA, RS, XK and MK are shown at country level.
Youth unemployment rate is the percentage of the unemployed in the age group 15 to 24 compared to the total labour force (both employed and unemployed) in that age group.

4.1.2. Territorial Opposition between Lifelong Learning and Low Educational Attainment

Lifelong learning and skills development is essential to sustain a competitive, innovative, green and smart workforce that is adapted to the constant challenges throughout the workers' lifetime in the context of a very changing and globalised world. And it is also particularly vital in a time where unemployment is extremely high in several European regions and part of the labour force needs to reinvent itself in order to find a job, namely low-skilled old workers who are being especially affected by joblessness.

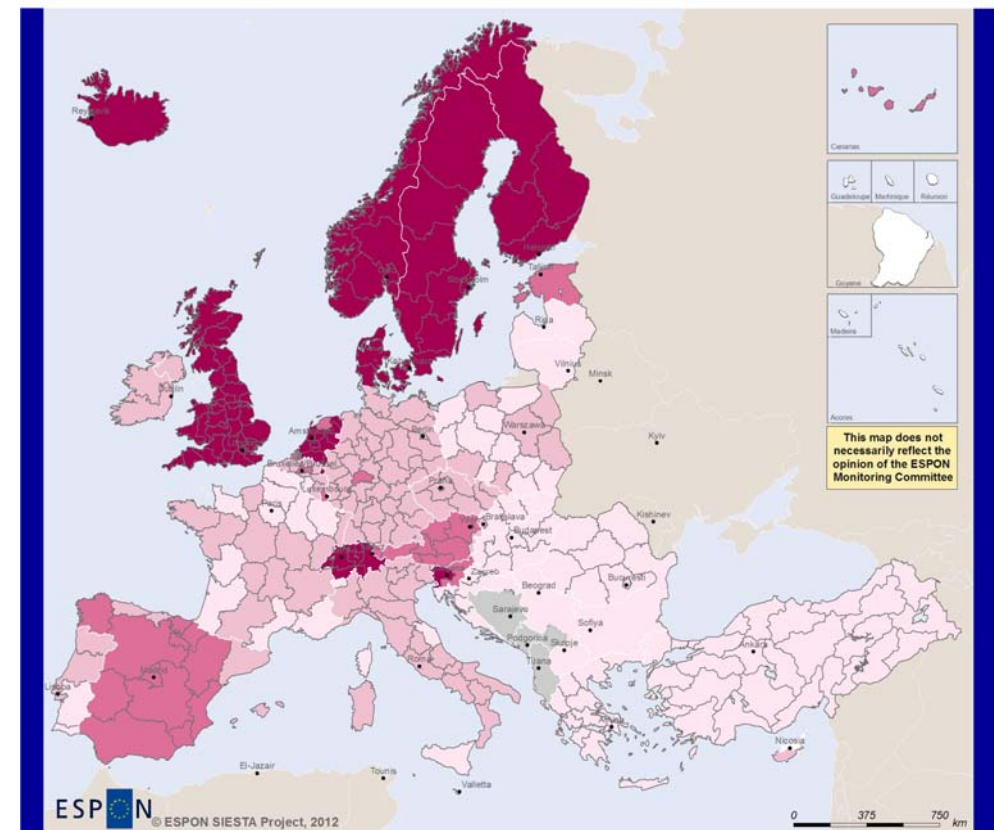
Indeed, according to SIESTA's calculations, there is a positive correlation at the regional scale between lifelong learning participants and employment rate. Lifelong learning is designed to cover learning in all contexts (whether formal, non-formal or informal) and at all levels: from early childhood education and schools through to higher education, vocational education and training (VET) and adult learning, but usually lifelong learning refers to adults (more than 25 years old). The flagship An Agenda for New Skills and Jobs has the basic strategy to develop and improve the workforce in Europe through the concept of flexicurity, which consists of flexible contractual arrangements, active labour market policies, modern social security systems and, this is substantial, lifelong learning.

The importance of the latter was already highlighted by the Lisbon Strategy, that stated as a target that 12.5% of the 25-64 years-old population should participate in these activities. By 2010 (the target year of the Lisbon Strategy) the real figure was 9.1%, showing that the target had not been reached. Indeed, in 2009 this issue was reiterated by setting 15% of adults participating in lifelong learning as a target by 2020 (through the Strategic Framework for European Cooperation in Education and Training, commonly the so-called ET2020).

This point consists of two maps. The first is devoted to lifelong learning, measured as participation of adults in education and training ([Map 4.7](#)). The second is about one of the main reasons to develop lifelong learning: low educational attainment ([Map 4.8](#)). In fact, low educational attainment is regarded as an obstacle to both personal and professional development and is also a disadvantage for society's purpose of dropping the disparities and inequities between individuals or groups. What is expected is that lifelong learning affects especially those regions that are worst positioned in terms of low educational attainment (thus, low-skilled people) but, as will be seen below, they do not correlate in such a way.

Map 4.7 Participation of adults (aged 25 to 64) in education and training, 2009

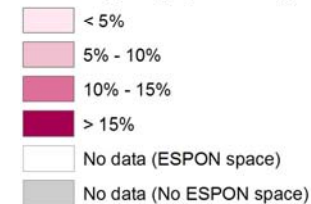
- Despite being at the regional scale, the representation is very dependent on the state level. That means that the national policy context is fundamental for understanding the disparities, together with the socio-cultural background of each state.
- In the forefront, the Scandinavian countries, plus Iceland, the UK, Switzerland and the Netherlands score well, that is, above the target set for 2020 by the ET2000; typically, adults can access education fairly easily for different types of learning therein.
- A second group of countries covers the remaining regions of Western Europe, with median values, but it is true that most of the regions of Spain and Austria score high; these countries usually have less tradition in adult learning than the first ones, but the socio-economic context does not impose great difficulties in developing the sector. In Western Europe in general there are several training programmes with partnerships with the private sector (associations of companies, unions, etc.) and universities.
- The last position in the ranking is for Eastern Europe regions, where there have not been lifelong learning activities until recently and there was a lack of funding in this respect. Indeed, it can be forecasted that this participation will increase in Eastern Europe because the accumulated impact in most of these countries (new members of the EU) of the European Social Fund (ESF), which is usually devoted to lifelong learning and whose impact is arguably the cause of the high scoring of Spain or Slovenia. In this respect, the ESF acts as an overall opportunity.
- The accession to the EU itself constitutes an opportunity for this issue given that it has impelled a reorganisation of learning levels in these new members and, for instance, in the case of Romania there has been a reform of professional learning level which noticeably affects lifelong learning.
- For Eastern Europe national policies, and for the EU as a whole, there is a need to implement a culture of education and training for adults. The decay between Eastern Europe and the rest of Europe is explained just by the former behaviour of workers, meaning the stability along the entire active life of the same workplace.



ESPON
EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS0
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

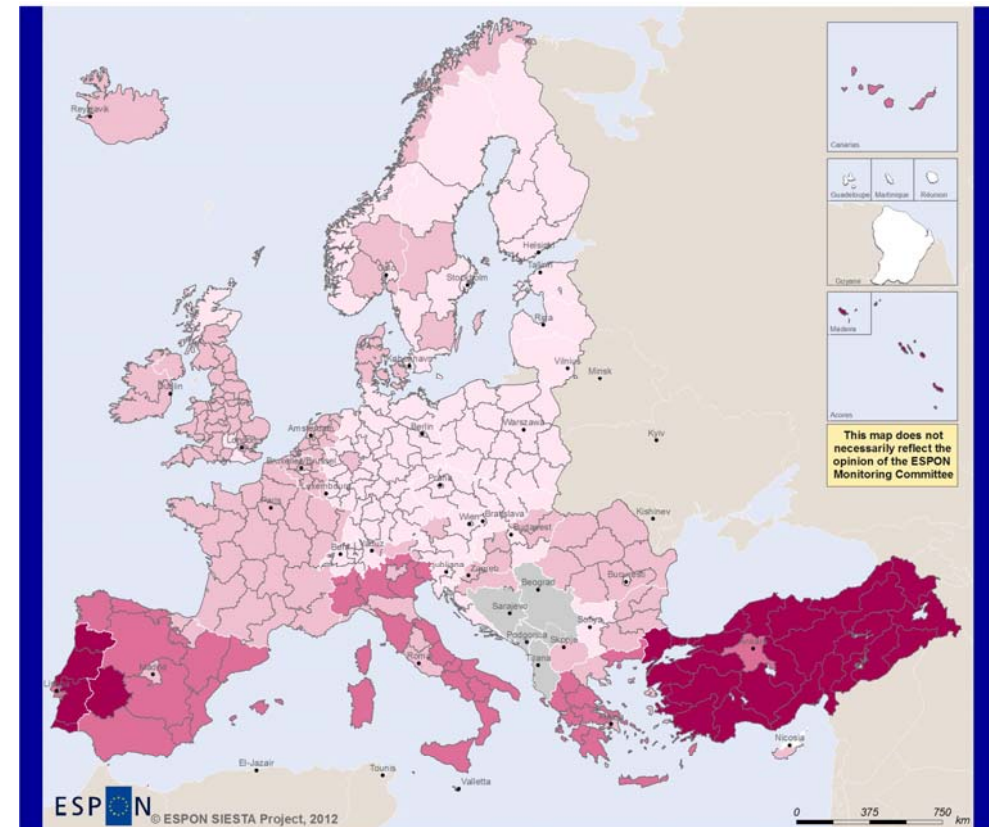
Percentage of population age 25-64 (%), 2010.



Notes:
RS, BG, MK, CY, IS, EE, LV, LT, LU, MT are shown at country level.

Map 4.8 Persons (aged 25 to 64) with low educational attainment (level 1 or 2 ISCED) by regions, 2010

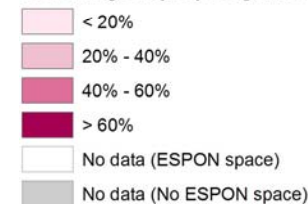
- An opposite situation exists between Central Europe and Scandinavia in an outstanding situation, and the Southern countries in a worse situation, especially Turkey, Portugal, Extremadura (Spain) and outermost Portuguese and Spanish archipelagos.
- The reasons behind the variations are the differences in the educational policy of the developed states comparing to those in economic transition but also the labour market structure. For example, those regions in which agriculture, tourism and construction (i.e. Spain, Portugal, Turkey) have more importance than specialised services and technology development show higher rates of low educated people
- In general, those regions with lower educational attainment (Map 4.7) have worse participation of adults in education and training (Map 4.8). This constitutes a major territorial challenge in the sense that it is a vicious circle. A particular effort needs to be made in the areas especially lagging behind, in countries such as Turkey, Greece or Portugal, where this low-skilled population does not have access to adult education and training.
- A special policy is urgently to be defined for the Southern part of Europe, including Spain, Italy and Greece, in order to reduce the percentage of people less educated.
- Ratios tend to be uniform at the national scale due to the importance of the national policies that are developed in each country. On the contrary, Spain is an example of a country with a wide range of territorial situations.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS0
Source: EUROSTAT
Origin of data: EUROSTAT, 2012
© EuroGeographics Association for administrative boundaries

Percentage of people aged 25 - 64 (%), 2010.



Notes:
This indicator is the ratio of people aged 25 - 64 with lower secondary education attainment. IS, EE, LV, LT, MK, CY and MT are shown at country level.

4.2. Territorial Dissimilarities in Poverty and Exclusion

The EU2020S places the fight against poverty in the agenda at the same time as economic growth, employment or smart economy principles are sought. Fighting against poverty is a major contribution of the EU2020S in the direction of inclusive growth, which basically means that growth has to spread to all society and that excluding people in this process is not acceptable. This very idea is especially important in the current crisis context, when the situation is worsening and the most vulnerable people are being affected.

The causes of poverty are multi-faceted and include a wide range of possibilities. Usually poverty is related to low incomes or even the absence of salaries, but there are the “working-poor”, with very low salaries or relying on temporary and low-paid jobs. It can be argued that higher rates of employment are related to reducing the levels of poverty, but this is not always true. There are also social groups which are not active population and that effectively are more at risk of poverty — i.e. children, elderly. Women, young people or third-country migrants also tend to be more at risk, together with specific groups such as people with mental health problems, people with disabilities or the homelessness.

The so-called flagship initiative The European Platform against Poverty and Social Exclusion identifies five areas of action in this field. However, the topics which can be effective in targeting poverty and social exclusion are basically in hands of each state rather than the Commission: social care, housing, health, family policies, education, etc.

Because of its complex nature, a common problem in referring to poverty is how to define it. Conventionally, the EU has adopted a specific statistical definition that will be followed in the next pages as it is related to the headline target that has been set. People at risk of poverty or social exclusion are persons who are at least in one of the following three conditions: at-risk-of-poverty, severely materially deprived, or living in households with very low work intensity; each one of these indicators has its specific definition (Table 4.2). The specific Eurostat mechanism for calculating such an aggregate indicator is the EU Statistics on Income and Living Conditions (EU-SILC), which has been used for elaborating maps herein.

Table 4.2 Definition of at-risk-of-poverty or social exclusion rate. Source: EU-SILC

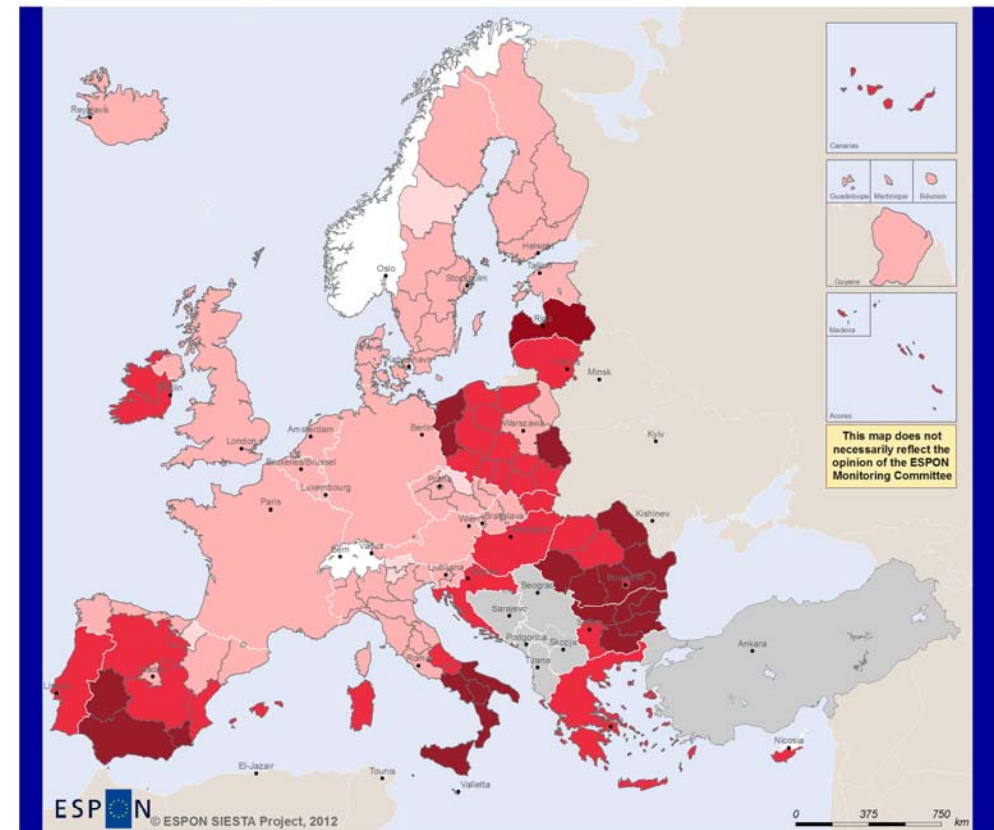
At-risk-of-poverty or social exclusion rate expresses the % of population at least in one of the following three conditions		
<p>At-risk-of-poverty: having an income below the 60% threshold of the national median equivalised disposable income after social transfers</p>	<p>Severe material deprivation: experiencing at least 4 out of 9 following deprivations items: cannot afford i) to pay rent or utility bills, ii) keep home adequately warm, iii) face unexpected expenses, iv) eat meat, fish or a protein equivalent every second day, v) a week holiday away from home, vi) a car, vii) a washing machine, viii) a colour TV, or ix) a telephone</p>	<p>People living in households with very low working intensity: people aged 0-59 living in households where adults work less than 20% of their total work potential during the past year</p>

As a target, the EU2020S envisages reducing the number of people at risk of poverty or social exclusion at least by 20 million by 2020. This is the only headline target that is not a percentage, but a global figure. In 2010 there were more than 115 million people officially considered poor, corresponding to 23.5% of total population, and the reduction of at least 20 million might mean a subtraction of 16.9% with respect to the 2010 value. Map 4.9 shows the distance of each individual region to the EU headline, given that the national targets are inconsistent, comparing the percentage of poor people that would be if this 16.9% was subtracted for each individual territory, on the one hand, and the current percentage of poor people (in 2010), on the other.

In addition to Map 4.9, this subsection consists of five additional maps that deconstruct the aggregate calculations on people at risk of poverty or social exclusion (Table 4.2). Maps 4.10 and 4.11 are referred to the first of the sub-indicators: people at-risk-of-poverty, the former on the current situation (2010) and the latter on the evolution (2005-2010). Then, Map 4.12 shows severe material deprivation and Map 4.13 represents people living in households with very low work intensity. The last cartography is also on the interface between work and poverty (Map 4.14), specifically on long-term unemployment, given that there is a common understanding that this creates poverty condition; this indicator is defined as the share of unemployed people for 12 months or more.

Map 4.9 Regional/national population at-risk-of-poverty or social exclusion represented as distance to the EU2020 target, 2010

- In this Map 4.9 it is assumed that all the regions have to make an effort in order to reduce poverty following the EU2020S but this endeavour will depend on the respective departing point. In this respect, it is forecasted that regions and countries with higher levels of poverty have a bigger distance to the EU2020S target.
- Regions scoring worse are both in East and Southern Europe. In the more extreme situation, there are different Bulgarian, Romanian and Italian regions, plus several regions in Spain, Poland and Latvia. Indeed, three regions in Bulgaria and Romania account for more than 50% of the population statistically defined as at risk of poverty or excluded. These areas constitute territorial challenges that should be specially targeted if the inclusive growth agenda of the EU2020S is really understood.
- There is a marked contrast in the cases of Italy and Spain, whose Northern regions have to make a small effort, while Southern regions have unacceptable levels of poverty or social exclusion that require a particular attention.
- Although poverty and social exclusion are territorially challenging, member states have paid limited attention to this target. Indeed, this is the headline target with feebler commitment by countries within the EU2020S: 2 countries do not have set a target, 7 countries have set a target but it is not comparable with the overall EU headline (using different indicators and making the EU target application in each country ambiguous) and the other 18 have a target but it is always under the EU expectations. The EU2020S might be an opportunity for fighting against poverty in time of crisis, but the different countries do not seem specially persuaded in this respect. In short, the implementation of inclusive growth pillar, thus the whole EU2020S, remains dubious.



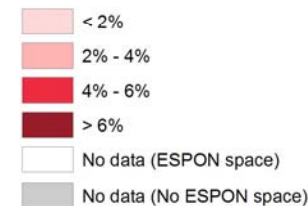
ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS0
Source: Seventh progress report on economic, social and territorial cohesion.
Origin of data: Seventh progress report on economic, social and territorial cohesion.
© EuroGeographics Association for administrative boundaries

Distance in percentage of population at risk of poverty or social exclusion in relation to EU 2020 Target (%).

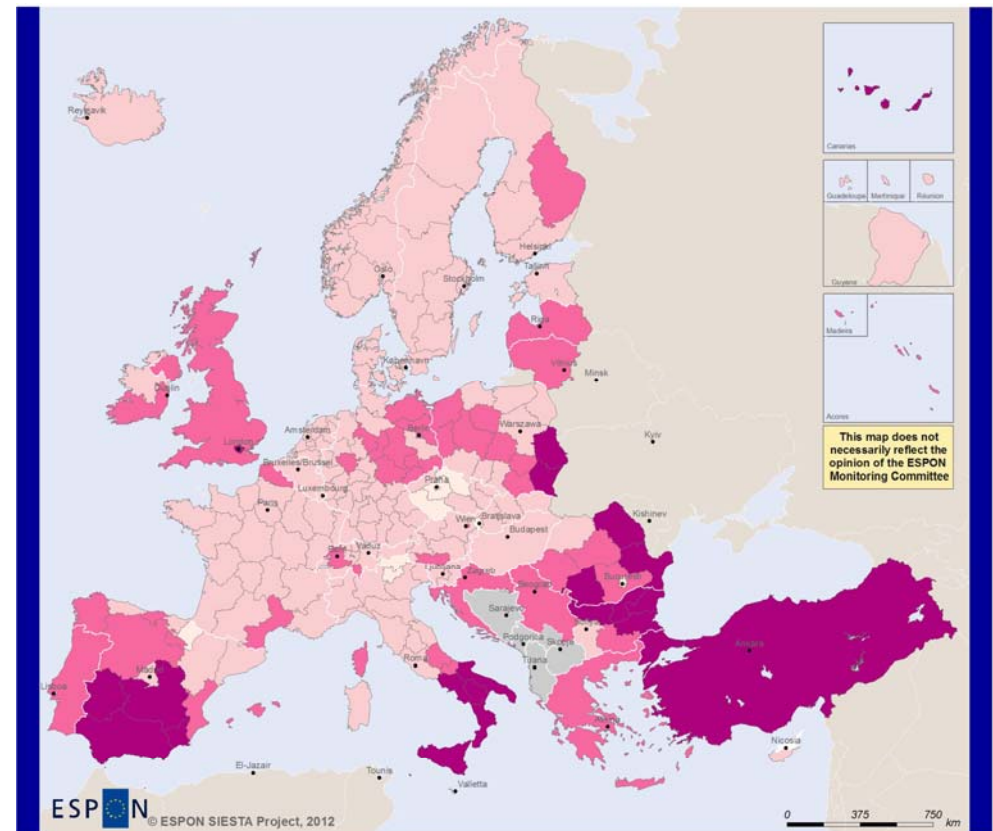
Above EU 2020 Target (%)



Notes:
In 2010 23.5% were at risk of poverty or social exclusion in the EU27.
The Europe 2020 Target is to reduce the people at risk of poverty or social exclusion by at least 20 million people.

Map 4.10 Regional people at-risk-of-poverty after social transfers, 2010

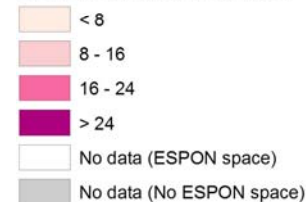
- According to Table 4.2, this is a state-based indicator of poverty showing social inequalities in regions in relation to a state-based income trend. That means that regions are referred to as national values, rather than the EU. In this respect, the analysis of the map is quite blurred.
- In general, there are not considerable variations within the most developed countries (towards the North and the West), while in the Eastern and Southern countries internal heterogeneity is marked, i.e. Italy, Spain, Bulgaria, Romania or Poland. This suggests that poverty is a very territorial issue in several countries, especially those more peripheral, while poverty is distributed more equally in 'central' countries.
- Such verification suggests that poverty is a very territorial issue in several countries, especially those more peripheral, while poverty is distributed more equally in 'central' countries. This provides a substantial evidence for cohesion policies in the sense that poverty needs to be territorially targeted in several countries, while in others poverty depends more on social variations rather than on territorial issues. In this respect, in territorial terms poverty is specially challenging in the peripheral countries, while in the central ones poverty seems to mainly refer to other factors.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS1 and NUTS0
Source: EUROSTAT
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

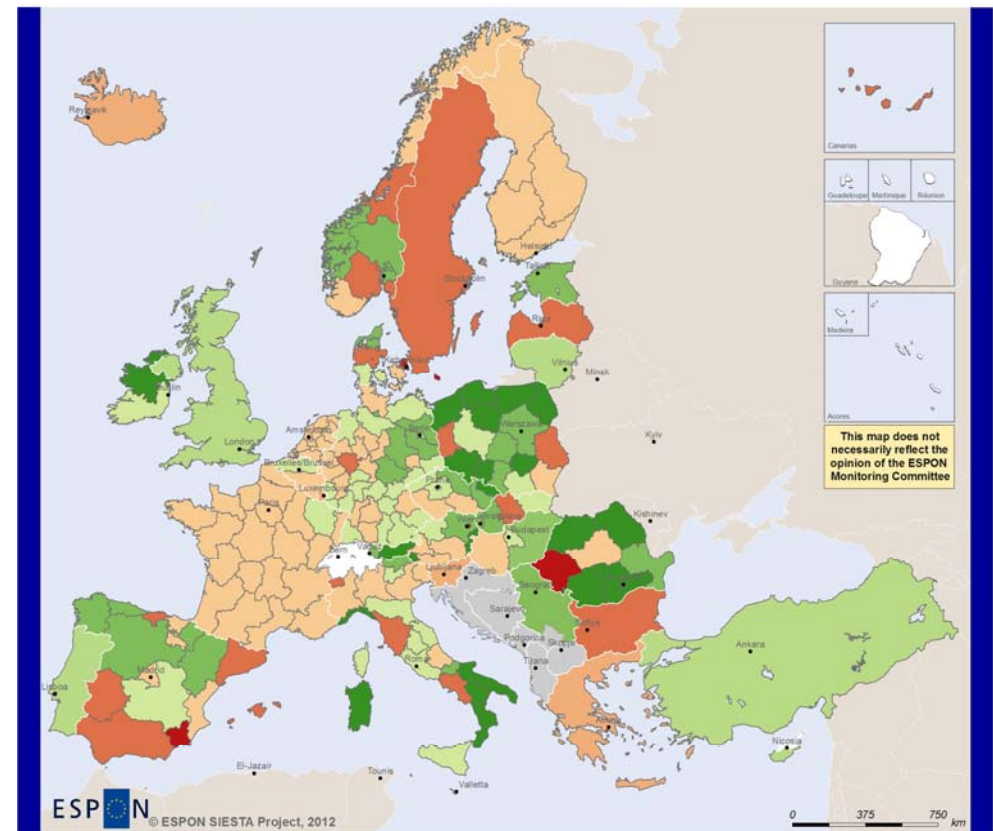
At risk of poverty rate, 2010.



Notes:
BE, EL, NO, and UK are shown at NUTS1 level.
HR, RS, TR and PT are shown at country level.
Data for FR, TR, UK, NL and RS are for 2009.
Indicator definition: The share of persons with an equivalised disposable income below the risk of poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers).

Map 4.11 Change in regional people at-risk-of-poverty after social transfers, 2005-2010

- Again, this map makes sense internally for each country. Most of the countries show severe imbalances in terms of change (the most outstanding exceptions being France, the Netherlands or Finland) and that means that the regional scale is especially pertinent in dealing with temporal variation of poverty. For instance, in Romania there have been positive variations everywhere, but in Transylvania and Banat the change has been negative, with increasing levels of poverty. In Spain, the South and some of the most developed regions (Catalonia, the Basque Country or Madrid) are apparently becoming impoverished, while others are improving their situation, thus poverty diminishes. This contradictory internal pattern is found also in Denmark, Poland, Germany, Italy or Norway.
- In general, regions in Eastern Europe, accounting for more poor people as reported above, are experiencing a positive change in terms of reduction of people classified as at-risk-of-poverty, for instance the Baltic regions of Poland.
- In contrast, most of the Western or Scandinavian regions are experiencing negative changes, although these changes tend to be soft, with some extreme values in Wien (5.4%), Copenhagen (4.6%) and Murcia (4.2%).
- It is challenging that several regions have shown great decreasing trends in this particular indicator. These regions deserve specific attention in order to stop with this alarming trend.
- To sum up, poverty has to be assessed at the regional scale and changes can take place very quickly, so they need to be properly managed. Following the considerations raised for the [Map 4.9](#), it does not seem that this is currently the case.



ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS1 and NUTS0
Source: EUROSTAT EU-SILC
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

Percentage points difference (%), from 2005 to 2010.

Positive change (%)

Negative change (%)

< -4%

0% - 2%

-4% - -2%

2% - 4%

-2% - 0%

> 4%

No data (ESPON space)

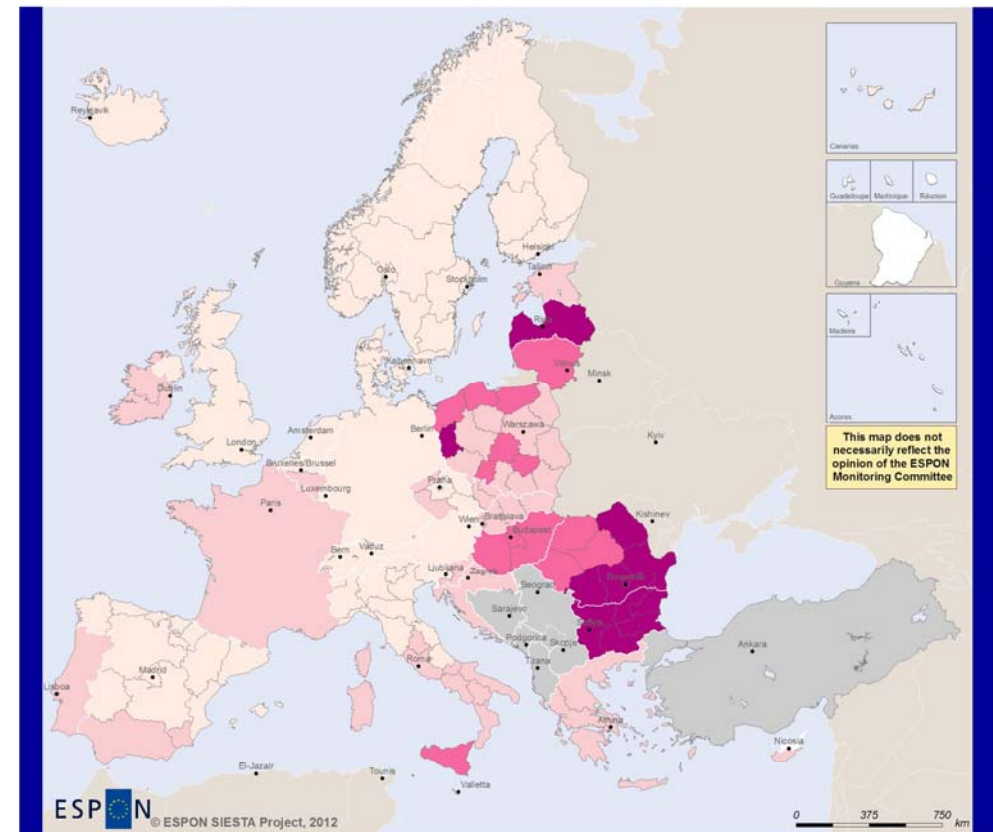
No data (No ESPON space)

Notes:
BE and EL are shown at NUTS1 level.
BG, TR, SE and UK are shown at country level.
Data for TR, FR and RS show the change 2005 - 2009.
Data for FR, NL and RS show the change 2006 - 2009.
Data for DK and RO regions show the change 2007 - 2010.

Regions in green colours show a reduction in their poverty rates between 2005 and 2010.
Regions in brown colours have suffered an increase in their poverty rates between 2005 and 2010.

Map 4.12 Severe material deprivation rate as percentage of total regional population, 2010

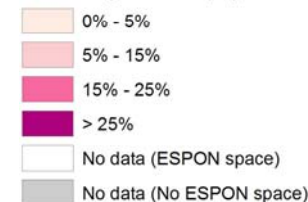
- Bearing in mind the definition available in [Table 4.2](#), the most outstanding conclusion on material deprivation is that Eastern Europe, that is, the countries joining the EU post-2004 clearly tend to score worse. In Romanian and Bulgarian regions more than 30% of the population suffers severe deprivation, the highest value scored by Severen tsentralen (44.2%).
- In contrast, Western Europe, but also the Czech Republic and Slovakia, perform better, with very low values of material deprivation. The geographical unit with the lowest value is Luxemburg (only 0.5% of its population suffers material deprivation). The worst value in the Western context is Sicilia (16.2%), comparable with Eastern European standards.
- It is odd that regions that in [Map 4.9](#) show high rates of people suffering poverty or social exclusion do not have problems of material deprivation at all. This is the case of Southern Spain or Southern Italy, where poverty does not seem to depend on material deprivation.
- It can be argued that this map is one of the most relevant for understanding the geography of poverty in Europe because of its palpable material implications. Consequently, Eastern Europe, and especially Romania and Bulgaria, require strong action in this respect if the inclusive agenda is to be truly pursued.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS1, NUTS0
Source: EUROSTAT EU SILC
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

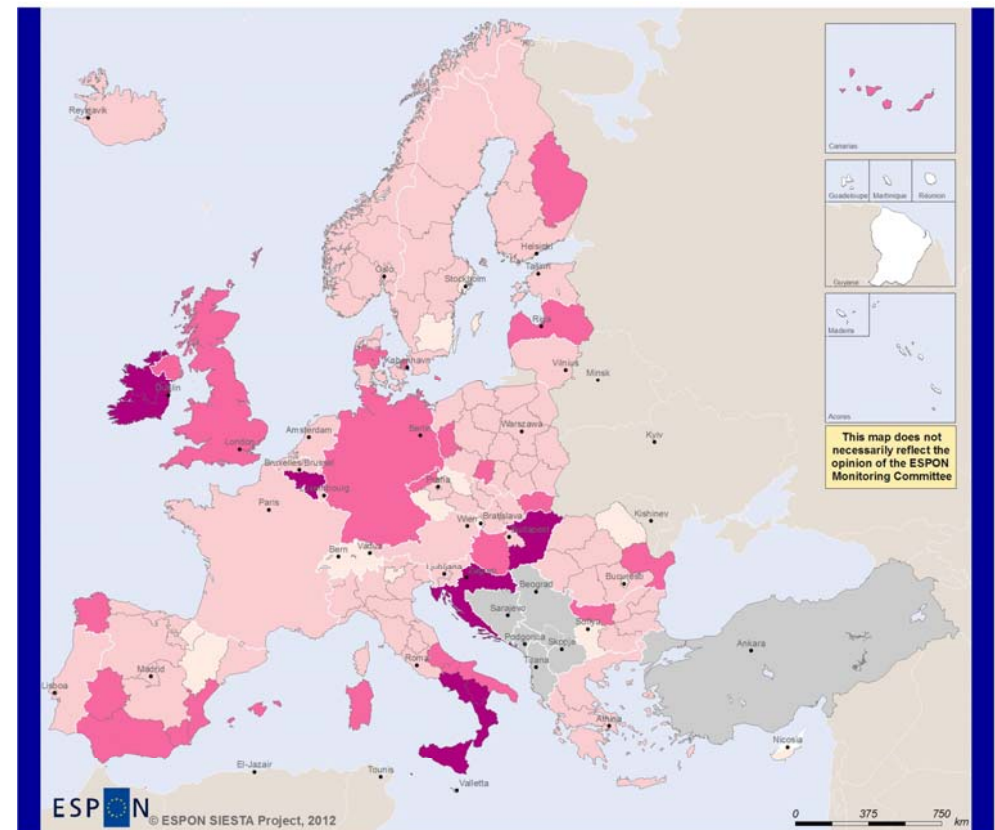
Percentage of total population (%), 2010.



Notes:
BE, EL and HU are shown at NUTS1 level.
FR, DE, UK, AT, EL and PT are shown at country level.
Definition: Material deprivation refers to a state of economic strain and durables strain, defined as the enforced inability (rather than the choice not to do so) to pay unexpected expenses, afford a one-week annual holiday away from home, a meal involving meat, chicken or fish every second day, the adequate heating of a dwelling, durable goods like a washing machine, colour television or telephone.

Map 4.13 Regional people living in households with very low work intensity as percentage of population aged 0 to 59, 2010

- This map is related to the maps on unemployment (for instance, [Map 4.5](#)) but it is directly derived from the fact that the calculations on poverty take actively into consideration the percentage of people with very low work intensity ([Table 4.2](#)).
- There are regions with high rates of unemployment that do not score particularly bad on [Map 4.13](#), for instance Southern and Eastern Spain; that might be evidence that, despite unemployment being important, in average households there are still persons working; nevertheless, the increasing levels of unemployment in Spain might be making this indicator worse.
- On the other hand, specific regions which do not account for high rates of unemployment appear on this [Map 4.22](#) as having high rates of people living in households with very low intensity (for instance, Wallonie or Ireland); this might express that in these regions unemployment is comparatively low but it affects especially familiar units of particular social classes.
- Areas with high concentrations of people living in households with very low work intensity should be especially targeted, for instance in Ireland (the country scoring worst, with 22.9%), Ceuta (the region scoring worst, with 27.4%), Bruxelles-capitale (23.1%), Wallonie (17.8%) or Southern Ireland (above 15%).



ESPON
© ESPON SIESTA Project, 2012

EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2, NUTS1, NUTS0
Source: EUROSTAT EU SILC
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

Percentage of population aged 0 - 59 (%), 2010.



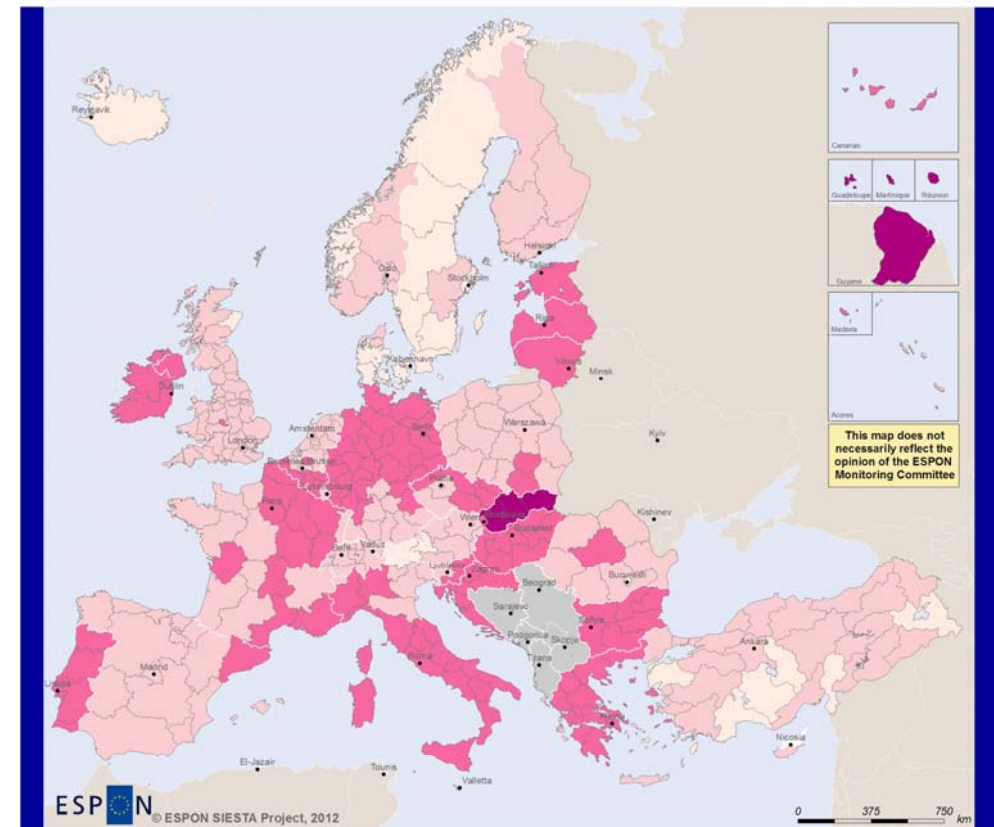
Notes:
BE, EL and HU are shown at NUTS1 level.
AT, DE, FE, NL, PT and UK are shown at country level.

The indicator people living in households with low work intensity is defined as the number of persons living in a household having a work intensity below a threshold set at 0.20.

Definition: The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period.

Map 4.14 Regional long-term unemployment as percentage of the unemployed population, 2010

- Long-term unemployment correlates only slightly moderately with unemployment, according to SIESTA's calculation for NUTS2 regions. That means that in general they work together, but there are exceptions. A region having top unemployment does not necessarily have top long-term unemployment. For instance, as shown on [Map 4.14](#) Slovakia has all its regions (except Bratislava) with high levels of long-term unemployment (almost 70%), while the countries and regions with top unemployment are mainly located in Southern Spain and the Balkans ([Map 4.5](#)). In any case, the situation in Slovakia seems to be very specific and requires targeted policies.
- In contrast, Scandinavian regions tend to account for very low long-term unemployment, even in regions with unemployment above the EU average (for instance, Upper Norrland in Sweden or Vestjylland in Denmark). That means that in these territories it is likely for an unemployed person to find another job.
- There are specific countries and regions with high shares of long-term unemployment (Ireland, the Eastern Baltic states, Northern Germany, Southern Italy, Greece, etc.) which are challenging, although in some of these cases there are low unemployment rates (for instance, in North-West Germany).
- Long-term unemployment needs to be particularly targeted as becomes structural for regions and for people involved in it, implying an unacceptable loss of human capital.



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS2
Source: EUROSTAT
Origin of data: EUROSTAT, 2012.
© EuroGeographics Association for administrative boundaries

Percentage of unemployed population, 2010.



Notes:

EU27 = 40.10%

Definition: The share of long-term unemployment is the share of unemployed persons for 12 months or more among the total number of unemployed persons, expressed as a percentage.

5. Conclusions: The Uneven Territories of the EU2020S

This Atlas has shown the regional and, when possible, urban dimension of the EU2020S. The conclusion that stands out most is that achieving the smart, sustainable and inclusive growth which is envisaged through the EU2020S is far from near, not only in terms of time but also in territorial terms.

In relation to the temporal dimension, the different headline targets that have been shown are not going to be achieved in a majority of regions or member states and indeed the national targets are in general disappointing in the sense that they do not guarantee that the EU2020S overall aims are attained. It is true that, as reported at the beginning of this Atlas, the European Commission (EC) has acknowledged in late 2011 that not all the regions can or should reach the EU2020S targets that have been set, but in practice the current gap in a large number of regions means that the EU2020S implementation is truthfully not feasible even by 2020 in the EU as a whole.

With regard to the territorial dimension, this Atlas has demonstrated how smart, sustainable and inclusive dimensions of growth are territorially uneven and dissimilarities across the European territory are noticeable and, for several variables, even dramatic. An essential inference derived from these very general verifications is that policy-makers have to take into account that required policies differ enormously between regions and cities, not only for the general scoring or ranking of each individual geographical unit in each one of the topics that are embraced by the EU2020S, but also because of the combination of all of them.

5.1. Unbalanced Territorial Interpretations of the EU2020S through an Aggregate Index

In order to assess the overall fulfilment of the EU2020S, an aggregate index has been developed by SIESTA. This aggregate index measures the distance of regions from eight EU2020S headline targets. A region would score 100 if it had reached all eight targets, while a region farthest away from all eight targets would score 0. The targets are obviously those officially set by the EC, given that the targets nationally set are highly inconsistent as shown across this Atlas.

This aggregate index is represented on [Map 5.1](#) for 2009-2010, taking into account that there are three headlines which are only available at the member state level (the “20/20/20”) and a fourth one has different scales depending on the country (people at-risk-of-poverty or social exclusion).

The first point to retain is that the index is strongly stressed due to the fact that the EU2020S covers a wide range of topics, a range that has been specifically translated into headline targets. In other words, although the regions scoring more are typically accomplishing or almost accomplishing the eight targets, all the regions in intermediate positions are in very different situations which vary from case to case and imply different reasons for their position in the ranking, thus implicitly must be managed through diverse policies and should be the object of different recommendations. In fact, two regions scoring the same might account for very different realities. This is true, but the EU2020S is plural in its very nature and the objective of the aggregate index is to reflect its general fulfilment at the regional scale, rather than scoring each one of its constitutive topics as has been done across the Atlas.

[Map 5.1](#) shows that top positions in the achievement of the regional EU2020S aggregate index for 2009-2010 are all Scandinavian regions, plus Southern Germany, several French regions and South England (basically, North of London, but also Hampshire). In Sweden five regions register an index above 90%. This pattern broadly coincides with two of the three

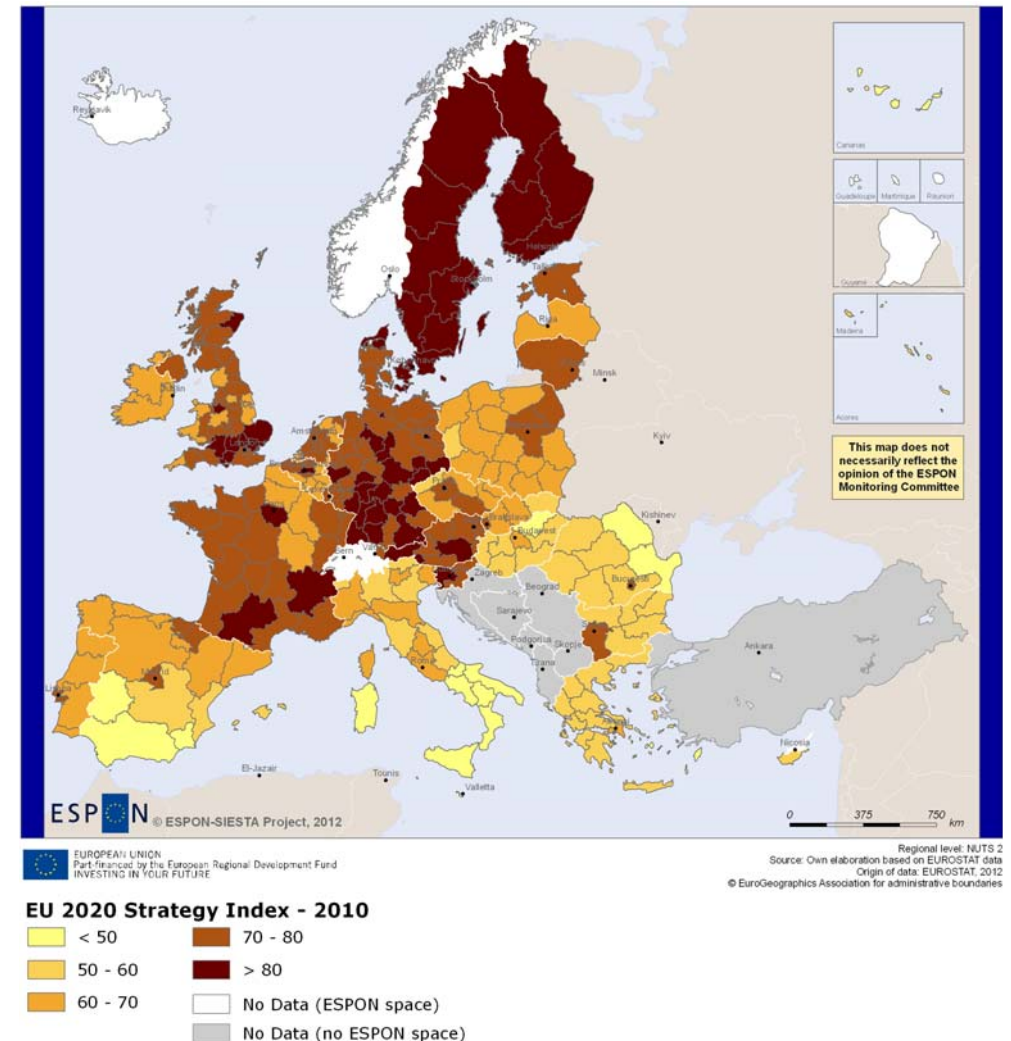
corridors repeatedly identified in relation to R&D and innovation performance: Midi-Pyrénées to Southern Germany and Denmark to Finland. Some capital regions (Île-de-France, Greater London, Berlin, Brussels, Copenhagen, Ljubljana) score particularly high as well and are included in the group of regions above 80%. The third corridor which is usually defined (between Austria and London) is less clear herein, because there are regions scoring relatively poor in relation to their neighbouring geographical units (i.e. Wallonie in Belgium and Picardie or Nord-Pas-de-Calais in France).

In contrast, bottom positions lay in Eastern Romania, Észak-Magyarország (Hungary), Southern Italy and Southern Spain, plus Spanish outermost regions; some of these regions lagging behind score less than 40%. In Spain or Romania, there are dramatic imbalances between regions, with high figures (Madrid, the Basque Country and Navarra in Spain, Bucuresti-Ilfov in Romania) in countries dominated by low figures.

In general, Eastern Europe tends to score worse than Western Europe and the Iron Curtin seems to still be quite easily appreciable on the map, although the Eastern capital regions in general score better and have already attained average EU values: Mazowieckie-Warsaw in Poland, Közép-Magyarország-Budapest in Hungary, Yugozapaden-Sofia in Bulgaria, Bucuresti-Ilfov in Romania, etc.

In order to grasp the regional change experienced in the last few years with available data (2005-2010), [Map 5.2](#) has been prepared. Importantly, this map avoids the non-regionalised data. That means that the change in the aggregate index is based on the four headline targets for which there are datasets (on employment, GERD, drop-out rate and tertiary educated population), excluding the three on environment and energy and the one on poverty.

Map 5.1 Regional EU2020S aggregate index, combined years from 2009 to 2010



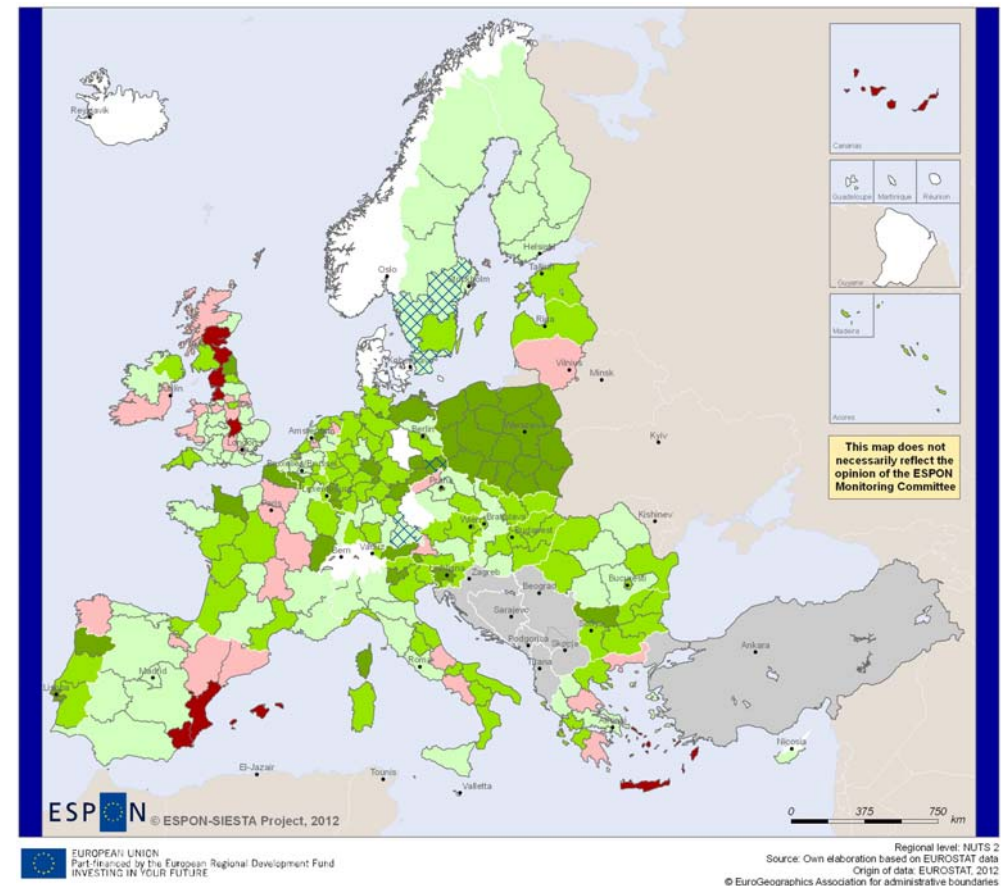
Although the pattern is not evident, the important issue to retain is that Eastern and Central European regions (plus Portugal) progress, notably Poland, while Scandinavian and Southern European regions remain stable, but the former are on top and that means that progress is statistically difficult to take place, while the latter are scoring poorly (Map 5.1). It is worthwhile mentioning that in 2010 there are 5 regions that score 100%, meaning that the 4 considered targets have been already reached therein: Västsverige, Sydsverige and Östra Mellansverige in Sweden, and Dresden and Oberbayern in Germany.

The regions that are decreasing their position are mainly in Greece, Eastern Spain (plus Galicia and the Spanish outermost regions), France, Lithuania and the British Isles. The causes associated with this downgrading are diverse, including:

- In Eastern Scotland, Lancashire and Leicestershire, Rutland and Northamptonshire (the UK) in 2005 the four targets were reached or almost reached, but in 2010 the figures are worsening because of several reasons: in Eastern Scotland and Lancashire because GDP invested in R&D has dramatically decreased, but in Leicestershire, Rutland and Northamptonshire the reason is the decrease in this issue, but also worsening levels of drop-out rates and tertiary educated population rates.
- In Illes Balears, Comunitat Valenciana and Murcia (Spain), the drop in employment is clearly the underlying cause for worsening conditions, but also the worrying increase of the early leavers rate; and unemployment is the same key reason for the diminution in Greek regions such as Kriti, together with the fall of tertiary educated people.
- Ceuta and Melilla (Spain), which are the regions scoring worse in 2010 accounting for the four variables (19 and 24%, respectively), have suffered a severe decrease as well in tertiary educated population.

If in the UK regions the EU2020S is almost accomplished in 2010 by each region and the increase only changes the overall positive situation a little bit with regard to the EU2020S at the regional scale (Map 5.1), in Spain or Greece the EU2020S implementation remains substantially very poor and for this reason the diminution is frustrating.

Map 5.2 Regional change in the EU2020S aggregate index (4 headline targets with available regionalised datasets), 2005-2010



Change 2005-2010 - EU2020S index (4 headline targets)



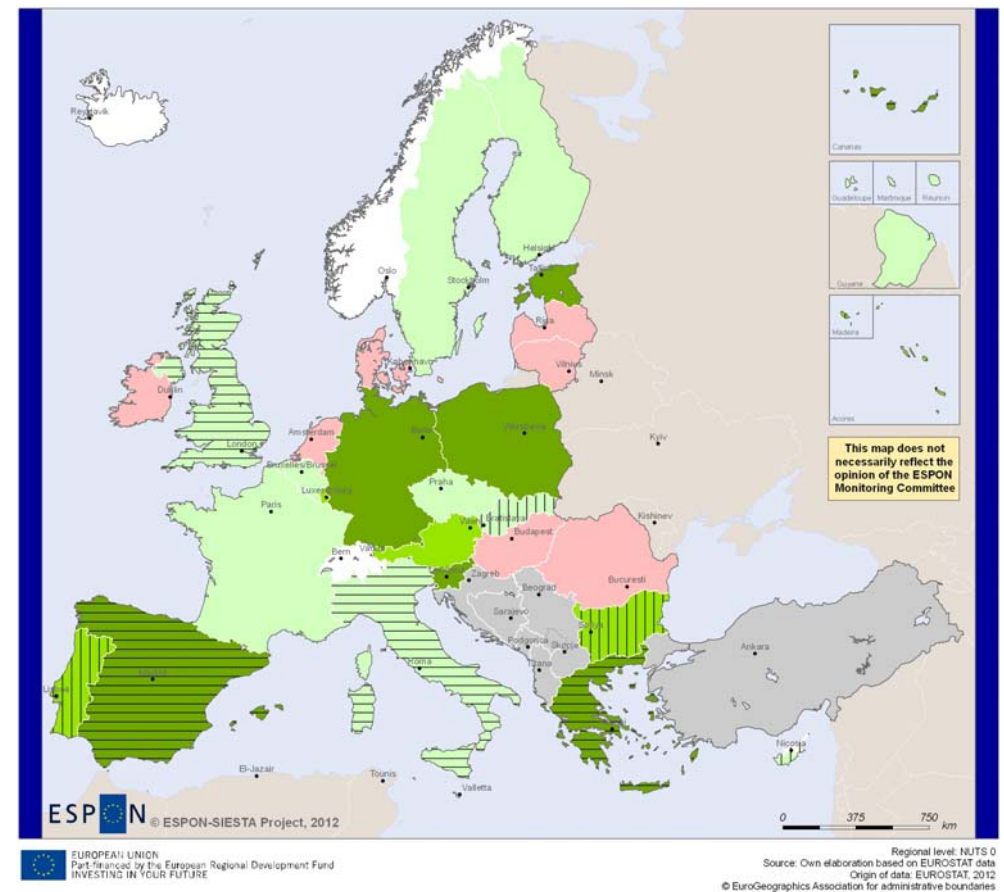
The territorial change from 2005-2010 for all the smart, sustainable and inclusive topics of the EU2020S through the 8 headline targets can only be assessed at the state scale (Map 5.3). The overall picture suggests that the EU2020S is going well in the sense that the majority of countries seem to be improving (19 out of 27).

However, it has to be pointed out that 4 countries have an overall positive behaviour but in fact worsen in the 5 socio-economic headlines and 4 countries have an overall improvement but in their cases the 3 environmental headlines worsen. The latter is the case of Slovakia, Cyprus, Bulgaria and Portugal and the specific headlines that change are different in every nation.

The case of the countries worsening in the socio-economic targets is more crucial, because three countries especially (Spain, Greece and Italy) show a dramatic diminution in these issues, particularly because of a substantial rise in unemployment. In these 3 countries improvement in environmental issues of the EU2020S statistically compensates the distance that is being generated in relation to the EU2020S due to socio-economic topics. But this environmental advance is artificial in the sense that it is mainly motivated by the decreasing levels of economic activity that are automatically reflected in a decline of energy consumption and of GHG emissions, so they cannot be truly considered sustainable growth, following the EU2020S standards.

Because of these comments, the overall picture of Map 5.3 has to be changed and clarified in the sense that the EU2020S is not really successful in each one of the countries, but in fact far from being achieved.

Map 5.3 Change in the EU2020S aggregate index by countries, 2005-2010

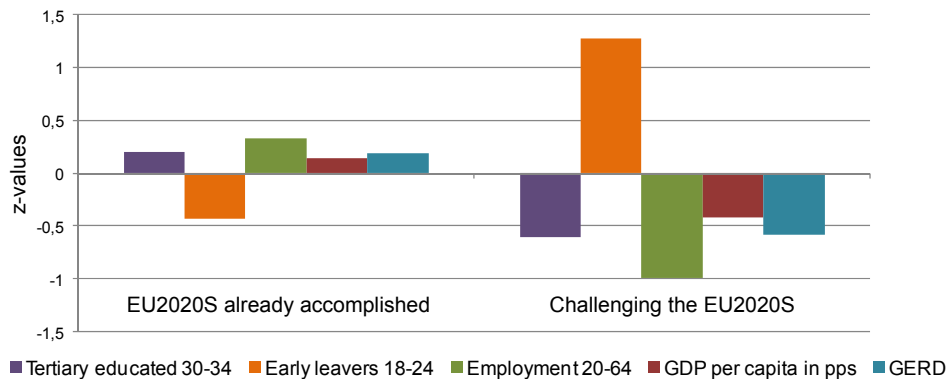


5.2. Territorial Clustering of the EU2020S: towards a Great Division?

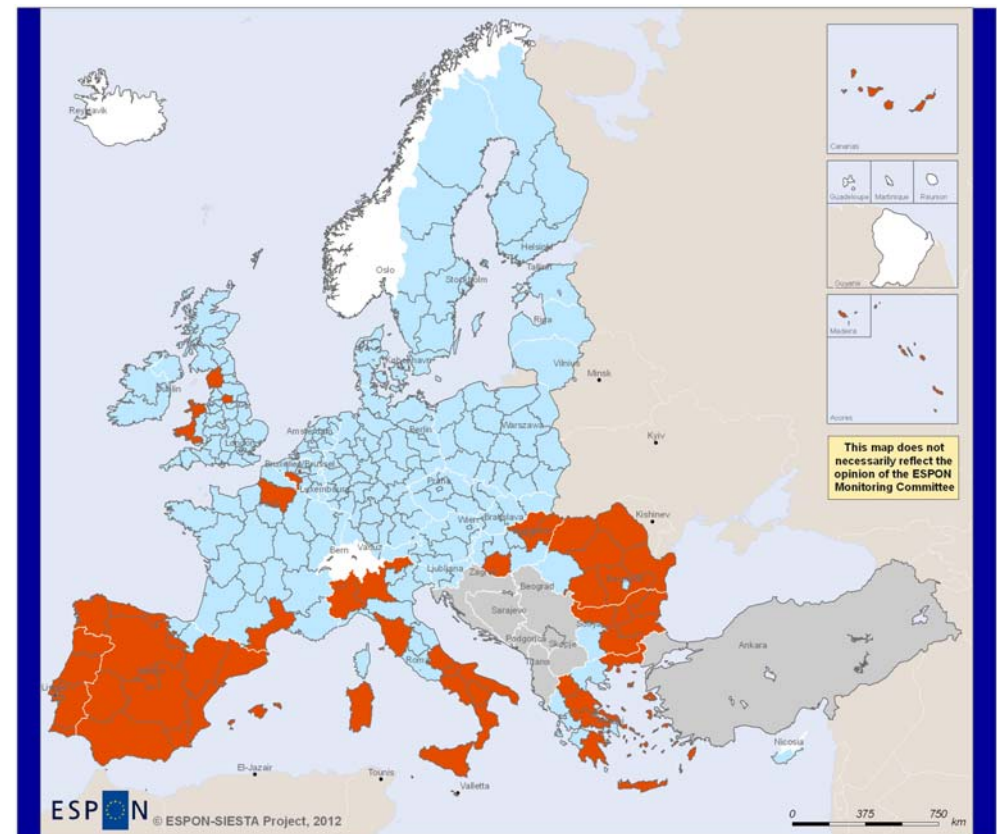
Beyond the aggregate index, a cluster analysis has been carried out by SIESTA. While the aggregate index appraises the territorial ranking in relation to the EU2020S understood as a monolithic block, clustering detects groups of regions which are close to each other in the sense that variables themselves combine. Again, clustering is only possible with data available regionally, that is, the four headline targets used for Map 5.2 (2009-2010). In addition, GDP per capita in pps (2009) has been incorporated because of its obvious implications for measuring growth.

The first map of clusters is Map 5.4, which reflects a basic divide in the EU between two blocks. Elaborated through PCA, it suggests that with regard to the EU2020S the basic distinction has to be made mainly between the North and the South. Throughout the Atlas, usually a division has been made between Eastern and Western Europe, but when the four available headlines according to the EU2020S are mixed together, then the basic divide is between the North and the South. The former is in general already accomplishing the EU2020S, while the latter is challenging this strategic document of the EU.

Graphic 5.1 First regional cluster analysis: 'two blocks' result



Map 5.4 First regional cluster analysis: 'two blocks' result



EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS 2
Origin of data: EUROSTAT, 2012. SIESTA own calculations
© EuroGeographics Association for administrative boundaries

- EU2020S already accomplished
- Challenging the EU2020S
- No Data (ESPON space)
- No Data (no ESPON space)

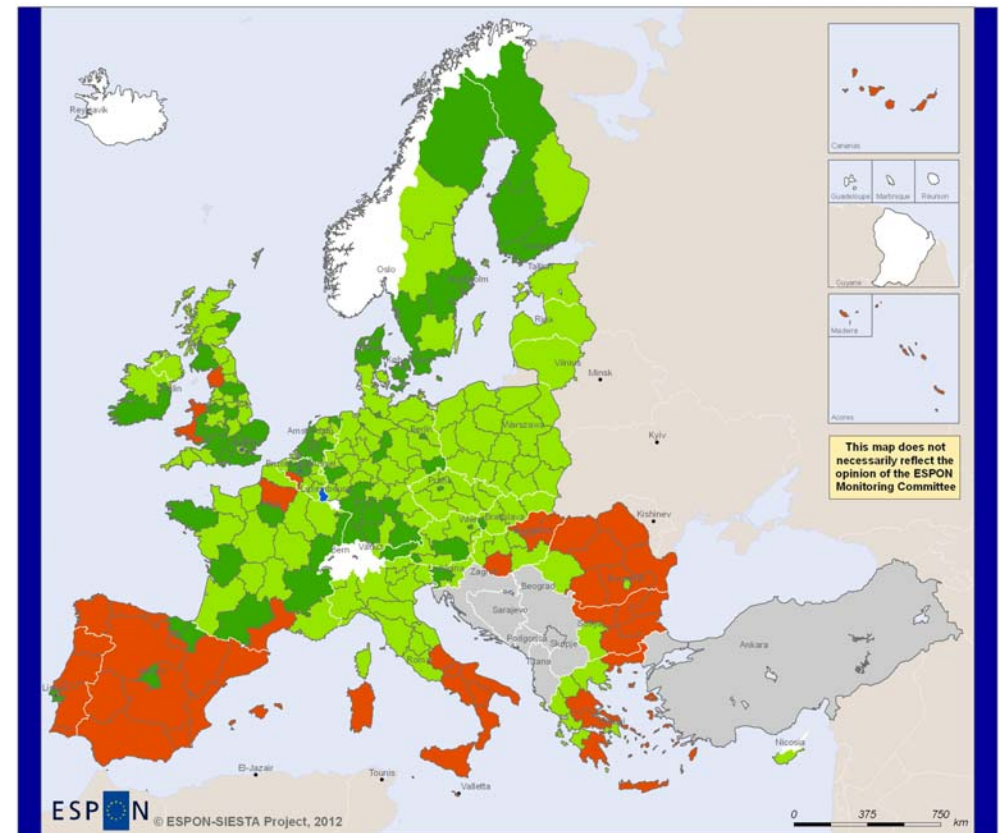
This is a substantial finding, because it proposes that the EU2020S does not have to consider the distinction between the member states pre-2004, on the one hand, and post-2004, on the other. It rather implies that regional scale matters and the attention must be paid to the Southern and Mediterranean Europe, plus the South-East, as a 'problematic' macro-region that needs to be addressed in order for the EU2020S to be achieved across Europe. Obviously, if the sustainable growth items were included, the picture might be different (poverty probably would not modify this analysis too much), but it has to be reiterated that there are no available datasets at regional scale for these issues.

As suggested in [Graphic 5.1](#) and [Map 5.4](#), Southern regions have low shares of higher educated population and very high rates of early school leavers, display very low levels of employment, expend poorly their GDP for R&D and account for a low GDP per capita. In contrast, Northern regions score comparatively better in all these items.

Importantly, the regional scale is essential because in several countries there are important variations, for instance in Italy or in Hungary. In France, Picardie and Languedoc-Roussillon are in the Southern cluster, but the rest of the country is in the Northern. In Spain the situation is the opposite: the Basque Country and Navarra are in the Northern cluster, but the rest of the country is in the Southern. In Bulgaria, Romania or Greece, the respective capital regions escape exceptionally from the Southern pattern, but the contrast between South and North does not seem to generally correlate in any case with the urban-rural reality of the EU.

This early and rough EU2020S division of Europe can be refined with a second cluster analysis, with the same variables as the previous one (four EU2020S headline targets and GDP per capita in pps) but obtaining four clusters of regions ([Graphic 5.2](#) and [Map 5.5](#)). The first cluster is mostly the same as the previous one and coincides with the same items expressed before: bad scoring in education, unemployment, GERD and GDP per capita, that is, seriously experiencing the current crisis and with several problems that tend to be accumulated and that move these territories far away from the EU2020S, thus challenging its implementation.

Map 5.5 Second regional cluster analysis: four clusters of regions



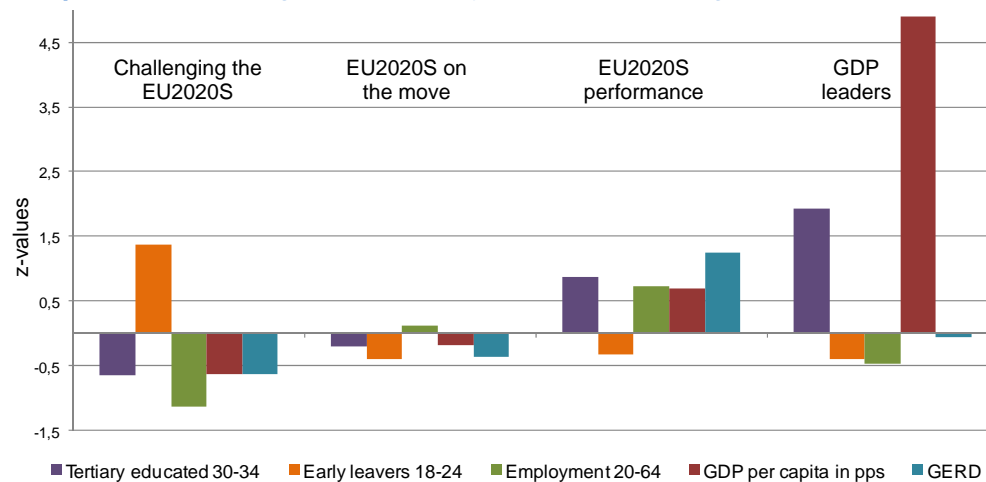
EUROPEAN UNION
Part-financed by the European Regional Development Fund
INVESTING IN YOUR FUTURE

Regional level: NUTS 2
Origin of data: EUROSTAT, 2012; SIESTA own calculations
© EuroGeographics Association for administrative boundaries

Clusters

■ Challenging the EU2020S	■ No Data (ESPON space)
■ EU2020S on the move	■ No Data (no ESPON space)
■ EU2020S performance	
■ GDP leaders	

Graphic 5.2 Second regional cluster analysis: four clusters of regions



In relation to the previous cluster analysis, most of the specific regions that ‘escape’ from this first cluster are capitals (Lisbon or Madrid) and Northern Italy; these regions are comparatively better, but in a first approach they were amalgamated within. In any case, this cluster masks the fact that there are regions scoring quite well in some specific items, for instance most of the Northern Spanish regions in tertiary educated population.

The second cluster consists of regions that do not tend to perform in most of the headline targets, except employment. That means that they are quite weak in tertiary education, early school drop-out, GDP per capita and/or GERD investment, being close to average levels, but in employment they score slightly better than the average. This second cluster is a kind of transition between the performing regions and the regions experiencing severe problems. They are a kind of intermediate situation in terms of the EU2020S implementation and they might advance if proper policies are put in place. The Eastern Baltic States and all Polish regions or all the regions of the Czech Republic and Slovakia (except their respective capitals) are clustered herein, at the same level as most of the typically Western regions or rural regions in Scandinavia or the British Isles; this is substantial as it shows that, according to the EU2020S, they are in quite a comparable, and potential, situation.

The third cluster consists of the performing regions scoring well in the headline targets set by the EU2020S. Arguably, these regions are the most dynamic and competitive in the EU economy and ready to compete globally. Unsurprisingly, the outstanding capital regions (London, Île-de-France, Madrid, Berlin, Wien, Prague, etc.) are comprised therein. Again, the three corridors that previous researchers have suggested for high levels of R&D and innovation are appreciated on [Map 5.5: Midi-Pyrénées to Bavaria, Austria to London and Copenhagen to Helsinki](#); even the well-known metaphor of the “blue banana” is easily seen, embracing most of the regions of the Benelux. The fact that these regions tend to score well cannot mask the fact that there are internal variations, with some regions having specific problematic issues according to the EU2020S.

The fourth cluster is defined specifically depending on high levels of GDP per capita: Inner London, Brussels and Luxembourg. These might be considered the best performing territories of Europe in terms of economic growth, but [Graphic 5.2](#) suggests that they follow the EU2020S in an uneven manner. Indeed, and except for the data on GDP per capita and tertiary educated population, they are more similar to the second cluster than to the third.

5.3. Concluding Remark

To sum up, the aggregate index and the cluster analyses have shown how the EU2020S as a whole has an uneven geography, a conclusion that reinforces the previous sections of the Atlas that have been repeatedly reporting the complex territorial dimension of each one of the constitutive topics under the sustainable, smart and inclusive pillars of the EU2020S that have been reviewed. In this sense, the Atlas provides important insights as it sets out which is the regional/urban starting point for implementing the EU2020S and, importantly, it clearly demonstrates that this regional/urban understanding of the EU2020S is pertinent. The open question that remains is how policies, especially the cohesion policy, will be able to face the challenges highlighted herein. However, what is also needed is that the spirit of the EU2020S is spread beyond the EU institutions and reaches each one of the regions and cities that have been analysed throughout these pages.

www.espon.eu

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

ISBN