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Sixth report on economic, social and territorial cohesion: Investing in Europe's Future

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Box on new degree of urbanisation and urban-rural typology

Since the 5th Cohesion Report, the European Commission has developed a new typology of local areas which is linked to a typology of regions¹.

Both typologies rely on a new analytical tool, the population grid, which is used to identify three types of cell:

- (1) urban centre (alternative name: high-density cluster): contiguous grid cells of one square km with a density of at least 1 500 inhabitants per square km and a minimum population of 50 000
- (2) urban cluster: contiguous grid cells of one square km with a density of at least 300 inhabitants per square km and a minimum population of 5 000;
- (3) rural grid cell: grid cells outside urban clusters;

These are then used to define three types of municipality (local administrative units level 2) as follows:

- (1) cities: at least 50% of the population live in an urban centre
- (2) towns and suburbs: less than 50% of the population live in an urban centre, but more than 50% live in an urban cluster;
- (3) rural areas: at least 50% of the population live in rural grid cells.

These cells are also used to define NUTS-3 regions as follows:

- (1) predominantly urban: less than 20% of the population live in rural grid cells;
- (2) intermediate: between 20% and 50% of the population live in rural grid cells;
- (3) predominantly rural: at least 50% of the population live in rural grid cells.

This creates an especially close link between rural regions and rural areas which are defined in the exact same way.

Box on EU-OECD city and commuting zone definition and metropolitan regions

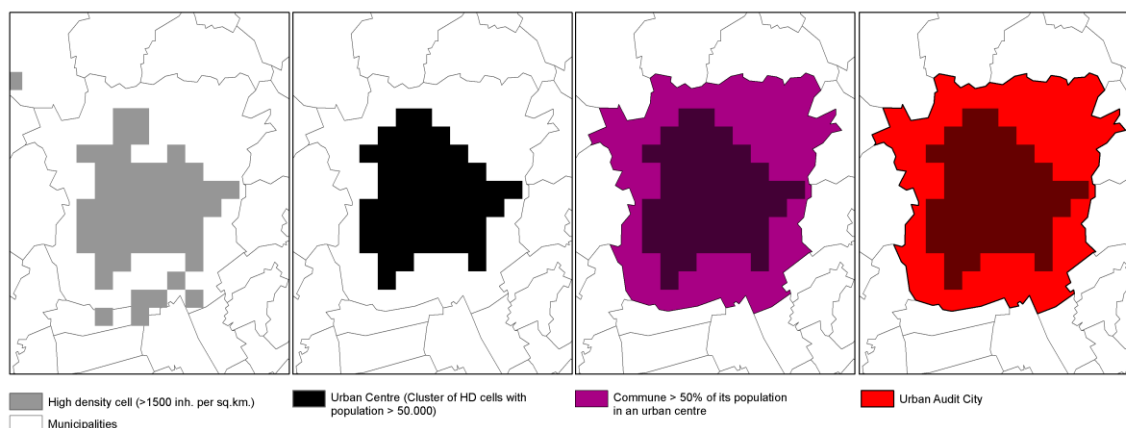
The new EU-OECD definition is linked to metropolitan regions.

The cities in this new definition are identical to those identified by the degree of urbanisation (see above). A city is defined as one or more municipalities (local administrative unit level 2) that have at least 50% of their population living in an urban centre.

¹ http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Urban-rural_typology

The commuting area of the city is defined as all contiguous municipalities where at least 15% of the residents in employment commute to the city. Municipalities below this threshold but surrounded by municipalities above this threshold are also included in the commuting area. (For more details, see Dijkstra and Poelman 2012² and OECD 2012³). The city and its commuting zone form a functional urban area.

High density cells, urban centre and city (Graz)



This report includes data for urban centres (see access to public transport), cities (see at risk of poverty) and cities and their commuting zone (see air quality).

The metropolitan regions⁴ represent cities plus commuting zones of more than 250 000 inhabitants. If a NUTS-3 region has more than 50% of its population living in such a city plus commuting zone, it is considered as (part of) a metropolitan region.

The typology distinguishes three types of metropolitan regions:

- (1) capital city regions (i.e. where the national capital is located);
- (2) second-tier metropolitan regions;
- (3) smaller metropolitan regions.

Second-tier metropolitan regions consist of the largest cities in the country excluding the capital. A natural break in population size was used to distinguish the second-tier from the smaller metropolitan regions.

² Dijkstra L. and Poelman H. 2012, *Cities in Europe, the new OECD-EC definition*, Regional Focus RF 01/2012, DG REGIO.

³ OECD, 2012, *Redefining urban: a new way to measure metropolitan areas*, www.oecd.org/gov/regional/measuringurban

⁴ http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/metropolitan_regions

7. START-UPS RATES AND ENTREPRENEURSHIP RELY ON INDIVIDUAL INITIATIVE AND THE RIGHT INSTITUTIONAL ENVIRONMENT

Business demography reflects the dynamism of an economy through the adaptation of economic structures and entrepreneurs to evolving market conditions. In the period 2014-2020, Cohesion Policy is focussed heavily on supporting smart growth with particular emphasis on innovation and high growth firms, with programmes aimed at supporting the innovative capacity of SMEs. In previous periods too, a substantial share of Cohesion Policy funding has been devoted to improving the business environment and supporting entrepreneurship.

Regional business demography indicators show where new businesses are created and how quickly firms grow. In this section, two main indicators are examined: the birth rate of firm (firms created in a region relative to the number of firms active there) and the death rate (firms going out of business which were last active in the region relative to the total number active).

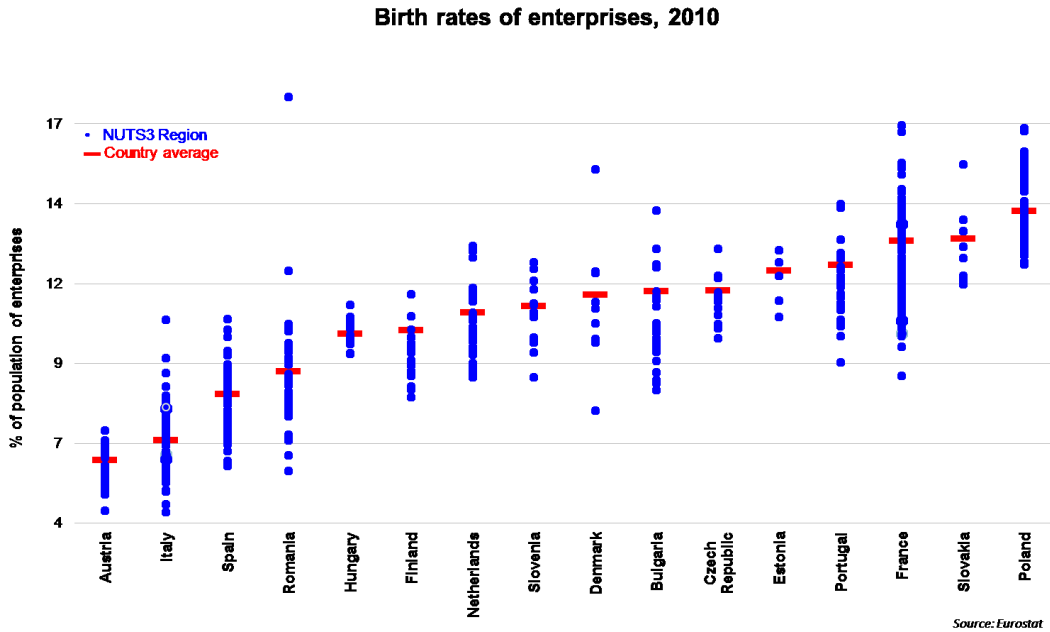
The birth rate of enterprises is one of the main drivers of job creation and economic development. New, innovative enterprises tend to increase the competitiveness of an economy both directly and by pushing competitors to become more efficient. Death rates tend to indicate the economic activities which are no longer profitable.

In 2010, newly-created enterprises tended to be more numerous in (or around) capital city regions, both in more developed and less developed Member States. Birth rates were also high in regions where the economy continued to expand (in Poland especially) or experienced a quick recovery after the severe contraction of 2009 (as in Slovakia) (Figure 14).

In France, which on average recorded a high birth rate of businesses, regional differences are marked, higher rates being registered in outermost and southern regions as well as around Paris and in the regions bordering Belgium and Germany.

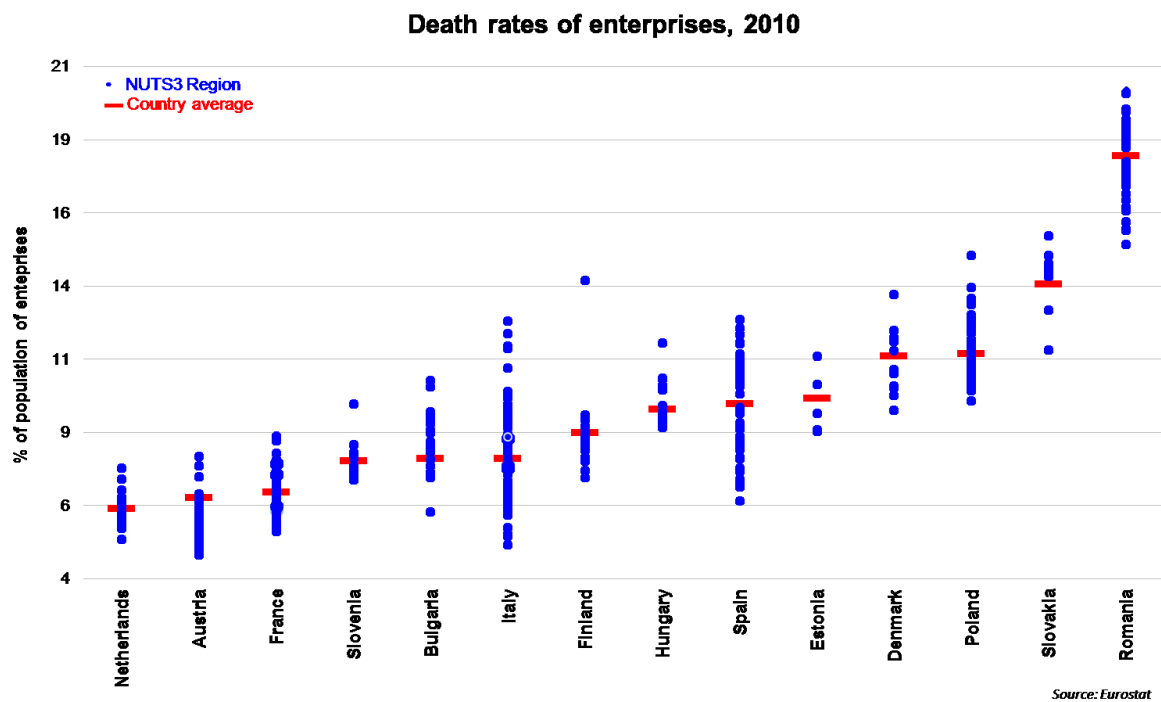
In Austria and Italy, the birth rates were particularly low. . In other countries, there are also large regional difference, though in some cases this is mainly due to a single region, such as Ilfov in Romania, the NUTS 3 region surrounding Budapest and Byen København (with a high rate) and Bornholm (a low rate) in Denmark.

Figure 1 Birth rates of enterprises, 2010



Death rates of enterprises were particularly high in Romania, Slovakia and in most Polish regions as well as in southern regions of Spain (e.g. in Andalusia and Murcia), Italy (e.g. Calabria) and the eastern regions of Denmark. Low death rates were recorded in the Netherlands, Austria, north-east Italy and in several regions in France. Interestingly, regions in Poland and Slovakia tended to record high rates of both births and deaths of enterprises, indicating a particularly high rate of business turnover, or ‘churn’. In Romania, high death rates were accompanied by low rates of birth in 2010 reflecting the further contraction of the economy following the severe recession in 2009.

Figure 2 Death rates of enterprises, 2010



This new set of data on regional business demography has the potential to become a critical policy indicator to measure business dynamics at the regional level. It can reveal where start-up rates are substantially below average or which regions have a high death rate or a low survival rate. All three should give rise to further investigation to identify why the business environment in the regions concerned seems sub-optimal.

Entrepreneurship is an important driver of economic development, restructuring and the growth of regions. Entrepreneurship can be seen as a dynamic, institutionally embedded interaction between the attitudes, abilities, and aspirations of individuals, shaping the allocation of resources through the creation of new ventures and the operation of existing ones. Accordingly, entrepreneurship reflects a complex process involving individual decision-making and the wider context where this occurs. The phenomenon has been studied from both the individual and context angles, but the complex relationship between the two has not been studied before at regional level.

The Regional Entrepreneurship and Development Index – REDI

A recent EU-project⁵ has developed an index (REDI - Regional Entrepreneurship and Development Index) that describes the entrepreneurial process, taking account of both individual attitudes and characteristics and the regional context and, accordingly, not only whether people are willing to start a business but also whether the conditions to do so are in place in the region concerned.

The index is composed of three sub-indices covering entrepreneurial attitudes, abilities and aspirations. Each of the sub-indices has an individual component (relating to the individual decision making behaviour) and an institutional component (relating to the context). Entrepreneurial attitudes indicate the attitudes of the population in a region as they relate to entrepreneurship, including elements such as perception of opportunities and risks, cultural support and networking. These are measured by indicators of market agglomeration, social capital and the extent of corruption. Entrepreneurial abilities measure characteristics of entrepreneurs and business start-ups with high growth potential, such as the take-up of technology, the level of human capital and the degree of market competition. The indicators used include the educational level, the degree of sophistication of businesses and the freedom for businesses to operate. Entrepreneurial aspirations refer to the distinctive, strategy-related nature of entrepreneurial activity such as product and process innovation and access to financing. These are measured by indicators of innovation, R&D and the development of the financial market. The indicators can relate to either regions (NUTS1 or NUTS2) or countries.

The variations in entrepreneurship, as measured, across the 125 regions are substantial (Map 9), with a difference of over four-fold between the region with the highest ranking (Hovedstaden in Denmark) and that with the lowest (Macroregiunea doi in Romania). There are four Swedish, two Danish, two British, one French and one Irish region in the top 10, Hovedstaden being followed by the two regions with the largest cities in the EU, Greater London and Ile de France. Larger, more developed city regions with higher GDP per head generally rank higher than less developed regions in the same country. In most cases, capital city regions are ranked first in each country. The regions with the lowest scores are in Romania, Hungary and Greece.

The index contains both individual-level and institutional or environmental indicators (see box), which reflect the regional context. For example, a factor such as the perception of risk is the outcome of combining an institutional factor (the actual business risk faced by a start-ups as measured by the business closure rate) and an individual one (the personal acceptance of risk by entrepreneurs, measured by the proportion of the population aged 18-64 stating that the fear of failure would not prevent them starting a business).

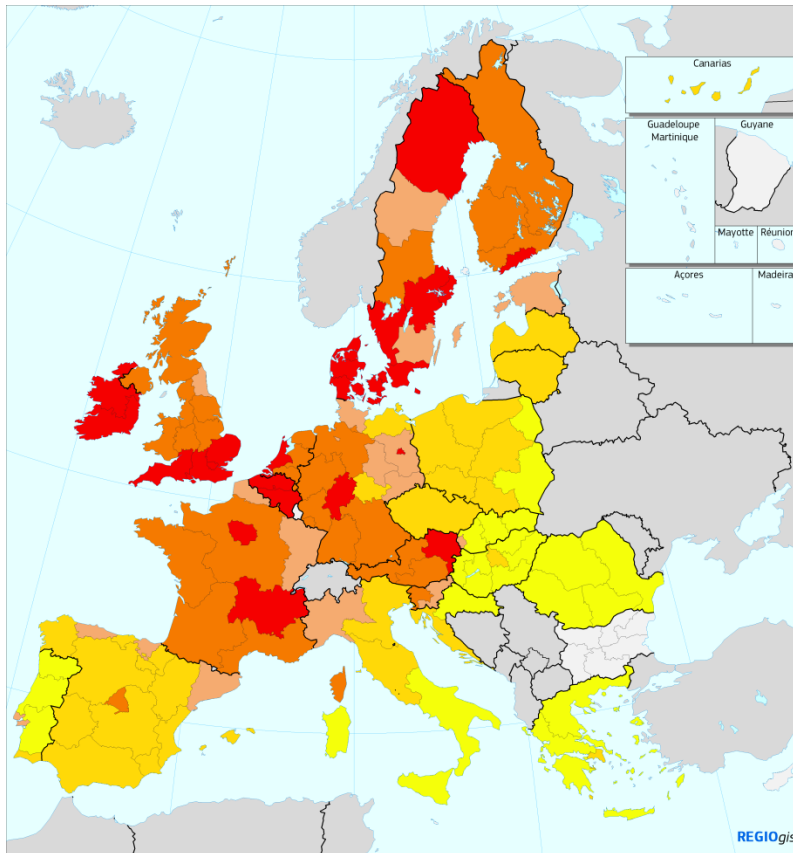
Analysis of the individual aspects gives a different picture than the combined index (Map 10). The top 10 regions of the 'individual' index still include 5 of those in the top 10 of the combined index (e.g. London, Hovedstaden and Ile de France), but there are also the

⁵ Szerb L., J. Acs Z., Autio E., Ortega-Argiles R., Komlosi E., 2013, *REDI: The Regional Entrepreneurship and Development Index – Measuring regional entrepreneurship*, Final report, 2013, Research financed by the European Commission Directorate-General Regional and Urban Policy

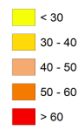
two Slovenian regions and the two Irish ones. The bottom 10 regions, unlike in the case of the combined index, include three German and four Polish ones.

This analysis can help regions tailor their strategies to remove the key bottlenecks to unleash the potential of entrepreneurship, including social entrepreneurship.

Map 1 REDI combined index



The Regional Entrepreneurship and Development Index (REDI)

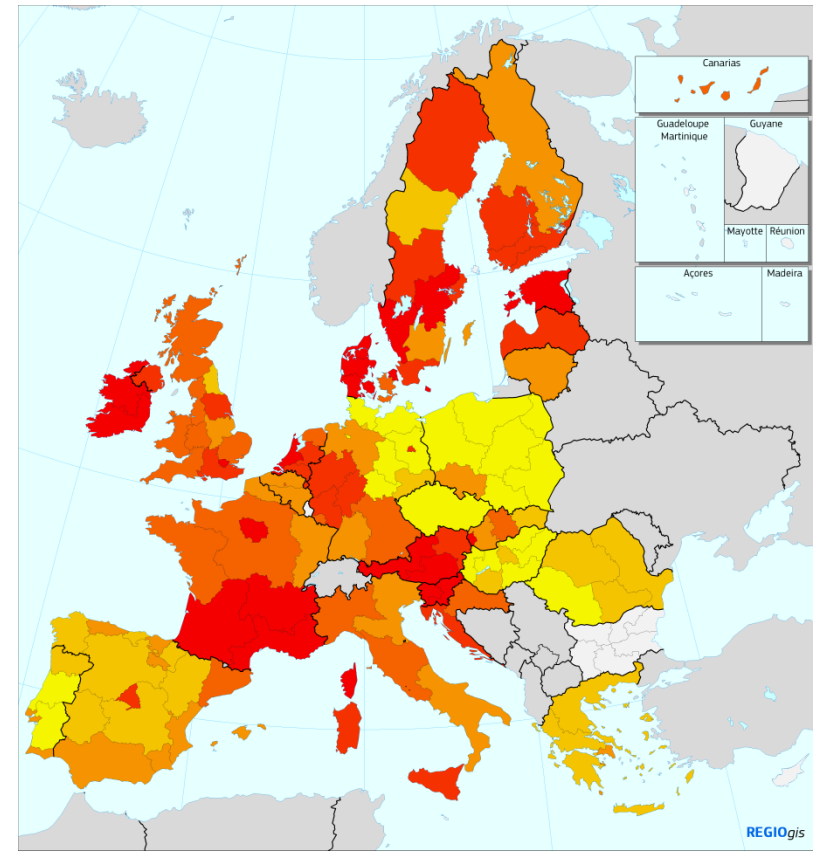


Source: UNIVERSITY OF PÉCS, Faculty of Business and Economics

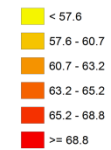


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Map 2 REDI individual dimension



The Regional Entrepreneurship and Development Index (REDI) - individual Score



Source: UNIVERSITY OF PÉCS, Faculty of Business and Economics



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8. INNOVATION REMAINS SPATIALLY CONCENTRATED

As widely documented in the economic literature, research and innovation play a critical role in determining the economic performance of countries and regions. Innovation, understood in the broad sense to include product, process, market and organisational innovation, is identified as one of the major engines of economic growth, employment and ecological sustainability and accordingly is of critical importance for social progress as well as prosperity.

In particular, innovation is an important driver of long-run productivity growth and, as such, is crucial for maintaining the competitiveness of firms over their rivals. This is particularly true for firms in Europe which more and more compete with firms located in less developed parts of the world and in emerging economies. These are not only catching up fast in terms of technology but they also continue to benefit from lower labour costs due in part to different standards in the organisation of the labour market, a lack of social protection for workers and lower income expectations, though low labour costs are offset to some extent by lower productivity. From this perspective, innovation, as well as the capacity to assimilate innovation produced elsewhere, can be regarded as an important condition for maintaining the specific features of the European social model.

In addition, contrary to growth obtained from restructuring economies, growth arising from innovation is in principle without bounds, which is why it is central to securing economic growth and development in the long-run⁶.

One of the main indicators for assessing investment in innovation is the level of regional expenditure on research and development (R&D).⁷ Technical progress is to a large extent driven by R&D activities and expenditure on R&D indicates the effort devoted by the public sector and firms to generating innovations and new market opportunities.⁸ The role played by R&D in supporting key engines of growth has made it a headline target objective of the Europe 2020 strategy, specifically that expenditure on R&D in the EU should reach 3% of GDP by 2020.

According to the latest data available, expenditure on R&D in the EU-28 amounted to around 2% of GDP in 2010. However, there is wide variation around the average with some regions – Braunschweig in Germany and Brabant Wallon in Belgium –having expenditure on R&D as high as 8% of GDP and others (Ciudad Autónoma de Ceuta in Spain, Dytiki Makedonia and Notio Aigaio in Greece, and Severozapaden in Bulgaria) having expenditure of only around 0.1% of GDP.

⁶ The importance is recognised by the Innovation Union Initiative launched in 2010 as part of the Europe 2020 strategy which is aimed at boosting research and innovation throughout the EU through 34 action points.

⁷ It should be noted however that if R&D expenditure is likely to underestimate innovation activities, particularly in sectors outside manufacturing where non-technological innovation is frequent (see the section on the Regional Innovation Scoreboard below).

⁸ Note that R&D expenditure is an input measure which does not capture the extent to which this expenditure is actually transformed into innovations and, more specifically, commercial innovations.

R&D expenditure in the Union has steadily increased over the past decade, from 1.8% of EU-27 GDP in 1995 to 2.0% in 2011. However, the pace of this increase is too slow to close the gap with other highly developed economies in the world, like Japan where R&D expenditure amounted to 3.7% of GDP in 2011 or the US where it stood at 2.9% of GDP.

In general, regions with high expenditure on R&D are the most highly developed ones. Of the 20 regions in the EU with the highest expenditure on R&D, 16 have a level of GDP per head above 100% of the EU-27 average. The vast majority of regions recording low levels of expenditure on R&D are located in southern, central and eastern Member States or are regions with relatively low levels of GDP per head in the Western Member States.

8.1. R&D and the 2020 target

Expenditure on R&D in 2011 exceeded the Europe 2020 target of 3% in only 32 regions in the EU and it was less than 1% in 100 regions. Expenditure in the majority of regions is far below the national target, which for most Member States is below the overall target. Only in 32 regions has expenditure reached the national target and even in Member States with expenditure close to the national target (e.g. Denmark, Sweden and Germany), regional disparities are still considerable.⁹ However, not all regions can or should try to reach the national target since regional differences in this regard are an inherent feature of the situation, as noted below.

R&D expenditure is generally high in regions with a large city, though the regions with the largest city, which is usually the capital, do not in all cases have the highest levels. Indeed, many regions with high expenditure do not have a very large city, such as Oulu in Finland or Styria in Austria. In part, this is because very large cities tend to have a smaller share of activity in manufacturing, which generates most R&D.

R&D by no means captures all expenditure on innovation. While it captures a large share of innovation expenditure in manufacturing, misses most of the expenditure in services. Because manufacturing is spatially concentrated, it is unrealistic to expect that all regions can reach the national target for R&D spending. Indeed, due to the positive ‘externalities’, or spill-overs, from concentration of technological innovation in a few locations, many regions should not aim to reach their national R&D target, but should focus instead on other ways to innovate.

Table 1 Total R&D expenditure and the distance to the 2020 target, 2011

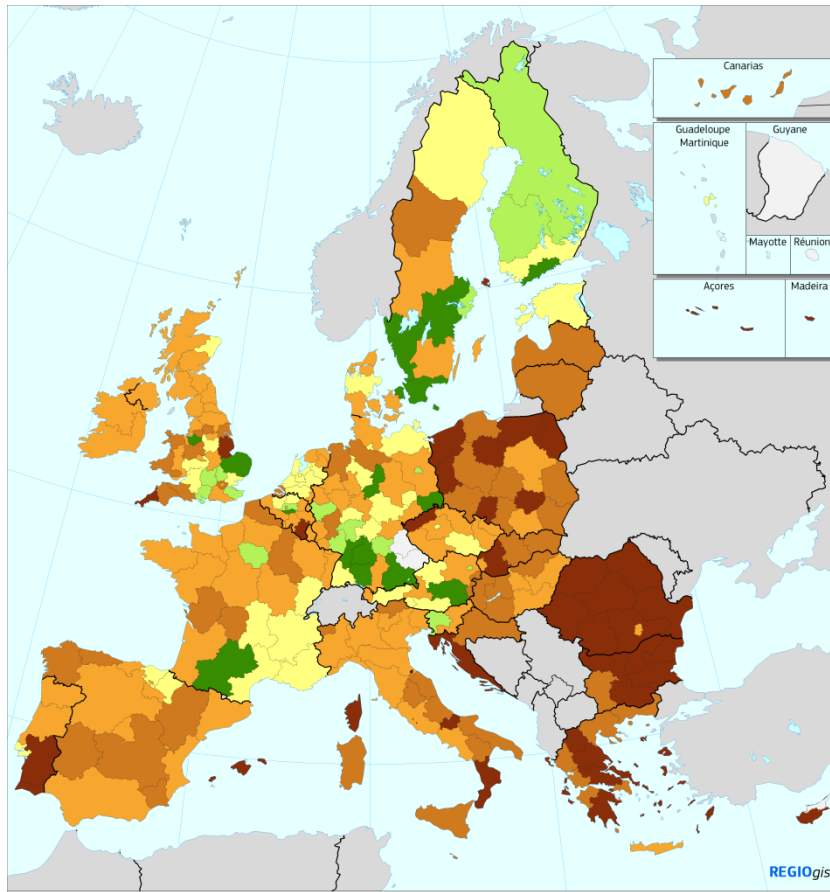
	More developed	Transition	Less developed	EU-28
RD as % of GDP, 2011	2.3	1.3	0.8	2.1
distance to national target	0.4	1.4	0.9	0.9
Share of regions* that have reached national target in %	21	8	5	14

* Includes only regions with data and a national target

Source: Eurostat and DG REGIO calculations

⁹ See ESPON (2013), *Territorial Dimension of the Europe 2020 Strategy*, ESPON Atlas.

Map 3: Total expenditure on R&D, 2011



Total expenditure on R&D, 2011

% of regional GDP

< 0.5	3 - 4
0.5 - 1	>= 4
1 - 2	no data
2 - 3	

EU-28 = 2.04
FR91:2009 LU:2010

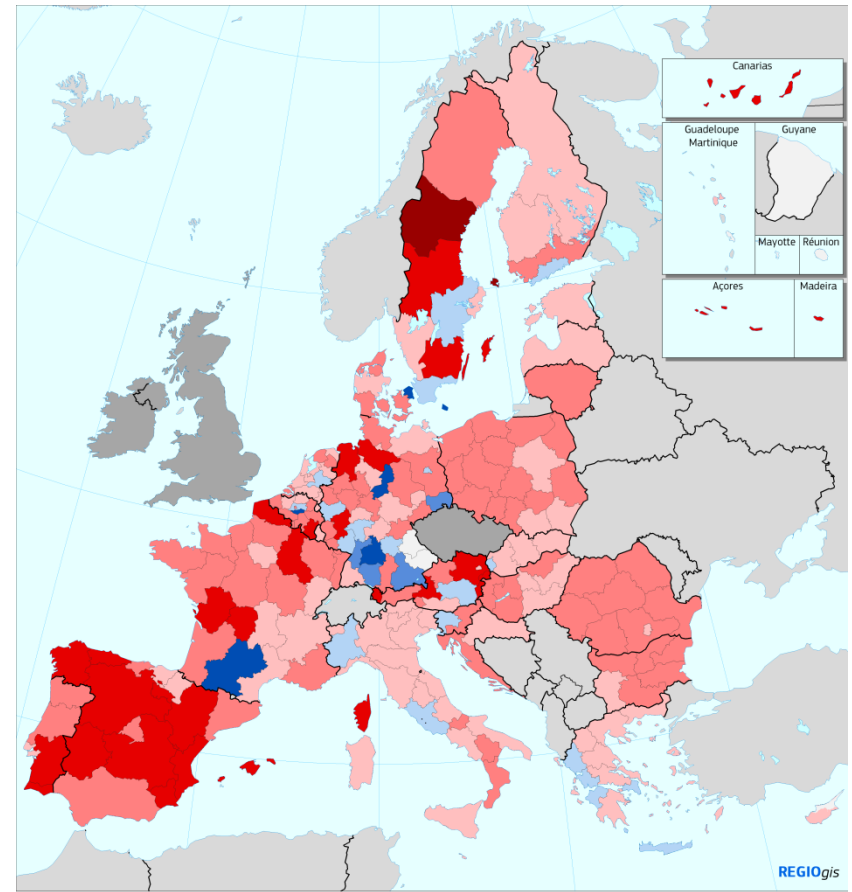
The Europe 2020 R&D target is 3%.

Source: Eurostat, DG REGIO

0 500 Km

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Map 4 Total expenditure on R&D, distance to national target, 2011



Total expenditure on R&D, 2011 - Distance to National 2020 target

Percentage point difference

< -3	1 - 2
-3 - -2	> 2
-2 - -1	no national target
-1 - 0	no data
0 - 1	

EU-28 = -0.96

Blue regions have reached the target
Red regions have not reached the target

Source: Eurostat, DG REGIO

0 500 Km

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Innovation is a key factor of development for all regions in the EU, not only the high-tech ones. However, regions differ widely in their performance with respect to innovation. Some are close to the global technology frontier and their growth generally hinges on R&D and technological innovation shifting this frontier outwards. Other regions are catching up with the leading ones through a process of absorbing existing technology and their main challenge is to increase the capacity of workers and enterprises located there to be able to do this.

For another set of regions, the limiting factor is their low endowment of infrastructure and the quality of the business environment. It is therefore important to take account of more aspects of innovation than simply R&D, or indeed technological innovation, in order to give a more accurate and complete picture of the geography of innovation in the EU. This is the approach adopted by the Regional Innovation Scoreboard (RIS) in assessing performance in this regard in NUTS 1 and 2 regions.

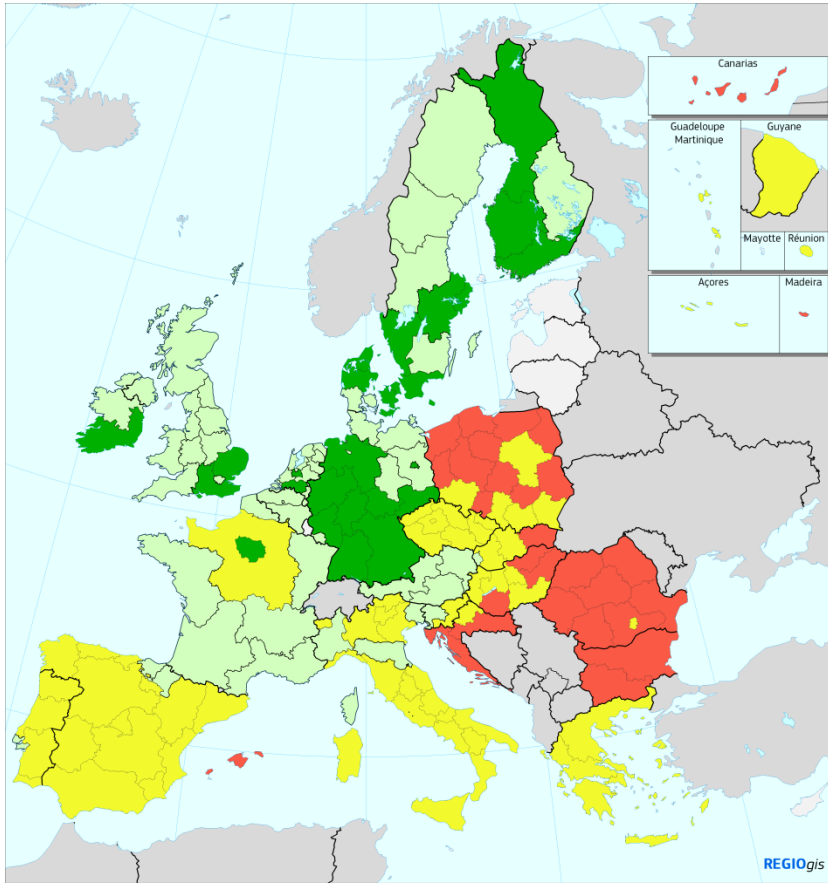
The RIS covers 190 regions in Europe in total – all those in the EU together with those in Norway and Switzerland¹⁰. It is based on 11 indicators reflecting various aspects important for innovation, such as ‘Human resources’, ‘Finance and support’, ‘Firm investment’, and ‘Linkages and entrepreneurship’ (capturing entrepreneurial efforts and related efforts at collaboration) as well as ‘Outputs’ (i.e. the number of firms that have introduced innovations on to the market or within their organisations and their effects on employment, exports and sales). For purposes of analysis, regions are grouped into four categories: innovation leaders (34 regions), innovation followers (57 regions), moderate innovators (68 regions) and modest innovators (31 regions).

In general, regional performance as measured tends to be in line with national performance. Most of the regional innovation leaders and innovation followers are located in countries which are identified as such in the Innovation Union Scoreboard (IUS) and similarly for the regional moderate and modest innovators. All the innovation leader regions are located in just 8 EU Member States (Denmark, Germany, Finland, France, Ireland, Netherlands, Sweden and the UK), indicating that excellence in innovation is concentrated in relatively few parts of Europe. Regions in Bulgaria, Croatia, Greece, Poland and Romania are assessed as having the worst performance.

There are, however, some variations in regional performance within countries. In particular, 14 countries have regions in two performance groups and four (France, Portugal, Slovakia and Spain) have regions in three groups. Only Austria, Belgium, Bulgaria, Czech Republic and Greece have all regions in the same group.

¹⁰ Details about the method and the indicators used to establish the RIS can be found in the report prepared for the European Commission *'Regional Innovation Scoreboard 2014'*, European Commission, 2014.

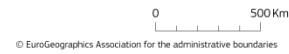
Map 5 Regional Innovation Scoreboard, 2014



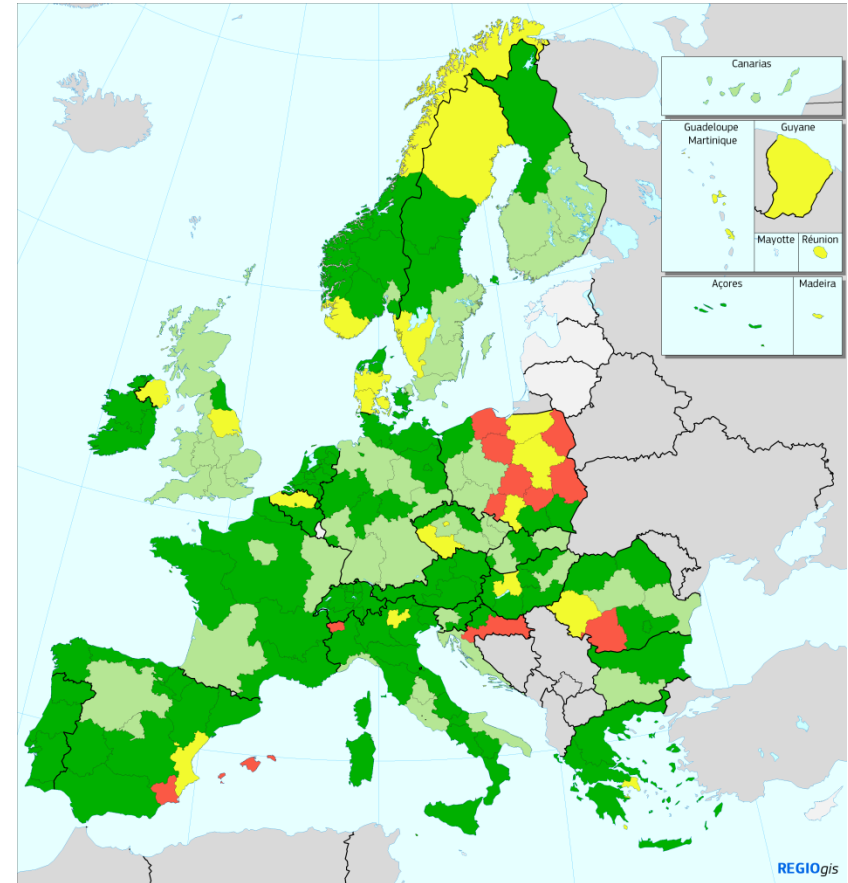
Regional Innovation Scoreboard, 2014

- Innovation Leader
- Innovation Follower
- Moderate Innovator
- Modest Innovator

Source: Maastricht Economic and Social Research Institute on Innovation and technology



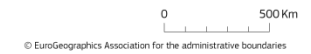
Map 6 Regional innovation growth performance, 2008-2014



Regional innovation growth performance, 2008/2014

- < -2.5%
- -2.5% - 0%
- 0% - 2.5%
- 2.5% - 15%

Source: Maastricht Economic and Social Research Institute on Innovation and technology



The analysis conducted for the period 2004-2010 shows that innovation performance has improved in most regions (155 out of 190, see map). Regions with relatively high rates of improvement are located right across the EU. At least one region in every country increased its performance by more than the EU average. This is the case for all regions in Austria, Ireland, Netherlands and Switzerland.

On the other hand, in most countries (14), the performance of at least one region worsened over the period. The score declined by over 2.5% a year in 7 Polish regions, 4 Spanish regions and one region in each of Croatia, Italy and Romania. It declined by even more (by over 10% a year) in Ciudad Autónoma de Ceuta and Ciudad Autónoma de Melilla in Spain and Podlaskie and Kujawsko-Pomorskie in Poland. Overall, the results indicate that there is no sign of any catching-up, in the sense of performance in the less innovative regions converging towards that in the more innovative ones.

Most of the highly innovative regions (innovation leaders and high performing innovation followers) have high scores on most indicators (e.g. human resources, R&D expenditure, entrepreneurship and product and process innovations). By contrast, the majority of the moderate and modest innovators have widely varying scores for the different aspects.

A positive attitude of people towards novelty (as monitored by the European Social Survey) is a key factor for both entrepreneurship and innovation. In addition, regional performance depends to a significant extent on a well-developed system of public financial support for innovation with many companies receiving some form of support. This suggests that public funding can compensate for a lack of private funding in stimulating innovation activity.

In general, the analysis confirms the wide diversity of regions in the EU in terms of innovation performance which reinforces the notion that innovation has a strong regional dimension. Given this wide variation, programmes for supporting innovation, including Cohesion Policy programmes, need to take explicit account of the local or regional context when devising the kind of support to provide.

Box on Competitiveness and Innovation Framework Programme

The Competitiveness and Innovation Framework Programme (CIP) is one of the EU funding programmes supporting innovation activities (including eco-innovation) the EU, access to finance and business support services. The programme, which had a budget of EUR 3.6 billion in the 2007-2013, is aimed at medium-sized enterprises and cohesion is not an explicit objective, although the main projects it supports contribute to achieving Cohesion Policy goals.

The main means of support for SMEs are financial instruments (with funding of around EUR 1 billion) though networks, platforms and agencies (e.g. the Enterprise Europe Network, PRO INNO Europe and Europe INNOVA) are also provided. Other initiatives are focused on European Clusters (e.g. European Cluster Observatory, European Cluster Excellence Initiative) and on supporting eco-innovation, market replication projects and ICT related pilot projects.

The CIP also supports statistical analysis of regional innovation. The Regional Innovation Monitor Plus (RIM Plus) project provides a platform for sharing knowledge of innovation policy trends in EU regions. The Regional Innovation Scoreboard (RIS) provides a comparative assessment of how European regions perform with regard to innovation. The 2012 edition of the RIS confirms that there is considerable diversity in regional innovation performance and that differences do not change much over time. Between 2007 and 2011, therefore, only a small number of regions improved their performance.

Building on the lessons learnt from the CIP, two programmes will provide support for competitiveness and innovation in the 2014-2020 programming period. The Programme for the Competitiveness of Enterprises and SMEs (COSME) will focus on competitiveness issues of particular relevance for SMEs. Innovation will be covered by the Horizon 2020 Framework Programme for Research and Innovation. Improving synergies between COSME, Horizon 2020 and the Structural Funds is a key element of the new programmes. Regions are required to establish smart specialisation strategies at regional level in order to enhance the impact of their investment, to take better advantage of the innovative and creative potential of the Internal Market and to relate their strengths in research and innovation to business needs. In this context, Cohesion Policy funding can be an important source of support for the deployment of advanced manufacturing, modernisation of factories and the development of key enabling technologies.

Box on Research Framework Programmes

Research Framework Programmes are the main means of providing support for research and innovation across the EU. Their primary objectives are to strengthen the EU's scientific and technological base and its international competitiveness through research cooperation with partners in other countries.

The 7th Research Framework Programme (FP7) with a budget of some EUR 50 billion for 2007-2013 was aimed at making the EU the leading research area in the world by supporting research excellence wherever it took place.

Support was provided for a range of activities such as encouraging greater involvement of SMEs in research activities; supporting the creation of large-scale, pan-European research infrastructure¹¹ and the optimal use of existing facilities and equipment. The concern was also to strengthen the R&D potential of regions by encouraging the emergence of research clusters (involving the triple helix of researchers, businesses and the public authorities) through the Regions of Knowledge initiative and by supporting research centres of excellence in Convergence regions through the Research Potential initiative.

¹¹ European Strategy Forum for Research Infrastructures. <http://cordis.europa.eu/esfri/roadmap.htm>

Horizon 2020, the EU's new programme for research and innovation, will run from 2014 to 2020 with a budget of nearly EUR 80 billion (at current prices), supplemented by the private investment that it is expected to attract. Its intention is to link research and innovation by supporting scientific excellence, industrial leadership and measures to tackle social challenges. The goal is to help produce world-class science in the EU, remove barriers to innovation and make it easier for public and private sectors to work together in producing innovation.

Horizon 2020 brings together all EU-level funding for research and innovation in a single programme, covering the current 7th Framework Programme, the innovation activities of the Competitiveness and Innovation Framework Programme and the European Institute of Innovation and Technology. The intention is provide seamless funding for innovative projects from the laboratory to commercial exploitation and to bring together previously separate activities to better tackle societal challenges as regards health, clean energy and transport.

All forms of innovation are covered, including in services and social innovation and support is also given for developing the market for innovations and for devising relevant legislation on public procurement, standard setting and so on.

The aim is to attract the best researchers regardless of where they are located, and funding will continue to be allocated on the basis of competitive calls for proposals without taking account of the regions from which the proposals come. Such an approach, however, needs to be complemented with measures to ensure that funding is open to a wide range of applicants, especially in the less developed regions. Support will, therefore, be provided to regions under Cohesion Policy to help them develop their capacity for research and innovation.

As in the previous programming period, some of the research funded will be on regional issues. Research in Socio-economic Sciences and Humanities, with a budget of EUR 623 million for 2007–2013, therefore, included studies of regional performance, smart specialisation, social innovation, urban problems and rural regions under pressure from globalisation as well as of social cohesion in cities. Horizon 2020 will continue to support studies of these kinds under ‘Societal Challenges’, as well as research into innovative spatial and urban planning to create sustainable and inclusive environments.

8.2. Patenting in the EU and the USA

Over the two years 2008-2009, some 135 patent applications per million people were made to the European Patent Office (EPO). In the US, there were 408 applications per million over the same period. The higher patent rate in the US reflects a more innovative economy, though also a greater tendency to apply for patents.

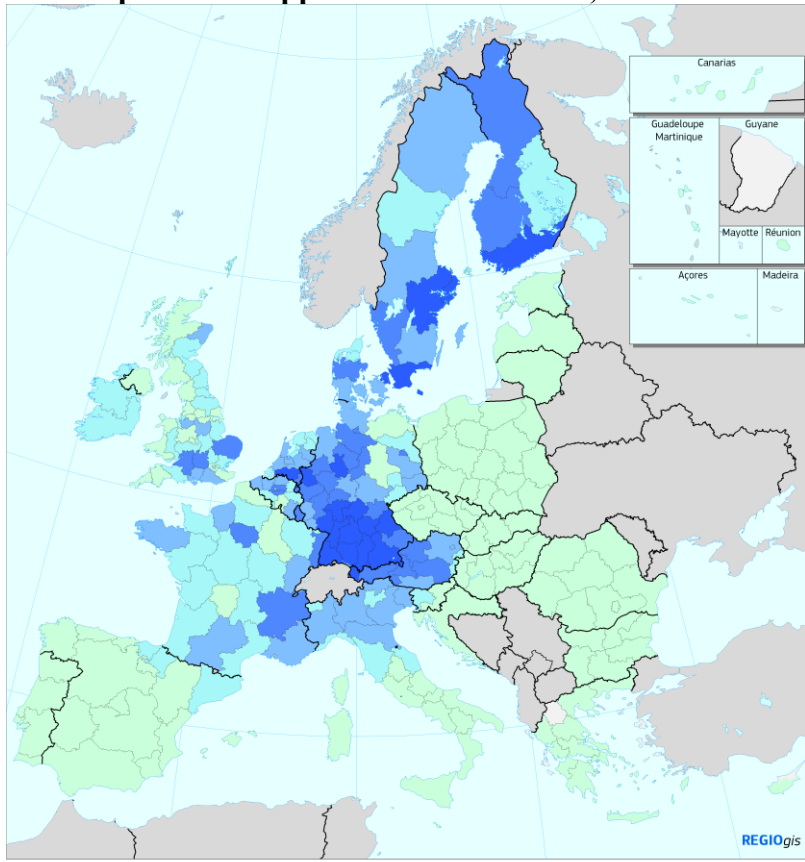
Although there are marked variations across regions in both the EU and US, most US States have a much larger number of patents per head than EU regions. In the

EU, the regions with the highest patent application rates are Noord-Brabant (559 per million people), Stuttgart (544) and Mittelfranken (505); other regions with relatively high rates are in Germany, southern England, Sweden and Finland. The majority of the EU regions, however, have a relatively small number of patents per head.

In US, the States with most patent applications are situated on the East and West Coasts, in Massachusetts (879 per million people) and California (864) especially.

The patent application figures suggest that whereas some regions in the EU may be close to the global knowledge frontier in certain areas of economic activity, most regions are not. In the US, there seem to be more States which fall into the former category.

Map 7 Patent applications to the EPO, 2008-2009



Patents applications to the European Patent Office (EPO), average 2008-2009

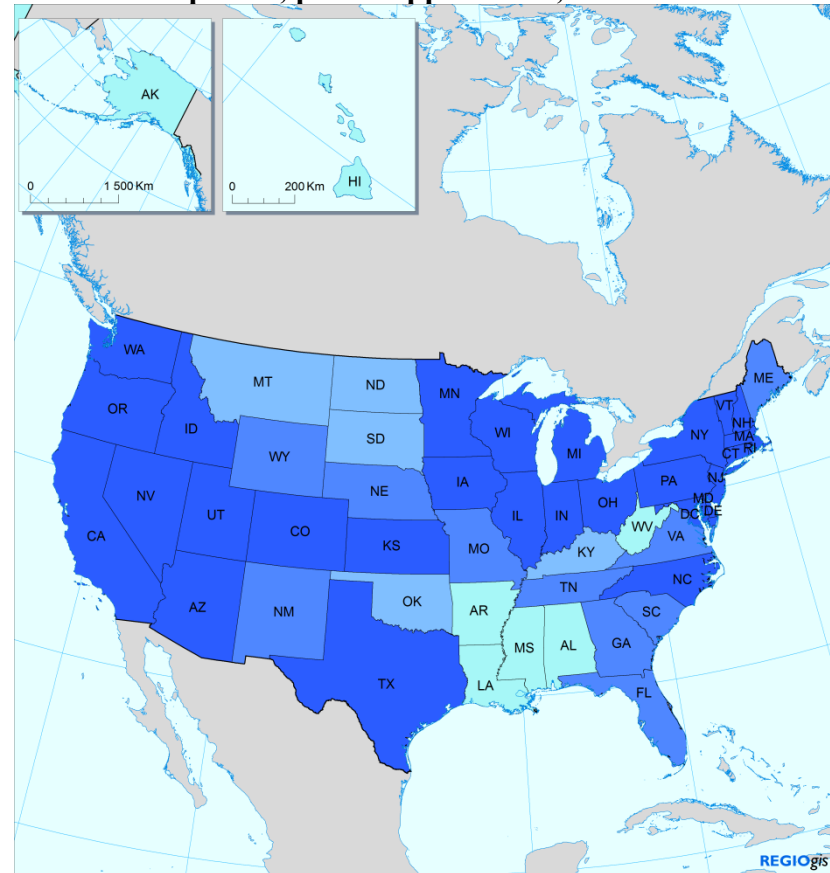
Applications per million inhabitants

- <50
- 50 - 100
- 100 - 150
- 150 - 250
- >=250

EU-28 = 135
Source: Eurostat

0 500 Km
© EuroGeographics Association for the administrative boundaries

Map 8 US, patent applications, 2011-2012



US: Number of patents, average 2011-2012

Applications per million inhabitants

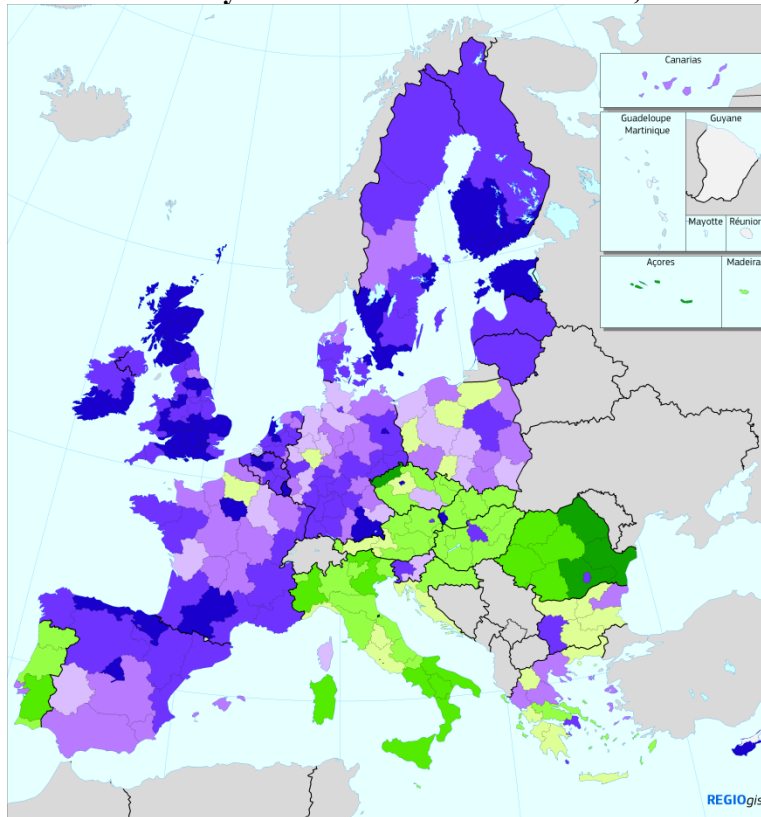
- <50
- 50 - 100
- 100 - 150
- 150 - 250
- >=250

US average: 408

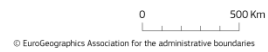
Source: US Patent and Trademark Office

0 1000 Km

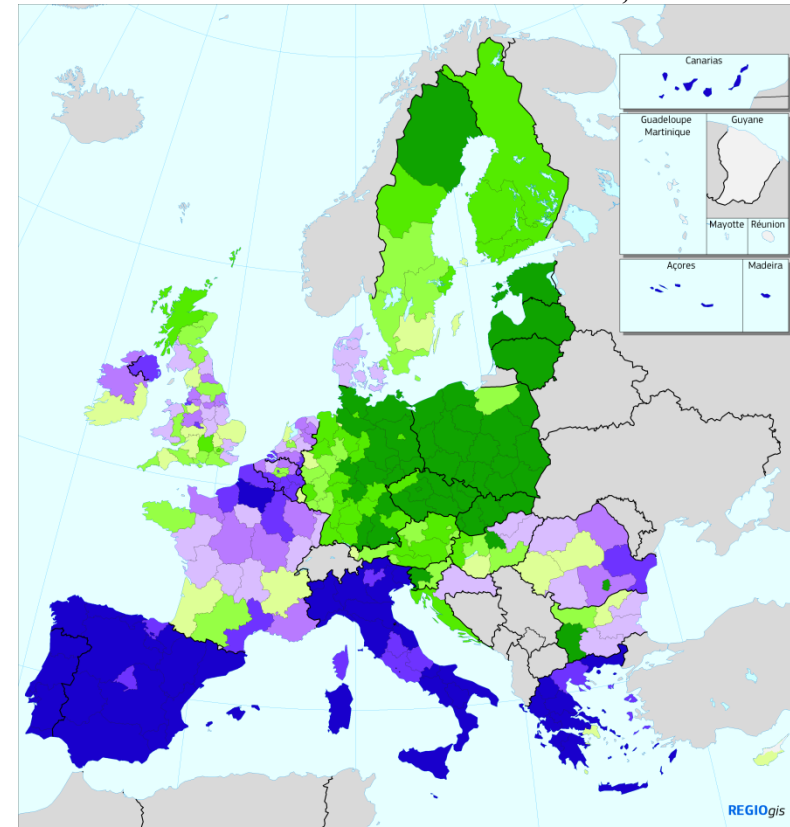
Map 9 Population aged 25-64 with tertiary educational attainment level, 2013



Population aged 25-64 with tertiary educational attainment level, 2013



Map 10 Population aged 25-64 with low educational attainment level, 2013



Population aged 25-64 with low educational attainment level, 2013



9. TERTIARY EDUCATIONAL ATTAINMENT IS INCREASING, BUT LARGE DISPARITIES PERSIST

Tertiary education, with its links to research and innovation, can help to provide the highly skilled human capital that the EU needs to create jobs, economic growth and improvements in social welfare¹².

A well-educated workforce is key to prosperity. There tends to be a strong correlation between the educational attainment of a region's workforce and median earnings in the region. In addition, attaining a relatively high education level tends to mean less risk of being unemployed. The share of people aged 25-64 with a high educational attainment level (i.e. with tertiary qualifications), however, varies significantly across regions (Map 17). In only 10% of the regions in 2013 was the share over 40%, with Inner London, Brabant Wallon and Helsinki having the highest figures. In most cases, regions with capital city cities or adjoining them have the highest educational attainment levels¹³.

By contrast, the share was less than 15% in 15 regions, mainly located in Italy and Romania.

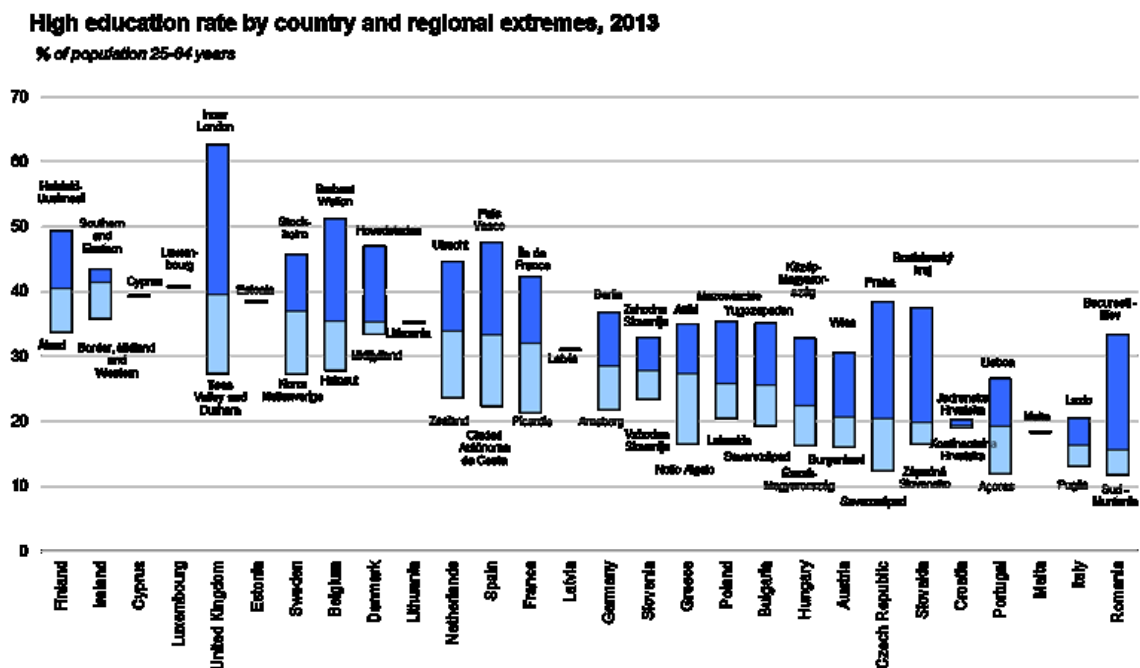
Regional variations can be substantial within a country. In the UK, the share of people with tertiary education varies between 28% and 63%, more than the variation between Member States, which is only between 16% and 42%. At the other extreme, around a quarter of people aged 25-64 in the EU have only basic schooling (i.e. less than upper secondary level qualifications) Many of the regions where the proportion of people with this level of education is largest are in the southern Member States, in a number of cases, the figures exceeding 50% (Map 18).

In most cases, regional extremes seem to follow national averages (Figure 14), but there are a few exemptions. For example, Romania has a higher share of low-educated than the UK or Denmark, but București – Ilfov has a lower share than any of the regions in these two Member States.

¹² European Commission, 2012, *Education and training monitor 2012*, Publications Office of the European Union, 2012, ISBN 978-92-9201-350-9, doi: 10.2797/51172

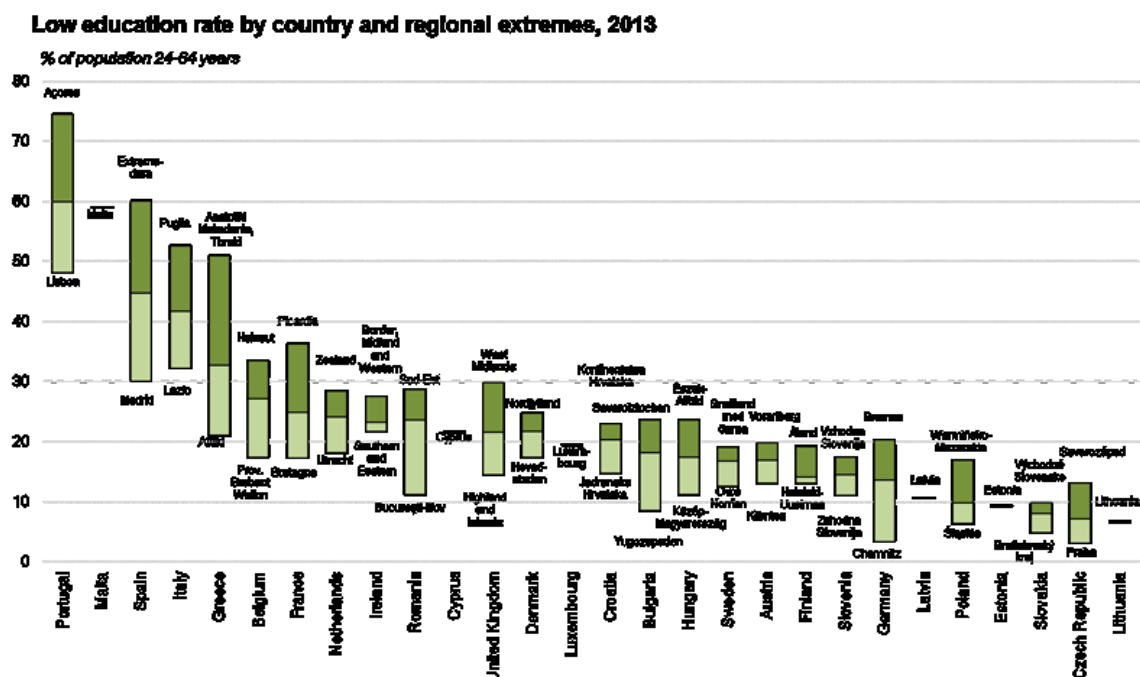
¹³ It should be noted, however, that the very different ways in which education systems are organised across the EU, such as, for example, the much longer training than elsewhere generally required of skilled manual workers in Germany or Austria outside of the university system and who acquire a high level of skills as a result, means that the number of people with tertiary education is not necessarily a reliable indicator of a highly-skilled, workforce, or even a well-educated one.

Figure 3 Tertiary educational attainment country and regional extremes, 2013



Source Eurostat

Figure 4 Low education rates by country and regional extremes, 2013



The tertiary educated and the 2020 target

The Europe 2020 strategy is aimed at increasing the share of the population aged 30-34 with tertiary education to 40% by 2020. Member States have set national targets for this varying from 26% (in Italy) to 60% (in Ireland). In the EU-27, the share increased significantly between 2008 and 2012 from 31% to 36%, suggesting that the Union-wide target of 40% should be achievable without much difficulty.

The prevailing situation in 2013, however, varies markedly between regions (Map 19 – because of the relatively small sample size on which the data are based, a three-year average is used for regions to ensure more reliable figures).

Table 2 Population aged 30-34 with a tertiary education, average 2013

	More developed	Transition	Less developed	EU-28
Population aged 30-34 with tertiary education, 2013	41.3	32.3	28.9	36.8
Change 2008 - 2013, in pp	5.7	1.1	8.1	5.8
Change 2000 - 2008, in pp	9.3	9.1	8.5	8.6
Distance to national target	1.0	12.2	8.7	4.3
Share of regions* that have reached national target, in %	27	0	6	17

* Includes only regions with data and a national target

While 29% of the 124 more developed regions with data and a national target have already achieved the latter, not a single transition region and only four of the less developed regions have reached their national target.

Regions with less than 20% of the population aged 30-34 with a tertiary degree are located in Italy, Romania, Greece, Slovakia, Czech Republic, Greece and Hungary. The average distance to the national target was reduced by 9 percentage points in all three categories of regions between 2000 and 2008. Between 2008 and 2013, the distance narrowed most in the less developed regions by 8 percentage points, followed by the more developed regions (5.7 percentage points). In the transition regions, the distance to the national target did not narrow substantially between 2008 and 2013 when it was still 12 percentage points as compared with only 1 percentage points for the more developed region and 9 percentage points for the less developed ones. This implies that, on present trends, the targets are likely to be reached in more and less developed regions, but that more needs to be done in transition regions to reach the target.